International Training at University of NSW, Sydney, Australia

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By

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IMPLEMENTATION OF MINED OUT AREA REHABILITATION PROGRAMME IN SMALL MINES OF HIMACHAL PRADESH

-THROUGH COMMUNITY PARTICIPATION
-SETTING UP OF DEMONSTRATION SITES

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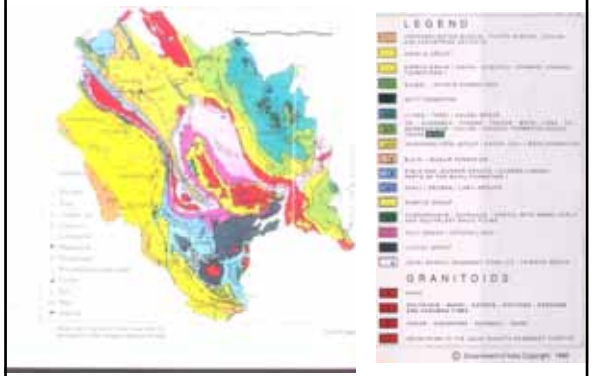
INTRODUCTION

- Himachal Pradesh is primarily a mountainous state,covers an important segment of western Himalaya extending from plains of Panjab & Haryana upto the Tibetan Border, With an area of 55673 Sq. Km. And constitutes 1.69% of India and 10.54% of Himalaya.
- The State covers a wide spectrum of Geological, Morphological and Climatic Zone.
- The lowest point of the State is at 400 mts. M.S.L. and the highest is at 6900 mts. M.S.L.
- 5 major Rivers of the country drain out of this State
- Average rainfall is 110 Cm. And varies from 340 Cm at Dharamshala to 50Cm. in Lahaul & Spitti

Panaromic view of Chandertal lake

Snow covered mountains

Half tunnel in Kinnuar



MINING IN HIMACHAL PRADESH

- Himachal Pradesh is endowed with a variety of rocks add fossil which make a type section of Himalayan Geology
- The State is rich in Non Metallic mineral resources in comparison of metallic minerals. Although there is history of Iron ore mining prior to 17th centaury and mining and mining of Pyrite and Antimony during 2nd World war.
- Slate mining in Khaniyara area was started prior to 1900 and are continuing till date. Presently it is temporarily stopped for getting clearance under F.C.A., which is in principal agreed upon subjected to submission of EMP, which is under preparation.
- Presently following important minerals are mined:-
  - Limestone (Bothas major and mineral)
  - Slate
  - Gypsum
  - Baryte
  - White Slate
  - Silica Boulders
  - Building Material

FEW CONTRASTS

Mine of M/S GACL &M/C ACC are well managed, having full establishment of technical staff	Lime Stone mines of Sirmour district having mine mate and mine engineer for one and many mines	Slate mines and other small mines where mine owner himself is working as labour in his mine
Completely mechanized	Partially mechanized	100 % manual
Production is as high as 2.5 million ton /year	Production varies from 0.2 to 0.04 million ton/year	Production may be less than 10 ton/year
Area >100 hectare	Area lies between 8 to 0.5 hectare	Less than 0.5 hectare

Mile Stones

- First lease was granted in 1973
- Closure of mines in adjoing Dehradun area in 1985
- Displaced lessees of Dehradun area rushed to Sirmour District
- Problem of environment degradation became acute
- A public interest litigation was filled by an lady smt. Kikri Devi in Hon'ble High Court of Himachal Pradesh
- **Because** Large sector has
  - Skilled man power
  - Financial Resources --To take care of various environmental control measure
- **Small mining** (which is emerging as the lead sector in economical development in remote area) is :
  - Vast technical knowledge
  - Generally unorganized
  - Mostly unsupervised
  - Lacks both technical &Financial Resources

✓HENCE

It became the duty of government to

Firstly

Make this sector aware of their potential & about environment degradation

Secondly

To give them technical Know how for carrying scientific mining

To Achieve this

-Department got registration as RQP
-Prepared mining plan for Major as well as for leases granted under minor mineral on nominal charges
-Socio- Economic impact of the mining was studied
-Base line data was generated
-Demonstration sites were set up at various sites depicting various methods of rehabilitation

Mine of M/S/ JST Distt Sirmour,Before mining during 1970

Overview during active mining (Limestone mine of M/S. JST)

Reclamation of bench after mining,1991(Limestone Mine of M/S JST)

Reclaimed bench after mining (Limestone mine of M/S JST)

Mine of M/S/ JST Distt Sirmour,Before mining during 1970

Mine of M/S/ JST Distt Sirmour,after mining during 1980, spreading of soil on the mined out areas

