

## BRIEFING DOCUMENT

### Community Issues in Coal Belts

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(Raniganj-Jharia)

Environics trust

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A short descriptive report on Bardhaman District outlining areas of public health and indicators of health, nutrition and environmental pollution, MDGs. A blog [www.alongtheburntcoalcorridor.wordpress.com](http://www.alongtheburntcoalcorridor.wordpress.com) elaborates more on specific issues of health and education.

## 1. Introduction and Background to the Region

Bardhaman District of West Bengal bordering Jharkhand State's Dhanbad District forms a contiguous industrial and coal mining belt. As history records it, it was in the late 18<sup>th</sup> Century, that the first contours of extracting coal from Raniganj coalfields emerged during the British rule, even today the history parallels the present. India has several energy hubs in the country producing energy from coal extraction and has given rise to associated industries like steel plants, metallurgical industries, thermal power plants, manufacturing and many more.

The Damodar valley Corporation was first ever attempt to harness energy from the Damodar river which used to flood parts of Jharkhand and West Bengal, DVC was created through an Act of Parliament in 1948. It was during the mid 20<sup>th</sup> Century and alongside the freedom gained by Indian Republic that industrialization began in this valley, SAIL established Durgapur Steel Plant and it was also the beginning of several energy generation projects from the Damodar valley which is rich in thermal grade coal. DVC has an installed capacity of nearly 6400 MW, largely from coal.

District Bardhaman's western part forms part of the eastern plateau hill region which extends into Jharkhand whereas its eastern part is in the lower Gangetic plain region – these two regions define the agro climatic region. The climate is hot humid to sub-humid with mix of alluvial derived soils, red and lateritic soils. The district forms part of the Ganga Basin (Lower) encompassing an area of 6755.32 km<sup>2</sup> with its sub basin of lower Ganga and Damodar with 25 watersheds located within district boundaries. Dhanbad district is one of DPAP districts.

Jharia coalfield has deep seated coal seams with availability of quality coking coal whereas Raniganj coalfields have largely non-coking coal. In post reform era, several attempts to attract foreign investments and recently auctioning of minerals took a centre stage and new laws were framed, these however, didn't created a space for communities to strengthen their demand for redressing externalities and impacts that mining has caused over the years.



