

CHAPTER IX

COAL CONSERVATION, UTILISATION AND RESEARCH & DEVELOPMENT

COAL CONSERVATION

9.1 Conservation of Coal enjoins maximum recovery of in-situ reserves of coal. The aspect of conservation of coal is taken into account right from the planning stage and maximum recovery is ensured during the implementation stage.

9.2 Mechanised opencast mining is presently the commonly adopted technology for extraction of thick seams at shallow depth. This is also important from the conservation point of view since the percentage recovery by this technology is about 80% to 90%. The dominance of this technology can be understood from the fact that it now contributes more than 80% of total coal production. This trend is likely to continue in the near future also. Further, the thick seams, which were earlier developed by Bord and Pillar method or other methods of underground mining and had been standing on pillars for long in absence of a suitable technology for extraction, have now in many cases become extractable by opencast method of mining with HEMM equipment of suitable type in some mines of WCL, BCCL, CCL and ECL under shallow cover.

9.3 In case of underground mining, the introduction of mechanisation has resulted in increased percentage of extraction thereby leading to better conservation of coal. Replacement of the prevalent manual Bord and Pillar method of mining by semi-mechanised method of extraction (with SDL/LHD) has improved the percentage of extraction.

9.4 Continuous miner technology, which has of late been introduced in India is able to extract 60% to 70% of the coal in a panel depending upon the seam parameters as against 50% to 60% by semi-mechanised Bord and Pillar system of mining with SDL/LHDs. The rate of extraction by the continuous miner being high, it will be possible to create larger panels and thus reduce the coal lost in barrier pillars. Efforts are being made to introduce this technology in a large scale in CIL mines.

9.5 Longwall mining technology yields higher percentage of recovery (70% to 80%) with higher rate of output compared with other methods of underground mining. This method has been implemented in some mines of SECL, ECL and BCCL of Coal India Limited as well as in SCCL. However, due to difficult geo-mining conditions prevalent in India, large-scale adoption of this technology has not been possible.

9.6 With the improvement in roof support technology as mechanised bolting and resin bolts it has been possible to maintain wider gallery span and extract seams under bad roof conditions more efficiently resulting in improved conservation of coal.

SAND STOWING

9.7 Sand stowing in underground mines is yet another effective means of coal conservation, which is widely in use for extraction of coal pillars from underground coal seams lying below built up areas, such as important surface structures, railway lines, rivers, nullahs, jores, etc. which otherwise would have resulted in locking of coal in pillars. Stowing also helps in the extraction of thick seams in several lifts increasing the percentage of extraction.

RESEARCH & DEVELOPMENT

9.8 Research & Development activities funded by Ministry of Coal under Coal S&T Grant are outlined in the Table below along with the number of projects covering the different areas related to Coal & Lignite sector. A total of 10 S&T projects were completed during 2003-04 and 12 projects are expected to be completed in 2004-05.

<i>Status</i>		<i>Production, Productivity & Safety</i>	<i>Coal Beneficiation & Utilisation</i>	<i>Environment & Ecology</i>	<i>Total</i>
i.	Projects on-going as on 1.4.2004	22	16	11	49
ii.	Projects Approved till Dec. 2004	4	2	2	8
iii.	Projects on-going as on Dec. 2004	26	18	13	57
iv.	Projects in final stage of completion as on Dec. 2004.	5	4	3	12

CONTROL OF MINE FIRE AND SUBSIDENCE - JHARIA COALFIELD

9.9 In the Jharia coalfield, at the time of nationalisation of coking coal mines in 1972, there were reportedly, 70 active mine fires spread over in about 17sq.kms. 22 Fire Projects were taken up from 1975 to 1988 for control of these fires at an estimated outlay of Rs.114.57 crores. 10 fires were extinguished and the remaining fires were by and large kept under control. Eight schemes for fire and subsidence control were sanctioned in 1997-98 under EMSC/SSRC Schemes of Ministry of Coal. Four of these schemes have been fully implemented and another four are nearing completion.

The capital outlay for these 8 schemes was Rs. 16.18 crores. Further 4 new RCFS Schemes were sanctioned by Ministry of Coal for protection of railway lines and Chatkari Jore under EMSC/SSRC schemes with approved capital of Rs. 25.60 crores in the year 2001.

9.10 Under IDA credit to the Government of India, BCCL received a loan of US \$ 12.00 million for developing a long term plan for carrying out investigation and preparation of recommendations of measures for extinguishing/controlling fire and preparation of Environmental Management Plan (EMP) for Jharia Coalfield. M/s GAI-

METCHEM, a joint venture of USA/Canada was appointed for preparing the "FIRE FIGHTING PROGRAMME" and M/s NORWEST MINE SERVICES of Canada for preparation of the EMP. The major observations/findings are given below:-

I FIRE FIGHTING PROGRAMME

1. Overall fires have reduced in an area from about 17 sq. km. (1986) to 9 sq.km. (1996).
2. Dhanbad – Patherdih railway line (28 Km) is endangered by fires and require grouting, stabilization, relocation preferred.

