CHAPTER IV
MINING ACTIVITY
MINING ACTIVITY

The spatial distribution of different minerals and their production in the study area was discussed in detail in the previous chapter. This chapter focusses on the mining activity of the study area by identifying the types of mining and mining areas.

4.1 Types of Mining:

Minerals and mining have started playing important role in the economy of the state and in the quality of life of people living with in this state. Generally there are two types of mining which are quite commonly practised and these are:

1. **Surface or open Cast mining**: In this method the vegetation is cleared and the upper crust is removed for extraction of material. This type of mining with reference to coal is known as open cast mining and with reference to metallic and non-metallic ores extraction is known as open pit mining. The open-pit mining is quite common in Himachal Pradesh.

2) **Underground mining**: When the mineral deposits are found in the interior at the depth of 45-50 metres, it is not feasible to extract them through surface mining. The underground mining becomes necessary in such cases. Underground mining is quite uncommon and at present there are only two mines - a baryte mine of Andhra
Khala in Sirmour district and rocksalt mine at Gumma in the Mandi district where underground mining is practised. (Trivedy, 1990).

The working mines in the state can be divided into two parts.

1) Large scale private and govt. sectors: There are three important large scale private and govt. sector mines:

   (i) Associated cement companies at Barmana, Bilaspur district.

   (ii) Cement Corporation of India at Rajban, Poanta Sahib, Sirmour district.

   (iii) Gujarat Ambuja Cement Ltd. at Darlaghat, Arki, Solan district.

   All these mines are under active operation and produce about 10,000 tonnes of limestone per day. The total lease out area is about 1780 hectares, but mining is going on only over an area of 128 hectares, or about 7.19 percent of the total lease area. These mines provide employment to about 1,000 persons directly and to more than 5,000 persons indirectly.

2) Small Scale Private Sectors: There are about 70 mining leases for limestone, dolomite, baryte, gypsum rocksalt and silica boulders. These leases have been granted under the Mineral Concession Rule 1966 and 156 leases have been granted under Himachal Pradesh Minor Mineral Concession (Revised) Rule 1971 for limestone, slate, sandstone, clay, boulder, shale, gravel and sand etc. Besides these, more than 200 quarries of river beds are put to auction every year for minor minerals like sand,
stone and gravel etc. (see Plate 1 & 2). Based on these quarries about 220 stone crushers, lime kilns, brick kilns and hollow block units have been set up in the state. This sector gives an employment to more than 15,000 persons directly (Sharma, 1995).

4.2 **Identification of Mining Areas**:

The mining areas for different minerals have been shown on map (see Fig. 4.1). The mining areas of some of the important minerals are as given below:

(a) **Limestone** : The limestone mining areas are located in Sataun, Manal, Chaurei, Malgwal, Hioyana, Badwas, Kamrau, Ashnoi, Bhimgoda, Dugana, Shilla, Bahrar, Tatiyana, Kuffur, Baldwa, Pamta, Chori Patheri, Pamti Chittli, Shama Pamta, Kathwar, Kumla, Banor, Shiva rudana, Bhorli, Raicha, Sangrah, Mandli, Butmari, Nohra and Hindga in the district of Sirmour, and Gaggal and Barmana area of Bilaspur district. The limestone of Bilaspur is used by the Barmana Cement Plant which is nearly 10 kms from the district headquarter. The Kaslog limestone of Arki in Solan district is also quite important as this is used in the Gujarat Ambuja Cement Plant located near Darlaghat. The production of this plant started in 1995.

(b) **Dolomite** : The dolomite mining activity is confined only at Parnali village of Sadar tehsil of Bilaspur district.
(c) **Gypsum**: Like dolomite gypsum is also mined only at Bharli in Sirmour district.

(d) **Baryte**: Baryte is mined only in Sirmour district. The important areas where the mining activity is being carried out are Kanti miswan, Tatiyana, Shaoga, Andra Khala and Badwas.

(e) **Rocksalt**: Rocksalt is being mined at Gumma in Mandi district.

(f) **Slate**: Slate mining is being done in Kangra, Chamba and Mandi districts. Koor, Lech, Makroti, Akkad, Piura, Kunwada, Katara, Panhetru, Dibroka, Sajoth and Jayothi in Chamba tehsil, Kaila nallah in Churah tehsil and Yuhaglu, Kuna, Bihanu and Bhora in Bhattiyat tehsil of Chamba district. The Bhagsunag area, Khanyara area which includes Manjhi, Manuni and Thatharna area and Yol area in Dharmsala tehsil of Kangra district also produce slate. The slate mining is also done at Kotlu Ghar, Quoli, Ligni Ghar, Bhaul, Chimiti *nallah*, Kapri in Thunag tehsil, Silhot. Khunan, Kalipari, Kufri in Chichiot tehsil and Panjog slate mine in Sundernagar tehsil and Ropdu, Thiraskhad, Chaluna B and D, Kafli A and B, Nihri-A, Shihni, Dharyal, Purana Bansotla A and B and Malohni in Nihri tehsil and Jantholtu in Karsog tehsil of Mandi district (Upadhyaya, 1995 and H.P. Govt., 1995).