## 2. Bardhaman At a Glance



Map showing sub divisions and blocks of District Bardhaman

Source: bardhaman.nic.in

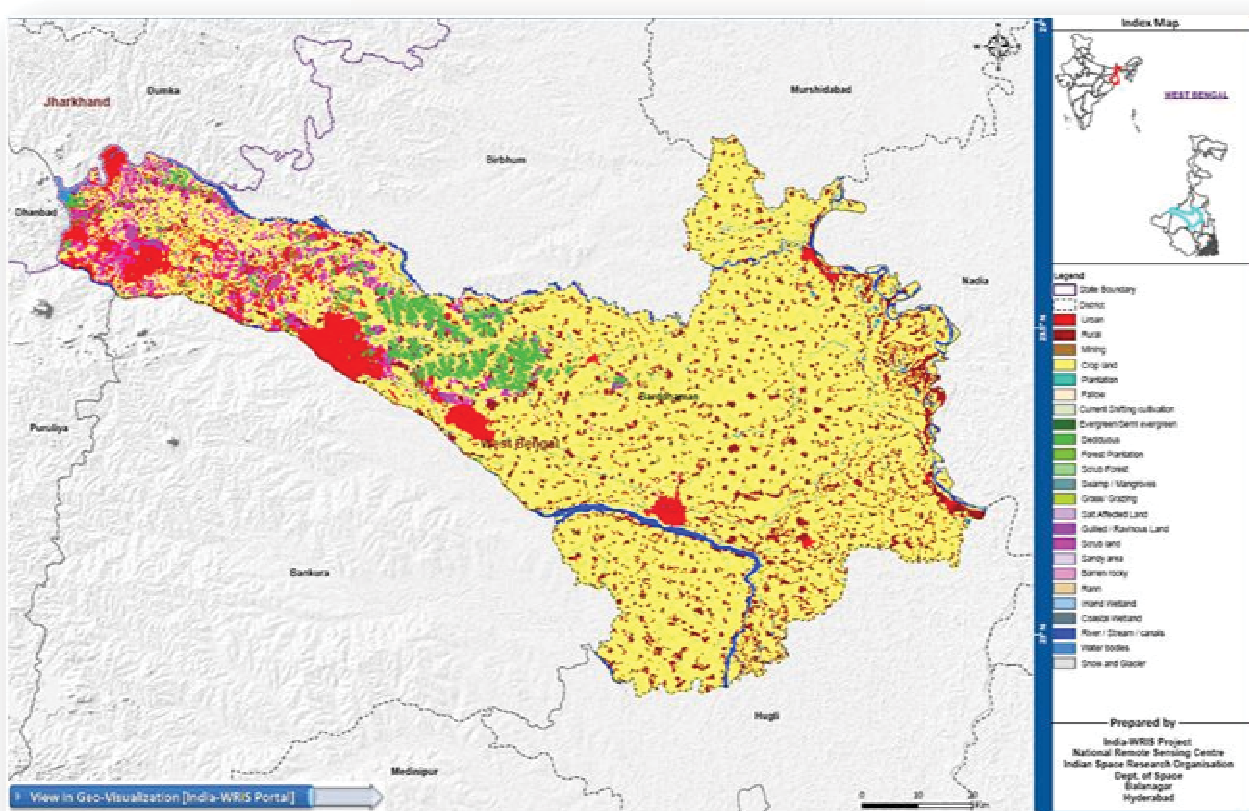
### Few Select Indicators

Population Growth Rate 1991 – 2001	1.31% per annum
Population Growth Rate 2001 – 2011	1.13% per annum
Total Population	7717563
Sex Ratio	945 (950)
Population of 0-6 (in % to total population)	10.78%
Sex Ratio (0-6 years)	951 (956)
Schedule Caste Population (% to total population)	27.41%
Schedule Tribes Population (% to total population)	6.34%
Total Working Population (% to total population)	37.72%
Main Workers (% to total Working population)	74.42%

Bardhaman District is administratively divided into 6 sub divisions; Asansol and Durgapur sub divisions are largely industrialized and mining areas. Municipalities of Asansol (Municipal Corporation), Kulti (Municipality), Durgapur (Municipal Corporation), Raniganj (Municipality), Jamuria (Municipality and Outgrowth) constitute majority of population of around 17.22 lakh people; the two sub divisions, however have a total estimated population of 22.40 Lakh people. Agricultural belt is in the north eastern and south eastern regions. The map shows all the urbanized regions in red colour and these can be easily identified; similarly the agricultural region of Bardhaman is shown in Yellow colour. The district is bounded by River Ajay in the North and River Damodar in the South, with Maithon Dam at Jharkhand – West Bengal bordering Asansol sub division.

## Demographic and Area Details of District Bardhaman Sub Divisions

Sub Division	Area (Hectre)	Households	Total Population	Sub Centre	Public Health Centre	ICDS	Area (Sq.Km)
ASANSOL	42561.74	52603	1281785	54	13	303	843.45283
BURDWAN SADAR(NORTH)	165739.75	192106	964928	139	21	753	1703.7463
BURDWAN SADAR(SOUTH)	139820.47	211986	1085445	156	21	723	1403.1407
DURGAPUR	74242.94	92453	958058	78	12	403	1033.5583
KALNA	97170.04	180848	931742	76	14	651	1010.0056
KATWA	105055.16	148144	847810	87	9	450	1075.7435
Total	624590.1	878140	6069768	590	90	3283	7069.64723



- Main source of income in Bardhaman is casual labour, almost 60%<sup>1</sup> of the households' main source of income is casual labour followed by 17% households having income source linked to agriculture / cultivation
- 31.85% of population in the District is illiterate and only 3.71% has attained higher education

<sup>1</sup> Socio Economic and Caste Census (SECC), 2011 | Tables on Employment and Income Characteristics (Rural), Households Land Ownership Pattern (Rural) and Deprived All Households are also from SECC, 2011

Employment and Income Characteristics (Rural)								
Code with District Name	Total Households	% of Households with Salaried Job	Number of Households having Monthly income of highest earning household member					
			Less than Rs. 5,000	% Less than Rs. 5,000	Between Rs. 5,000 and Rs 10,000	% Between Rs. 5,000 and Rs 10,000	Rs. 10,000 or more	% Rs. 10,000 or more
All India	179620372	9.65%	133846828	74.52%	30866006	17.18%	14828368	8.26%
East Total	47252622	7.19%	37105622	78.53%	7185668	15.21%	2943611	6.23%
State Total	15756750	8.50%	12994091	82.47%	1812566	11.50%	948770	6.02%
08 - Birbhum	758961	5.40%	668877	88.13%	56479	7.44%	33602	4.43%
<b>09 - Bardhaman</b>	<b>1250095</b>	<b>11.36%</b>	<b>984786</b>	<b>78.78%</b>	<b>141992</b>	<b>11.36%</b>	<b>123058</b>	<b>9.84%</b>