Implementation status:- A decision has been taken by a committee constituting of representatives from Railways, State Govt., DGMS, Coal Companies etc. The railways have discontinued operation of trains on Dhanbad – Patherdih Railway line. The passenger traffic has been diverted through alternative route i.e via Sindhri-Pardhankanta. The RCFS Scheme at North Lodna which was mainly for protection of Dhanbad-Patherdih Railway line has been discontinued in view of the proposed decision to dismantle the railway line and dig out the fire and coal below railway line and relay the track.

3. Adra-Gomoh Railway Line requires protection by isolation trench and water curtain.

Implementation status:- One RCFS scheme has been sanctioned in August 2001 for protection of Adra-Gomoh railway line at Block II OCP and Phularitand Colliery at an estimated cost of Rs.5.78 Crores. The work is under progress. Expenditure up to October 2004 is Rs. 173.50 lakhs.

4. Ekra, Kari and Chatkari Jores are endangered by Fires and require immediate grouting stabilisation.

Implementation status:- Two Environmental Measures and Subsidence Control schemes (EMSC), one at Industry Colliery (Karijore) and one at

Joyrampur Colliery (Chatkari Jore) have already been completed. Further one RCFS scheme has been sanctioned in August 2001 for diversion of Chatkari Jore at Jeenagora-Bararee Colliery which is under implementation. Expenditure upto October 2004 is Rs. 191.62 lakhs.

5. Jharia and Kirkend towns and other built up areas are endangered due to fires and require immediate isolation from fires. Shifting of townships has been recommended as a better option.

Implementation status: Shifting of houses from the most critical areas affected due to fire and subsidence under a demonstration scheme "Shifting of people from most endangered areas of BCCL", at an estimated cost of Rs.33.88 crores (revised

to Rs.69.09 Crores) is under implementation. Construction of 344 houses in BCCL areas was completed and 150 families have already shifted to newly constructed houses. The State Govt. is to take action for shifting of non-BCCL persons. The site for shifting of non-Bharat Coking Coal Limited houses has been finalised at Belgoria mauza in consultation with State Govt.

6. Some fires may be excavated as part of profitable opencast mining projects such as Block-III, Kusunda, Block-IV and Tisra.

Efforts for land acquisition and physical possession through State Govt. are being made for augmenting production in on-going and new mining projects.

II PREPARATION OF ENVIRONMENTAL MANAGEMENT PLAN (EMP) FOR JHARIA COALFIELD

1. 22,300 families are required to be shifted.

Implementation status: As mentioned above action has been initiated to rehabilitate affected families.

2. Predominant air pollution is from road generated dust and vehicle exhaust.
3. Contribution of dust by traffic is about 37% of total pollution load in Jharia Coalfields.

Regular ambient air monitoring is being carried out to monitor the level of air pollution.

4. The coalfield contributes about 15% of the total pollution load in the Damodar River.

Implementation status: Recirculation arrangement has been adopted in all washeries of BCCL and no effluent is going into the Damodar river from BCCL's Washerries.

5. Construction of small reservoirs to the North of the coalfields across the streams is recommended.
6. Continue the existing plantation programme and encourage social forestry.

Implementation status: Plantation work in 278 hectare of degraded land has been done at Lodna, Bhowrah, Sijua, Govindpur and Barora areas (approx 6.95 lakhs saplings have been planted). The maintenance and protection work is in progress.

Subsidence Problem in Raniganj Coalfield

9.11 In Raniganj Coalfield, good quality non-coking coal occurring in thick seams at shallow depth was mined indiscriminately with very small size pillars. In past, when the surface was not densely populated, the operators had extracted as much coal as possible. With the growing industrial importance of Asansol, many townships have come up in the periphery during the last century and further growth is ensuing, even though, some of the areas fall among those declared unsafe by DGMS.

9.12 Various Committees were formed on subsidence to identify unstable area and to suggest remedial measures. Apex Monitoring Committee with Sri H.B.Ghosh, Ex. DGMS and retired CMD, CMPDIL, as a Chairman and representatives of Govt. of West Bengal, DGMS, CMPDIL, ECL, CMRI with local representatives etc. was constituted to go into the problem of subsidence of Raniganj coalfield. In June 1992, it identified 49 unstable locations and again in September 1995, 21 more locations were declared unsafe.

More recently DGMS has indicated 171 unstable locations.

9.13 A High level Committee with Secretary (Coal) as Chairman and representatives of Central and State Govts., DGMS, Planning Commission, ECL, BCCL & CMPDIL members was constituted on 19.12.96 to look into the problem of subsidence and fire in Raniganj & Jharia coalfields. The Committee suggested that Master Plan be prepared to tackle the problem of subsidence and fire.