4.3 **The Geographical Profile of Select Case Studies**:

It clearly emerges from this discussion the limestone, rock salt and slate are the three most important minerals of the study area in terms of
economic importance, demand, production, occurrences and proven reserves. The districts which occupy most significant places in the mining of the aforesaid minerals are Sirmour, Mandi and Chamba. Chamba occupies the important place in the production of slates, Mandi is famous for mining of rock salt and Sirmour occupies most significant position in the occurrence, extraction and proven reserves of limestone which at the movement is the most important mineral of Himachal Pradesh. Limestone is not only in great demand due to the location of cement industries, it fetches highest value among all other minerals of the state.

In the following pages an attempt has been made to present the geographical profile of the three mining areas. These are Kamrau limestone mining area in Sirmour district, Guma rocksalt mining area of Mandi district and Gehra slate mining area of Chamba district. The environmental impact of mining activity will be presented in the next chapter on the basis of these case studies.

4.3.1. A Case Study of Kamrau Limestone Mining Area:

Sirmour district (77° 01' 12" - 77° 49' 40" east longitude and 30° 22' 30" - 31° 01' 20" north latitude) is the largest producer of limestone in Himachal Pradesh. The limestone mining in this district has been continuing since 1963. There were only 14 leases during 1963-80. But in 1980-86 the number of leases rose to 82. However, currently there are only 68 leases in operation (Sharma, 1995). Altogether seven major
limestone mining blocks have been identified in Sirmour. These are: (i) Manal block, (ii) Hiyona-Barbas-Kamrau block, (iii) Bhimgoda block, (iv) Baldhwa-Pamta block, (v) Shilla block, (vi) Sangarh block, and (vii) Bharli-Banore-Kumla block (Shcoran, 1995) (see Fig. 4.2).

The present case study deals with Kamrau mining area which is located along the Paonta-Shilla-Narkanda state highway at a distance of 80 kms from the Nahan, the district headquarter. Sataun, a small industrial town, is just 17 kms away (see Plate 3). The village Kamrau is also a sub tehsil headquarter (see Fig. 4.3 and Plate 4). This village consists of three settlements known as (i) Chaukki, (ii) Shalna and (iii) Munnana.

The village Kamrau falls in the catchment area of the river Giri. It is located in the trans Giri region of the district, which is the part of outer Himalaya. Sirmour district is characterised by granite, metamorphic and calcareous rock systems. The Kamrau mining area is characterised by the calcareous type of rock where limestone has been found in abundance. The summers are hot and winters are dry, but rainfall occurs in monsoon season only from July to September. The vegetation in Kamrau area is scanty comprising grass, shrubs, bushes with ban oak and deodar trees on higher reaches (see Fig. 4.4 & 4.5).

The revenue area of the village Kamrau is 907 hectares. In this village, there are 459 families living in 454 houses. The total population
MINING ACTIVITIES IN SIRMOUR

Fig 4.2
LOCATION MAP OF KAMRAU (SIRMOUR).

Fig. 4.3
GEOGRAPHIC ENVIRONMENT OF STUDY AREA

Fig. 4.4
LAND USE PATTERN OF STUDY AREA

Fig. 4.5
of the village is 2,642 persons. There are 1,538 males and 1,104 females. The level of literacy is very low. Only 1,087 persons are literate which is just 41 percent of the total population. The literate males and females are 863 and 224 respectively. There are 1,247 workers engaged in different activities. Nearly 30 percent of this working population is involved in the mining activity. There are 432 persons who earn their livelihood from the mining (Census, 1991).