Mine of M/S/ JST Distt Sirmour,after mining during 1980, spreading of soil and digging of pits in the mined out areas

Mine of M/S/ JST Distt Sirmour,after mining during 1985's Showing the plantation in the mined out areas

Mine of M/S/ JST Distt Sirmour,after mining during 1987's, The well rehabilitate area after mining

2nd Mile Stone

- First demonstration site was established in 1997 at Khajjiar Khalla with the object to convert the degraded and disfigured slopes of already mined out area to a safe and stable condition and to restore it as closely as possible to pre- mining condition.
- The area of about 3 hectare in an operative mine since 1980 was selected because most of the mines are located nearby it.
- Silent features
  - Eco restoration plan on the scale of 1:500
  - Land leveling , scaping and fencing
  - Total length of breast wall & crate wire wall etc. for stabilizing --- appox 1000mts
  - More than 600 species of trees and many bushes were planted.
  - **Result :-**
    - Bakumbar a lime stone loving bush survived well in first year.
    - After area is stabilized Euclyptus, Gold Mohr, Bamboo started coming well
    - Area attained almost pre mining condition in three year.
    - Photo showing the the comparison of area before rehabilitation and after the plantation.

Pre-restoration sight-Khajjiar Khala

May 1991

Showing Retaining Structure to retain debri

Photograph Showing resemblance with the surrounding area after rehabilitation.

Oct 1999

Close view of plantation in Rehabilitated area.

EXPERIENCE GAINED

NATURE IS THE BEST TEACHER

- Species suggested by old local person and growing in surrounding similar area i.e. rocky area are more successful
- Involvement of stakeholders through community participation(I.e. local Mahila mandals,School children) and workshop at village for all stakeholders I.e. mine owners, truck operators,local villagers, mahila mandels, yuva mandals and school children etc can lead to success of programme
- Rehabilitation programme started percolating in nearby mines
- Mine owners started contributing Rs.1/ton for social welfare I.e. village school, hospital,temple etc.
- Mine owners offered a collective approach for rehabilitation by making an organization GREEN (Giri Region Environmental and Ecological Network)

FEW MORE DEMONSTRATION SITES AUS-AID PROJECT

✓**Hence**

–All stakeholders were involved in future rehabilitation programme

–Big Mine owners provided free plants to small mine owners as well to villagers

–Camps were held in villages it self

–6 area having deferent type of problem as well as in different area of H.P. were selected where different simple and low cost techniques were demonstrated at the cost lessee.

–As depicted in photographs the sites were successfully rehabilitate

AusAID Project

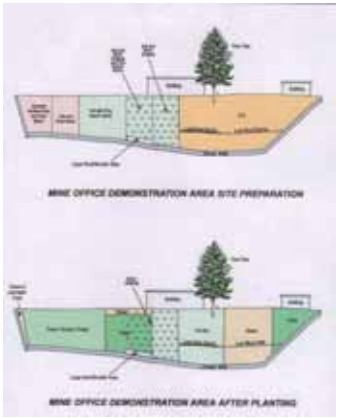
- Component -3 of the Sub-Project under Aus-AID's India Australia Training and Capacity Building Project (IATCBP) entitled " Capacity Building in Community Based Participative Approach for Rehabilitation and Reclamation of Degraded Mining Areas in Parts of Himachal Pradesh" envisaged imparting training to selected Indian officials in Australia

The training schedule of 35 days in Australia was:-

- **In class room lectures at university of Queensland**
- **In classroom lectures at M/s Woodward-Clyde Office**
- **Lecture at office of SIMTARS**
- **Interaction with officials of DME**
- **Field trips including 6 overnight stays at Rockhamton, Gympic, Cairns and Mareeba, to see 11 mining sites.**

PLATE 1: View of JST Mine Site Office prior to Rehabilitation Works 25/6/99

PLATE 7: General view of the developing vegetation - Mine Office slope - JST Baldhwa Limestone Mine, Sirmaur District, HP.



View of site after Rehabilitation

Well stabilized over burden

PLATE 3: View of JST Mine Dump after placement of Jute material and while right-hand side of Dump was being regraded

Site after initial plantation

Dump Showing growth in greenery and stabalation after 2nd rainy season

Final view of both sites

Rehabilitation work in progress at Top Bench of M/s K.K. Anand's Mine

Top Bench of M/s K.K. Anand's Mine after Rehabilitation.