9.14 On suggestion of High Level Committee, CMPDIL was entrusted with the task of preparing a Master Plan for Raniganj Coalfields. This report was submitted in February '99. It has identified the following:

- (i) 59 locations for stabilization
- (ii) 80 locations for rehabilitation have been further categorized as priority 1 and priority 2.
- (iii) 7 Location consisting of Railway line and road have been considered for diversion and
- (iv) 7 fire areas have been considered for bio-reclamation.

An action plan for Shifting and Rehabilitation of people from unsafe areas, dealing with fires and stabilising unstable areas in the command area of ECL and BCCL has been drawn up. A monitoring Committee under the Chairmanship of Secretary (Coal), along with representatives from State Govt., CIL, ECL and BCCL and related Ministries / Departments of Central Govt. has been constituted. As per decision taken in the 1st meeting of monitoring committee on 11.11.2003 the Master Plan for Control of Fires, Subsidence and Rehabilitation has been updated by CMPDI incorporating the action plan. It identified the following :

ECL

- (i) 43 locations for stabilisation
- (ii) 92 locations for rehabilitation.
- (iii) 7 location consisting of Railway line and road have been considered for diversion, and
- (iv) 8 fire areas have been considered for bio-reclamation.

BCCL

- (i) 121 locations for stabilisation
- (ii) 532 locations for Rehabilitation
- (iii) 66 locations for fire control

HIGH LEVEL COMMITTEE

9.15 A High level Committee was constituted with Secretary(Coal) as Chairman to examine the problem of subsidence and fire in Raniganj and Jharia Coalfields and to suggest mitigative measures. The Committee submitted its report in January 1998, and its recommendations were accepted by the Govt. of India. The implementation status of the recommendations is given below:

Recommendations of High Level Committee

Recommendation No. I

Whenever possible settlements of all unstable areas should be shifted to non-coal bearing zones. For this purpose, satellite townships are the best long term solution against subsidence hazards in the coalfields.

Implementation Status

That BCCL is constructing new colonies on non-coal bearing land and process of shifting its employees is going on. The numbers of houses in townships over non-coal bearing areas, where employees are being shifted are around 14442.

In ECL a Scheme was prepared by CMPDIL, for rehabilitation of four unstable locations at Samdih, Bangalpara (Refugee basti), Kenda and Harispur village. The scheme has been approved by Govt. of India under EMSC scheme of Ministry of Coal in May, 1997 with a capital outlay of Rs. 32.52 crores.

The following steps have been taken for implementation of the Scheme :

- (i) Constitution of Core Committee consisting of CMD, ECL, District Magistrate, Bardhaman and Director, Commerce & Industries Department, Govt. of West Bengal.
- (ii) Constitution of Core Group consisting of following:
 - 1. Addl. District Magistrate, Asansol,
 - 2. Regional Director, CMPDIL, RI-I, Asansol,
 - 3. Chief General Manager (Finance), ECL, Sanctoria,
 - 4. General Manager (Surface Construction), ECL, Sanctoria
 - 5. General Manager, JK Ropeways, ECL.

As per the finalised schedule of activities, Core Group held a series of meetings involving BDO, Sabhadhipatis and Gram Panchayet Pradhans in order to form the representative village committee for each location to negotiate. There have been numerous difficulties due to various reasons to sort out this problem. Such Committees have been constituted at all four locations.

Rehabilitation of these four locations is considered a first step before mass rehabilitation is contemplated which would require setting up satellite town ships.

Recommendation No. II

There should be total ban on any new construction over declared unsafe areas in the coalfields. Government of Jharkhand should also enact suitable legislation inline with the one already existing in West Bengal preventing construction over unsafe areas.

Implementation status

BCCL has put a total ban of construction of any new houses/colony/quarter over unsafe areas. Mining Area Development Authority (MADA) constituted by Govt. of Bihar issued notification dated 30.6.97 banning any new construction over critically endangered areas in BCCL. BCCL has written letters to Jharkhand Govt. to take necessary steps for the enactment of a suitable legislation banning new construction over declared unsafe areas in the coalfield. It is learnt that the enactment of the legislation is in process by Jharkhand State Govt.

In ECL suitable legislation as contemplated by the High Level Committee is already existing in the State of West Bengal under the West Bengal Restriction on construction in Unsafe Area Act,1979.

Recommendation No. III

For tackling the problems of fire and subsidence both in JCF and RCF, the participation and assistance from State Government and local administration is essential. Any enforcing agency entrusted with the responsibility of carrying out mitigating

measures against fire and subsidence in RCF and JCF should be adequately represented by the above authorities.

Implementation status

A High Level Committee has been constituted by the State of Jharkhand vide notification dated 2.8.2001 which is chaired by Minister of Mines and Geology, Govt. of Jharkhand and includes representatives from other State Govt. departments and also from DGMS, BCCL & CMPDIL.