- Majority of the households (as these are mostly in casual labour) i.e. 78.78% households have monthly income of highest earning household member less than Rs. 5000/-

Households Land Ownership Pattern (Rural)										
Code with District Name	Total Households	Total land	Number of Households Own any Land		% Total Un-irrigated land in acres	% With assured irrigation for two crops (in acres)	% Other irrigated land (in acres)	% of Households owning Mechanized Three/Four Wheeler Agricultural equipment	% of Households owning Irrigation equipment (including diesel/kerosene/electric pumpset, sprinkler/drip irrigation system, etc.)	% of Households having Kisan Credit Card with credit limit of Rs 50,000 or above
			% of Households with Land	% of Households with No Land						
All India	179620372	1058660142.00	43.62	56.38	40.46	36.79	22.75	4.10	9.84	3.61
State Total	15756750	85590406.11	30.38	69.62	39.32	45.08	15.60	1.13	3.60	0.97
<b>Bardhaman</b>	<b>1250095</b>	<b>9815958.15</b>	<b>26.13</b>	<b>73.87</b>	<b>61.24</b>	<b>29.84</b>	<b>8.92</b>	<b>1.53</b>	<b>3.65</b>	<b>1.49</b>

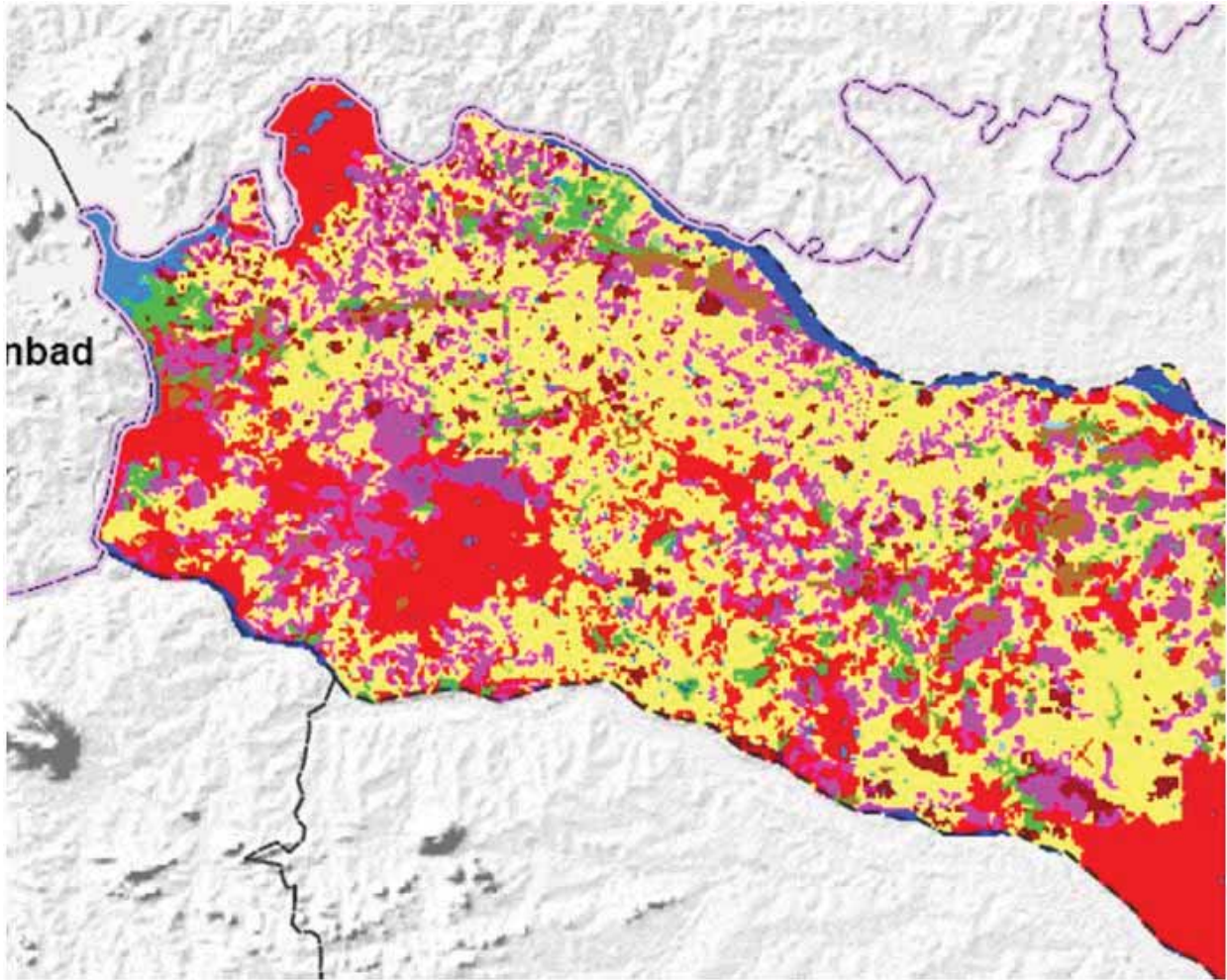
- The table above indicates the phenomenon of homestead land and land other than homestead like agricultural land. Those having land would be more troubled in circumstances of displacement. Mostly the agricultural land is acquired and homestead is left to declare people as partially displaced but in case of Raniganj and Jharia the situation is different, the homestead is more prone to subsidence and hence removed.
- Around 26% households in the District own land and if seen in conjunction with irrigation facilities, the situation is not too promising with only 29.84% land which can be irrigated for two crops with high proportion i.e. 61% of land under unirrigated category. The income profile mentioned above and more of casual labour work, mechanization is low i.e. between 1.53% to 3.65% for sowing / tilling and irrigating respectively.