Outcome

- the involvement of all stakeholders in rehabilitation programme
- the different strategy for different area
- it should be the aim that every area mined out is be put - to its best end use for the local society, after mining
- The concept of EMOS

FINALLY

A composite plan were made for a specific catchments because initially programme is focused in the lease area only.

Hence a composite plan for Bagan Dhar area was prepared.

Bagan Dhar is a ridge act as drainage divide between the Khajjiar Khalla and Shamahai Khalla and six small mines were situated in the catchment's of Shamahai Khalla

The area is most affected by old working,debris was rolling in the catchment's

Hence

The local persons and lessee organized and a society was made under the name TPRS (Tilling Paryavern Raksha Society),and

Lessees were asked to treat the sediments at the source

Stabilize the already debris already thrown in the catchment

Extensive plantation be done in the area by the society

The work has already been started as evident from the photographs and expected to that it will be completed in two years.

Site plan of Bagan Dhar

Area to be reclaimed as a part of total catchment's treatment

SHOWING A SERIES OF CHECK DAMS RAISED BY SH CHUHI RAM SHARMA BELOW THE MINE OF M/S SATYA TOMAR

CLOSE VIEW OF CRATE-WIRE CHECK DAM

Plantation of Bushes in between check dams

Well stabilized check dams

SHOWING THE BUSH PLANTATION IN MINED OUT PIT OF MINE OF M/S KUSH PARMAR

Photograph showing percolation effect in surrounding area.

Photograph showing plantation by stone crusher

Percolation effect of demonstration site

Mine Owner taking care of surrounding area

River/Stream Bed Mining Policy/Guidelines for the State of Himachal Pradesh

As notified on the 28/2/2004 .

Principles

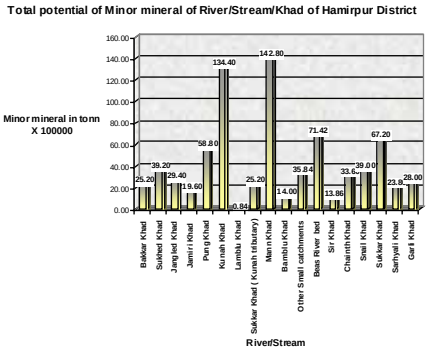
- River natural resources must be utilized for the benefit of the present and future generation;
- It is the responsibility of all sectors to maintain the river resources of the state and to ensure that it is prudently managed and developed;
- Awareness is essential for ensuring the protection of river natural resources and for the proper utilization of riverbed material.

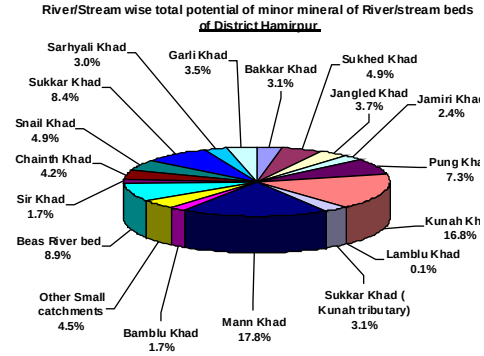
District Level River/Stream Bed Mining Action Plan

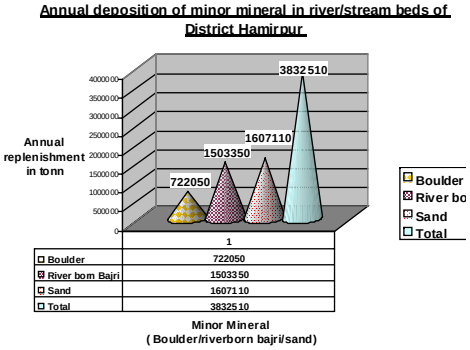
- The action plan for River/Stream bed mining shall be based on a survey document of the existing river/stream bed mining in each district and also to access its direct and indirect benefits and identification of the potential threats to the individual rivers/streams in the state.
- This survey shall be conducted by Geological Wing, Department of Industries, Himachal Pradesh and shall contain:-

The component of District Survey are

The detail of all river system of disrtict
The total potential of river bed
The annual replenishment of the mineral
the identification of area for river bed collection etc







Every River bed mining lease shall be allowed as per the Working- Cum -Environment Management Plan

✓Conclusion

- **Rehabilitation programme, by involving stakeholders through various camps etc,setting up of demonstration sites through joint venture of small mine owners has great success and bought environmental awareness among the small mine owner, who has**
  - **limited financial recourses,**
  - **less technical knowledge,**
  - **unsafe marketing,**
  - **tough climate and topography**

but still contributing lot to economy and welfare of the state by giving employment to thousands of peoples in their own village itself