Since then, a series of meetings have been held to sort out the different problems related to shifting of people from the affected areas. A fresh survey of the affected areas was done in November-December 2001, for identification of exact number of persons living in the affected areas

An Action Plan has been prepared by RI-II, CMPDI in July'03 which envisages shifting of 65,300 houses consisting of houses belonging to BCCL employees, Non-BCCL encroachers and private authorised houses from unstable/endangered areas of BCCL. The total duration of shifting is planned to be 20 years in 4 phases of 5 years each.

In ECL a Core Committee has been constituted consisting of CMD, ECL, District Magistrate, Burdwan and Director, Commerce & Industries Department, Govt. of West Bengal. In addition to the said committee, a core group has also been constituted consisting of representatives of ECL, CMPDIL, Regional Institute, Asansol and local administration for effective implementation.

Recommendation No. IV

The mitigation measures against subsidence and fire hazards are very costly options and fruitful implementation of these measures can only be possible through a separate executing agency with separate funding. Formation of such agencies responsible for formulating schemes, their implementation and management of funds should be finalised at the earliest. A broad outline of executing agencies has been evolved in consultation with the concerned State Governments and the Govt. Companies.

Implementation status

BCCL has constituted one Executing Committee, for rehabilitation of its employees with members from Director General Mines Safety, CMPDIL and Central Mining Research Institute for formulation and implementation of schemes for mitigation measures against fire and subsidence. As per the demonstration scheme BCCL has taken up construction of 344 houses for BCCL employees all of which have been completed and 150 families have been shifted. Further shifting is in progress. For non-BCCL persons several meetings were held with the State Govt. for construction of houses for them and their shifting. Proposed site for shifting of non-BCCL persons has been

finalised by the State Govt. at Belgoria mouza where BCCL has offered its land as one time social gesture.

The State Govt. has initiated action to constitute a Committee/Agency for construction of houses for shifting of non-BCCL persons. The work of demographic survey for non-BCCL houses has been initiated by the State Govt. Survey teams have been formed and some funds for demographic survey have been given to State Govt. The State Govt. has taken action for forming another agency for looking after the construction of houses and rehabilitation of non-BCCL people. By laws have been formulated by the district authorities and their approval is in process by the State Govt.

ECL has constituted a Core Committee and a Core Group for implementation of a rehabilitation scheme. Formulation of schemes and their regular monitoring for mitigation against subsidence and fire by sand filling and afforestation in the fire area is being done by CMPDIL for which sufficient funds have been allocated.

Recommendation No. V

The innovation hydro-pneumatic stowing technology currently being used at some locations in RCF has been found to be a very slow process. High pressure slurry pumping technology for underground void filling should be tried at some locations in BCCL for stabilising inaccessible unstable underground workings.

Implementation status

An R&D scheme for High Capacity Sand Flushing at Madhuband Colliery in BCCL has been sanctioned by Coal India Limited Further trials are being conducted for research in the other parameters of high capacity sand flushing. Besides this, another scheme for High Concentration Fly Ash Slurry Stowing has been sanctioned by CIL for undertaking research for establishing this new technology of high concentration fly ash stowing in the mines of BCCL. Work order has been placed in December 2004 for taking up the scheme.

In ECL, after the laboratory trials at IIT, Kharagpur, CMPDIL has prepared a trial report on stabilisation of old abandoned underground voids by slurry pumping technology. This report is under examination at ECL, Headquarters.

Recommendation No. VI

Intensive stabilisation work of unstable areas under locations, like Raniganj town from where population cannot be shifted, should be carried out and persons affected in the high risk but low-density areas may be relocated in a phased manner.

Implementation status

Stabilization work at the following sites of ECL has been completed.

1. Borachak, (EMSC-02)
2. Fatehpur, Phase-II (EMSC-01)
3. Haripur, Phase-I (EMSC-26)
4. Arun Talkies (under CCDA assistance)
5. Kumar Bazar (under CCDA assistance)
6. Porarbandh (EMSC-17)
7. Bhutdoba (EMSC-19)

Stabilisation work at following sites of ECL are in progress;

	Fatepur	Phase – III (EMSC – 01)
1.		
2.	Haripur	Phase – II (EMSC – 26). Unspent money of Phase – I will be utilised for additional quantity of sand filling.
3.	Palasban	EMSC – 15
4.	Gowalabasti	EMSC – 16
5.	Pottary	EMSC – 18
6.	Sanctoria	EMSC – 29

Schemes are being implemented as per the priorities in the Master Plan for Raniganj Coalfield.

Recommendation No. VII

The mitigation measures against subsidence and fire hazards are very costly options arranging fund for the purpose of stabilisation of the subsidence prone areas and settlement of affected people, the money could be made available either through planned expenditure or unplanned expenditure from Coal Conservation and Development Act Fund after making suitable enhancement.

Implementation Status

The Central Government has already sanctioned Rs. 33.88 crores which has been revised to Rs. 61.09 crores as a “Demonstration Scheme” for rehabilitation of 4600 houses, out of which 1500 are to be occupied by BCCL employees and 3100 are to be occupied by non-BCCL persons/encroachers who are located in most endangered area.