The limestone mining is being carried out by open cast method, all by manual means basically. The jack hammers are used for drilling. The cost of limestone extraction at the site has been worked out to be Rs. 150 per tonne. But there is a great deal of variation in the cost of limestone at the plot and in the market (see Table 4.1 & 4.2). The cost gets escalated mainly due to transportational factor. There are different grades of

**Table 4.1**

Approximate value of Limestone per tonne at Kamrau mine site

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Articles</th>
<th>Value in Rs. / tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Road maintenance</td>
<td>10</td>
</tr>
<tr>
<td>2.</td>
<td>Dozer</td>
<td>8</td>
</tr>
<tr>
<td>3.</td>
<td>Compressor</td>
<td>15</td>
</tr>
<tr>
<td>4.</td>
<td>Labourer</td>
<td>25</td>
</tr>
<tr>
<td>5.</td>
<td>Engineer, mate supervisor</td>
<td>15</td>
</tr>
<tr>
<td>6.</td>
<td>Compensation of land</td>
<td>30-40</td>
</tr>
<tr>
<td>7.</td>
<td>Royality</td>
<td>25-32</td>
</tr>
<tr>
<td>8.</td>
<td>Others (over burden etc.)</td>
<td>7</td>
</tr>
</tbody>
</table>

Value of limestone at mine site Rs 135-150

_Source_: Field observation.
limestone being sorted out here such as chemical, cement, sugar, paper and low grade. The market cost of limestone depends on its grade (see Table 4.3).

Table 4.2

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Articles</th>
<th>Value in Rs. / tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Transportation</td>
<td>125</td>
</tr>
<tr>
<td>2.</td>
<td>Plot rent</td>
<td>2-5</td>
</tr>
<tr>
<td>3.</td>
<td>Loading and unloading</td>
<td>3</td>
</tr>
<tr>
<td>4.</td>
<td>Sorting</td>
<td>10-20</td>
</tr>
<tr>
<td>5.</td>
<td>Salary (staff members at plot)</td>
<td>2</td>
</tr>
</tbody>
</table>

Value of limestone at plot (Sataun) Rs 275-300

Source: Field observation.

Table 4.3

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Articles</th>
<th>Value in Rs. / tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Low quality (Batta)</td>
<td>180-125</td>
</tr>
<tr>
<td>2.</td>
<td>Kachri</td>
<td>200-250</td>
</tr>
<tr>
<td>3.</td>
<td>Limestone (general)</td>
<td>260-280</td>
</tr>
<tr>
<td>4.</td>
<td>Limestone (high grade)</td>
<td>350-400</td>
</tr>
<tr>
<td>5.</td>
<td>Chemical grade L.D.</td>
<td>400-600</td>
</tr>
</tbody>
</table>

Source: Field observation.

4.3.2. A Case Study of Guma Rocksalt Mining Area:

The Guma rocksalt mine is located in Mandi district (76° 37’ 20” and 77° 23’ 15” east longitude and 31° 13’ 50” and 32° 04 30” north latitude) which is the only producer of rocksalt in Himachal Pradesh. The
rock salt is being mined from Guma for the last four centuries. To begin with it was open pit mining but underground method was introduced after 1924. It is 10 kms from Jogindernagar, the tehsil headquarter and 48 kms from Mandi, the district headquarter near Pathankot-Mandi National Highway 20. This rock salt mine is so important that it has been the centre of attraction for a longtime (see Fig. 4.6). Several geologists have studied Guma area. The mention may be made of Datta et al. (1965), Gaur and Rawat (1971) and Rawat (1972). Hore (1962) carried out a detailed geological mapping of the Guma salt deposit and estimated the reserves of about 6.77 million tonnes, 1.02 million tonnes proved, 2.25 million tonnes inferred, and 3.00 million tonnes as indicated reserves.

The Guma rock salt mine was operated by the Salt Department of India since 1950. But the management of this mine was transferred to Hindustan Salt Ltd. in 1963 and mine lease is valid upto 2003. The mine lease area is about 30.30 hectares (Malhotra, 1994).

Guma rock salt mine falls in the transition zone between the sub-Himalaya and lesser Himalaya (see Fig. 4.7). It lies along the foot of the Ghogar Dhar which runs in north-south direction. The topography in the area is also disturbed by the presence of salt because of its leaching and surface erosion. According to Medlicott (1864) this forms part of the Krol formation. Guma rock salt mine falls in the catchment area of the Beas river. The river Beas which flows in N.W. direction lies more than
MINING ACTIVITIES IN MANDI

Fig. 4.6

(3) Rock Salt
(6) Slate

0 10 KM
LOCATION MAP OF GUMA (MANDI)
8 kms S.W. of the mine site. This is characterized by the sub-tropical climate with cold winter and pleasant summer. Sometimes there is mild snowfall as well. The average rainfall in the area is 400 to 600 cms during the year. The average maximum and minimum temperature remain between 24°C and 10°C and it comes down below zero in winter.

The vegetation in the Guma rocksalt mine is scanty, comprising of grass, and bushes, oak trees, deodar trees and wild Anarbeez trees. Spring water is the main source of drinking water in the area and few saline springs are also noticed. The revenue area of the village is about 320 hectares. The total population of the village is 738 persons - 368 males and 370 females. The level of literacy is slightly better than in case of Kamrau. There are 439 persons as literates - 255 males and 184 females. The workers constitute 214 persons and those depending upon mining are 29 persons only (Census, 1991).