For 8 schemes for fire and subsidence control, an amount of Rs. 16.18 crores has been sanctioned by Central Government out of which 4 schemes have been completed. Expenditure of about Rs.1.70 crores has already been incurred in the four schemes which have been completed.

Another scheme, for stabilization of the seam below an area of Jharia town commonly called “Bata More” has been completed at an expenditure of Rs. 26.52 lakhs in Dec 1999 by Central Mine Research Institute under CSIR. Further, 4 new schemes for protection of railway lines and stabilisation of Chatkari Jore have been sanctioned under RCFS scheme at an estimated outlay of Rs. 25.60 crores which are under implementation. Out of these 4 schemes, two schemes related to protection of Dhanbad-Patherdih railway line have been discontinued and one of them is under modification in view of the proposed decision for dismantling of the railway line.

In ECL, funds for Arun Talkies and Kumar Bazar were provided from CCDAC funds. For other sites, funds are provided by Ministry of Coal under EMSC Schemes. Budget head has been created by the Planning Commission for the purpose.

Recommendation No. VIII

Considering the urgency, one scheme each by ECL and BCCL for shifting of the population from the unsafe areas may be taken up without waiting for the positioning of the institutional arrangement from planned funds available with the Ministry of Coal.

Implementation Status

One demonstration scheme for BCCL has been approved by the Government at an estimated cost of Rs. 33.88 crores. The scheme has now been revised to Rs. 61.09 Crores. Expenditure incurred is Rs.9.01 Crores till date.

One such scheme for ECL was prepared by CMPDIL for rehabilitation of four unstable villages, namely Samdih, Refugee Basti, Kenda and Harispur village. This scheme was approved by Government of India, Ministry of Coal, at a total cost of Rs. 32.52 crores in May 1998. Due to indifferent attitude of the villagers and lack of initiative on the part of State Government no material progress could be achieved till date. Expenditure incurred is Rs.50 lakhs till date.

Recommendation No. IX

The Interim Report submitted by BCCL and ECL jointly with State Authorities on the fire and subsidence prone areas including likely affected population and financial implications should be kept in view while drawing up priority wise schemes for immediate and effective way to deal with the problems.

Implementation Status

The new schemes/projects which are being sanctioned are prepared keeping in view the Interim Report and the Master Plan prepared by CMPDIL which is also based on the High Level Committee report.

9.16 Schemes under the "Environmental Management Measures and Subsidence Control"

Eight schemes for fire and subsidence control with a capital outlay of Rs. 16.18 crores has been sanctioned by Ministry of Coal. Out of these 8 schemes, 4 schemes for stabilisation have been completed and the other 4 schemes are under implementation.

The Details of the Schemes are as follows :

(a) Stabilisation, Fire and Railway line & Jore diversion scheme of BCCL:

(Rs in Lakhs)

Sl.No.	Name of the Scheme	Sanction Cost	Cumm. Expn. Upto 31.10.04	Status
A	Stabilization Schemes			
1	Stabilisation below Jharia Water Board Tank at East Bhagatdih	88.695	81.696	Completed

(a) Stabilisation, Fire and Railway line & Jore diversion scheme of BCCL:

(Rs in Lakhs)

Sl.No.	Name of the Scheme	Sanction Cost	Cumm. Expn. Upto 31.10.04	Status
	Colliery			
2	Stabilisation below Chatkari Jore at Joyrampur Colliery	47.460	30.67	Completed
3	Stabilisation of Kari Jore at Kusunda Industry Boundary	5.430	4.427	Completed
4	Stabilisation below Kusunda Yard at Khas Kusunda	49.630	52.950	Completed
B	Fire Control Schemes			
5	Dealing with fire at Alkusa Colliery	368.390	255.10	Under implementation
6	Dealing with fire at Rajapur Colliery	471.870	322.93	Under implementation
7	Dealing with fire with S. Lodna Colliery	333.720	269.06	Under implementation
8	Dealing with fire at Industry Colliery	253.300	86.685	Under implementation
TOTAL		1618.495	1103.518	

Further, 4 new schemes for protection of railway lines and diversion of Chatkari Jore have been sanctioned under RCFS Scheme at an estimated outlay of Rs. 25.60 crores. These schemes are under implementation. The details of the schemes are as follows :

(Rs. in Lakhs)

Sl. No.	Project	Approval Date	Sanction Cost	Cumm. Expn. upto Oct-04	Status
1	Scheme for dealing with fire for protection of Dhanbad-Patherdih railway line at Bararee Colliery	Aug 2001	577.27	115.95	Scheme has been discontinued since Aug. 03 in view of the proposed decision taken for dismantling the Dhanbad-Patherdih Rly line
2	Scheme for dealing with fire for protection of Dhanbad-Patherdih Railway line at Lodna-Bagdigi Colliery	Aug 2001	635.23	2.28	Dismantling of Railway line is to be done.

3	Scheme for dealing with fire for protection of Adra-Gomoh railway line at Block – II Phularitand Colliery	Aug 2001	578.40	173.50	Under implementation
4	Scheme of dealing with fire for protection of Chatkari Jore at Jeenagora Bararee Colliery	Aug 2001	769.82	191.62	-do-
TOTAL			2560.72	483.35	

For reclamation of abandoned coal mines in ECL, 854.27 hectare degraded area of OB dumps, opencast voids and fire areas have been completed by 31.12.2003 by social forestry division of Govt. of West Bengal and Jharkhand out of targeted area of 891 hectare.

(b) Subsidence Control

The details of the completed schemes including the 4 stabilisation schemes covered at (a) above are given below :

(Rs.crores)

Sl.No	EMSC No.	Name of the Scheme	Approved Cost	Remarks
1	EMSC 5	Generation of data and identification of subsidence prone area in ECL	0.26	These schemes have been completed in 1998-99
2	EMSC 6	Technological measures for control of subsidence where feasible in the leasehold of ECL	0.47	Completed
3	EMSC 7	Generation of data and identification of subsidence prone area in BCCL	0.26	Completed
4	MESC 8	Technological measures for control of subsidence where feasible in the leasehold of BCCL	0.48	Completed
5	EMSC 10	Stabilisation below Kusunda Yard at Khas Kusunda	0.50	This scheme has been completed in June 2001
6	EMSC 11	Stabilisation of Kari Jore at Kusunda Industry Boundary	0.05	This scheme has been completed in June 1999
7	EMSC 12	Stabilisation below Chatkari Jore at Joyrampur Colliery	0.47	This scheme has been completed in July 2001
8	EMSC 14	Stabilisation below Jharia Water Board Tank at East Bhagatdih Colliery	0.89	This scheme has been completed in Dec 1999
9	EMSC 2	Stabilisation of inaccessible water logged voids beneath Barachak Village	4.69	Scheme completed in Nov 2001 with total expenditure of Rs 4.36 crores

Sl.No	EMSC No.	Name of the Scheme	Approved Cost	Remarks
10	EMSC 26	Stabilisation below Haripur Village Phase – II	1.88	Phase – I completed with total expenditure of Rs.1.2428 crores Part of the village, not covered in Phase – I is yet to be stabilized. Stabilisation of this part will be taken up with the unspent money of Rs 0.68 crores
11	EMSC-16	Stabilisation below Gowalabasti (Phase-I)	1.88	Phase-I completed in Feb. 04 with total expenditure of Rs.0.85 crores. Part of the village not covered in Phase-I is yet to be stabilised. Stabilisation of this part is being done with the unspent money of Rs. 1.03 crore.
12	EMSC-17	Stabilisation of inaccessible void beneath Porbandh	1.88	Completed
13	EMSC-19	Stabilisation of inaccessible voids beneath Bhotdoba	1.88	Completed

Ongoing Schemes

- (i) P&M required for hydro-pneumatic stowing at all the approved sites is available. Stowing is continuing at Gowala Basti, Pottary, Haripur, Palasban and Sanctoria sites.
- (ii) Due to underground workings being on fire, hydro-pneumatic stowing at Sanctoria village has been replaced with hydraulic stowing only and sand filling is in progress.
- (iii) Hydro-pneumatic stowing at Borachak, Porarbandh and Bhutdoba has been completed.
- (iv) Haripur (Phase-I) scheme has also been completed. There is still a part of Haripur village on unstable ground, which was not covered for stabilisation under phase-I scheme. Phase-I scheme has been completed with Rs. 1.20 crores expenditure and there is still Rs. 0.68 crores of unspent money. Additional 15,000 cu.m. of sand will be stowed with this money. The stowing is in progress.
- (v) Fatepur stabilisation scheme was approved for 90,000 cu.m. of sand filling. The work was taken up in phase-I and phase-II for 20,000 cu.m. of sand stowing in each phase. Phase-II was completed in March, 2002 and total sand stowing under Phase-I & Phase-II is 40,876 cu.m. After the completion of Phase-II, CMPDI, RI-I was requested to assess the further requirement of sand to be filled to complete the stabilisation of Fatepur village. As per the present assessment of CMPDI, total quantity of sand to be filled for stabilisation of Fatepur village is 60,000

cu.m. Necessary steps are being taken for further sand filling of 20,000 cu.m. below Fatepur Under Phase-III.

- (vi) Gwalabasti Phase-I scheme for 20,000 cu.m. sand filling has been completed. There is still a part of Gwalabasti village on unstable ground, which was not covered for stabilisation under Phase-I scheme. Phase-I scheme has been completed with Rs.0.85 crores expenditure and there is still Rs. 1.03 crores of unspent money. Additional 26,000 cu.m. of sand will be stowed with this unspent money. The stowing is in progress.