The rocksalt mined at Guma is impure. It contains on an average of 65 to 80 percent sodium chloride, 19 to 34 percent insoluble calcite, silica and shale and about 1.0 percent other salts. The insoluble impurities are finely interlocked with sodium chloride particles. The colour of rock salt is pinkish to purplish. At present the mining of rock salt is confined to the southern side of Khani nallah (see Fig. 4.8 & 4.9). The overall proved reserves in the lease area is about 25 million tonnes. The mineable reserve of rocksalt is about 5 lakh tonnes (Malhotra, 1994).
GEOGRAPHIC ENVIRONMENT OF STUDY AREA

Survey of India 53/A

Rock Salt Mine
River
Road

Fig 4.8
LAND USE PATTERN OF STUDY AREA

Survey of India 53/A
- Reserved forest
- Wooded Forest
- Surveyed trees
- Built-up Area
- River
- Road
- Mine

Fig 4.9
The production of Guma rocksalt mine is very low. The total
development in rocksalt will be about 190 metres.

\textbf{Table 4.4}

\textbf{Year wise Estimated / Planned Production at Gumma rocksalt}

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Years</th>
<th>Total production in tonnes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1996-97</td>
<td>2500</td>
</tr>
<tr>
<td>2.</td>
<td>1997-98</td>
<td>2800</td>
</tr>
<tr>
<td>3.</td>
<td>1998-99</td>
<td>3200</td>
</tr>
<tr>
<td>4.</td>
<td>1999-2000</td>
<td>3400</td>
</tr>
<tr>
<td>5.</td>
<td>2000-2001</td>
<td>3600</td>
</tr>
<tr>
<td>6.</td>
<td>2001-2002</td>
<td>3700</td>
</tr>
<tr>
<td>7.</td>
<td>2002-2003</td>
<td>3800</td>
</tr>
</tbody>
</table>

\textbf{Source} : Hindustan Salt Ltd., Guma.

The rocksalt is used by cattle use in its raw form. It is not
recommended for human beings as it lacks iodine.

4.3.3. \textbf{A Case Study of Gehra Slate Mining Area}:

Slate is a fine grained metamorphic rock which is composed of
very fine grains of mica, chlorite, felspar, quartz and oxides of iron etc. It
has wide range of colours but the common varieties are greyish black and
light green (Krishnaswamy et al, 1988). The slate shingles are used for
roofing and flooring purposes. Sometimes slate and slate tiles different
sizes are exported to other slates as well. The Chamba district (75° 47'
50" - 77° 0' 55" east longitude and 32° 10' 40" - 33° 13' 40" north
latitude) is the most important producer of slate in Himachal Pradesh. The slate mining in this district has been carried out for the last fifty years. The major patch of slate mining in this district is Bagga-Gehra-Koor which stretches for about 22 kilometres along the banks of the Ravi river.

The present case study deals with the Gehra slate mines which is at a distance of 35 km. from the Chamba tehsil and the district headquarter. The method of mining is open-pit and the mining is being done on both the banks of Gehra nallah (see Fig. 4.10).

The Gehra mines are in the lesser Himalaya and represent Pukhari formation (Nautiyal et al, 1962 and Rattan, 1973). These are spread on the northern slopes of Dhauladhar range. The terrain around Gehra is highly dissected by small rivulets and falls and forms the part of the catchment of the Ravi river. This is characterised by temperate type of climate with cold winter and mild summer. It also receives snowfall during winter season. The vegetation is scanty comprising of grass, shrubs, bushes, kaith, oak and deodar trees. The revenue area of the village is 476 hectares. The total population of the village is 1233 persons - 639 males and 594 females and nearly 56 percent of the total population is that of scheduled caste. Only 31 percent people are literate. The female literacy is very low. Nearly 29 percent people are workers and 23 percent of the workers’ population is engaged in the slate mining activities in and around the village (Census, 1991). It is interesting to
MINING ACTIVITIES IN CHAMBA

Fig. 4.10
GEOGRAPHIC ENVIRONMENT OF STUDY AREA

Fig 4.12
know that most of the mining which is carried here is illegal and, therefore, the degree of vulnerability is very high. However, there are four slate mine leases where the legal mining is being done. There is one unit of slate tiles’ cutter also here in Gehra mine site (see Fig. 4.11 & 4.12).

The impact of mining with reference to these case studies has been examined in the next chapter.
References:


Sharma, A.K. (1995), Status of Mining in Himachal with special emphasis on district Sirmour. In *Souvenir, inauguration ceremony on 'Mining Activity in Himalayan Region'; Mining Engineers Association of India, Solan.*