- (vii) Sand stowing done till October, 2004 as per schemes are as under:

Sl. No.	Localities	EMSC	Sand Stowing in cu.m. as per scheme	Sand stowing done in cu.m. as per scheme till Oct.04
1	Fatepur	01	60000 (Revised)	42618
2	Borachak	02	45000 (Revised)	43408
3	Palasban Ph-I	15	20000	1349
4	Gwalabasti Ph-I	16	20000	26176
5	Porarbandh Ph-I	17	20000	8220
6	Pottary Ph-I	18	20000	15938
7	Bhutdoba PH-I	19	20000	3526
8	Haripur Ph-I	26	20000	27254
9	Sanctoria Ph-I	29	40000	21034

(c) **Social Mitigation Projects**

One Social Mitigation Project in BCCL has been sanctioned for rehabilitating the people living in the endangered areas. The details of the scheme are as follows :

Sl.No.	Name of the Scheme	Sanctioned Capital (Rs. in Crores)
1	Shifting of people from most endangered area of BCCL	33.88 (The scheme has now been revised for Rs. 61.09 Crores)

Progress in BCCL

- This scheme envisages construction of 4600 houses (1500 for BCCL employees and 3100 for non-BCCL). Work order for construction of 344 houses for BCCL employees was placed by BCCL in 1999. 344 houses have been constructed and 150 families have shifted. Further shifting is in progress.
- 3100 non-BCCL unauthorized houses identified in the most endangered area are situated - 32 sites in 9 areas of BCCL out of 151 sites.
- For the implementation of the non-BCCL part of the scheme, State Govt. was to constitute a Sub-Authority and to enact a suitable legislation banning new construction over unsafe coal bearing areas. Action has been initiated by the State Govt. in this respect.
- Site for rehabilitation of non-BCCL people has been finalised at Belgoria mouza on non-coal bearing area
- The proposal to enact a legislation banning construction of houses in coal bearing areas has been prepared in Dec. 2002 and was understood to be under process. It is learnt that this was later on referred to a Select Committee of the Jharkhand Vidhan Sabha for further approval/finalization.
- It was decided by the State Govt. in December, 2003 that until the sub-authority is finalised, the State Govt. would entrust the work of construction of houses for non-BCCL people to the District /Rural Development Agency (DRDA), Dhanbad as envisaged in the Action Plan including those of Demonstration Scheme for shifting of people from most endangered areas of BCCL. The DRDA has already started functioning in this respect.
- In accordance with the decision taken in the meeting on 1.12.2003 with Commissioner, North Chotanagpur, BCCL had deputed 6 of its employees (1 executive and 5 supervisory staff and 2 computer operators) to DRDA in February 2004. BCCL also agreed to enhance the requirement of manpower as and when required by the District Administration. Fund for starting construction work is also available.
- A number of meetings were conducted with the officials of State Govt. of Jharkhand to expedite various activities relating to the implementation of rehabilitation of people from most endangered areas of BCCL.
- An Action Plan for Dealing with Fires, Subsidence and Shifting of people from unstable areas has been prepared by CMPDI, RI-II in July'03 and the same has been sent to the then Department of Coal for consideration. The Action Plan is for a duration of 15 to 20 years. The details are as follows:

ACTION PLAN (August 2003)

(a) **Shifting and Rehabilitation of People from unsafe areas**

The Action Plan envisaged shifting and rehabilitation of people from unsafe areas involving 65300 houses, which is to be completed in a time frame of 20 years. The estimated investment is Rs. 2328.52 crores. For phase-I (1st five years) the shifting of 19984 houses (BCCL-10134, vt.Houses-3714 and Encroacher – 6136 houses) are proposed to be shifted from 119 sites. The estimated investment during phase-I is Rs. 548.45 crores.

In the Action Plan (for rehabilitation) certain pre-implementation activities like Demographic survey, preparation of schemes and formation of agencies for implementation has been proposed. From the State Govt. side the enactment of a suitable legislation banning new construction over unsafe and coal bearing areas, formation of a Sub Authority, demographic survey of non-BCCL people are also proposed.

(b) **Controlling the Fire continuing in a number of mines**

The Action Plan envisaged dealing / controlling fires by implementing 37 fire projects which are to be completed in a time frame of 15 years. The estimated investment is Rs. 1733.36 crores. For phase-I (1st five years) 17 fire projects will be taken up. The estimated investment during phase-I is Rs. 733.69 crores.

(c) **Stabilisation of unstable workings**

The Action Plan envisaged stabilisation of 121 unstable sites which is to be completed in time frame of 20 years. The estimated investment was Rs.343.60 Crores. For phase-I (1st five years) 35 stabilisation sites will be taken up. The estimated investment during phase-I is Rs. 70.77 crores.

One social mitigation scheme for ECL was prepared by CMPDIL for rehabilitation of four unstable villages. The scheme was approved by Govt. of India, Ministry of Coal. Detail of the scheme is as follows:

Sl.No.	Name of Scheme	Sanctioned Capital
1	Rehabilitation of four unstable localities in ECL	Rs. 32.52 crores.

Progress in ECL

(i) The summarized present status of implementation as on 31.10.03 of the approved scheme for rehabilitation of four identified unstable locations is as follows.

(ii) Action taken for implementation of scheme, details is as follows :

Sl. No.	Name of Unstable Locality	Constitution of village committee (VC)	Completion of socio-economic survey	Identification of land for rehabilitation	Agreement with VC on proposed compensation package	VC agreed regarding identified land
1	Samdih	Yes	Completed	No	No	No
2	Refugee Basti (Bengal Para)	Yes	Completed	Yes	No	Yes
3	Kenda village	Yes	Under progress	No	No	No
4	Haripur village	No	To be taken up by ADDA	No	No	No

A Core group under the leadership of ADM, Asansol with CMPDIL and representative of ECL held several meetings with the village committee members.

PRESENT STATUS OF REHABILITATION:

Samdih Village : Core Group meeting was held on 4.6.02 in the office of GM, Salanpur Area, which was chaired by ADM, Asansol. The meeting was attended by Director (T)OP, ECL besides people's representatives of the village committee and others. Director (T)OP explained that ECL Management has offered a number of sites for rehabilitation for Samdih village which was not acceptable to the villagers. Villagers expressed that they were interested in cash compensation instead of rehabilitation at any site. ADM, Asansol, explained that there was no provision for cash compensation in the approved scheme. If no solution could be found then the villagers with the local panchayat may take resolution to the effect and forward the same. Villagers requested for fresh survey of houses and home stead land. A Committee consisting of the representative of Salanpur Area, Panchayat member, BDO and village committee members was constituted for fresh survey. The committee assessed the valuation and submitted its report to ECL. After scrutiny at ECL, HQ the proposal would be put up through Core Group for competent approval.

Kenda Village : Core Group meeting was held on 29.7.02 by ADM, Asansol at Jamuria Block office. To understand the present scenario, it was decided to convene a meeting with Sabhapati. Panchayat Samiti, Pradhan, Gram Panchayat representative of Kenda village, CMPDIL, BDO & BLRO, Jamuria on 02.08.02. Next meeting was convened by ADM, Asansol on 12.8.02 at Jamuria Block office. Possibility of resettlement at

Mongalpur area is remote. It is therefore necessary to identify alternative sites. Villagers suggested some sites at South Kenda, Pure Kenda and along Raniganj-Suri road. ECL & BLRO were requested to identify suitable land. It was also decided that verification of home stead land to be done at Kenda Panchayat office by the representative of Kenda Area and BLRO office. In subsequent meeting held on 16.8.02 and 19.8.02 at BDO office, no concrete solution could be found. Kenda Gram Panchayat is yet to prepare the details of home stead land and alternative sites are yet to be finalized.

Refugee Basti : Core Group meeting was held by ADM, Asansol on 27.7.02 at Pandaveswar Block Office which was attended by Director (T)OP besides others. During the meeting, it was decided that a few possible sites may be identified by the committee comprising Pandaveswar Area representatives. BDO, Pandaveswar, BLRO, Village committee, Panchayat members and representative of CMPDIL. In the meeting held on 22.8.02, which was attended by representatives of Pandavesar Area, CMPDIL & others a place was identified at Baidyanathpur-Gobindpur abandoned sites for rehabilitation of this village. The villagers were requested to visit the proposed site and after the site visit the villagers agreed to settle at this site. It was also decided that a fresh household survey would be conducted to ascertain the number of villages to be resettled. It was also decided that detailed study of the proposed site should be conducted by CMPDIL to ascertain the stability of the site. It was further decided that after the house hold survey, the villagers should submit individual consent in writing for resettlement at the proposed site.

After proper survey, plan showing the proposed rehabilitation site has been submitted to RD, RI-I, CMPDIL for further necessary action.

Harishpur Village : A meeting was held on 27.7.02 at the Andal Block office which was chaired by ADM, Asansol and attended by Director (T)OP besides others. It was revealed that unless total compensation package is confirmed, the villagers are not willing to participate in the meeting. It was also pointed out that total capital involvement could not be arrived at, unless house hold survey is conducted. Decision regarding agricultural land adjacent to the village could only be taken after the house hold survey was completed. Earlier, there was willingness to resettle at Mongalpur, but during the site visit, it was found that the villages were reluctant to go to Mongalpur because of continuing environmental pollution. Sabhapati and Panchayat members were requested to convince the villagers to form the village committee and co-operate in conducting the house hold survey. A committee was constituted with the representative from Kajora Area, BDO Andal, BLRO Andal, Madanpur Panchayat Pradhan to conduct the household survey from 10.8.02 and to complete it by 21.8.02. This committee was also entrusted with the task of identifying a few sites other than Mongalpur. As on date, assessment work has not been completed.

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