Deprived All Households									
Code with District Name	Total Households	Total Households considered for deprivation	% of Deprived Households with deprivation criteria						
			Only one room with kucha walls and kucha roof	No adult member between age 16 to 59	Female headed households with no adult male member between age 16 to 59	Disabled member and no able bodied adult member	SC/ST households	No literate adult above 25 years	Landless households deriving major part of their income from manual casual labour
All India	179620372	107254396	13.27	3.63	3.86	0.40	21.52	23.51	30.01
State Total	15756750	12251060	21.06	2.41	3.55	0.47	30.15	25.73	44.32
Bardhaman	1250095	918858	18.15	2.39	3.92	0.43	36.60	25.64	49.43

- The core issue of employment in mining areas is intrinsically linked to mining labour and cultivation, building and construction works.



### 3. Present Context



The map above shows urban areas in red and mining areas in brown (NRSC, India)

In the mid 50s, industrial development took a centre stage and was considered a ‘game changer’ for a new developing economy. Over the years, Damodar has become one of the most polluted rivers in the country owing to intense industrialization in the Damodar valley. DVC, modeled on the Tennessee valley Authority (U.S.) is also engaged in mining of coal from coal blocks in Jharkhand. Rapid expansion of Railways, industries demanded extraction of coal with not much regulated mechanisms to comply leading to environmental consequences of coal extraction. While DVC looked at growth, the unscientific extraction of coal by contractors took a toll on the geography and its people, mined coal left huge underground voids and exposed coal seams rendering the areas unstable and unsafe. Several of those coal seams are burning even today and have put public property and communities at the brink of displacement and loss of livelihoods.

More than 6 lakh people are affected in the region which requires resettlement from their existing localities, the task has been entrusted to Asansol Durgapur Development Authority (ADDA) in West Bengal and Jharia Development Authority (JDA) in Jharkhand. It is not by coincidence that Directorate General of Mines Safety (DGMS), Central Institute of Mining and Fuel Research, Central Mine Planning and Design Institute (CMPDI), Indian School of Mines (ISM) are headquartered in Jharkhand, these were established to systematically enhance coal mining and conduct research and produce skilled manpower for harnessing the expanding coal mining industry.

But it is an irony that no concrete solution to the problem of environmental degradation, fire & subsidence (unsafe and unstable), has come to light, except a Master Plan which was approved in 2008 for Raniganj and Jharia Coalfields but has been a slow starter due to huge population to be addressed for resettlement, socio-cultural and economic issues that stand affixed to the history of human settlements in the region.

Mining of coal created a pool of land losers, few got some form of employment in the outsourced mines of Coal India and its subsidiaries on the basis of R&R policy of CIL and the issue of employment to women is still being contested in different courts. People employed in the coal companies (private sector) are apprehensive about employability due to systemic changes in Human Resource policy and lack of protection under contract labour laws. Although mining constitutes 0.7% of the land area in District Bardhaman, the problems emerged are multifold and affect large population. Similarly in Dhanbad district which is almost 2/3<sup>rd</sup> the size of Bardhaman has 5.73% of land under mining

Health-impact of coal mining penetrates from the mines to workers working in the mines to communities living in the region. For those working in the mines are classified as occupational diseases where as those in the community suffer from ailments due to burning of coal, coal dust, fugitive emissions, pollution of water resources and land. While this regions comprises of huge population, there is no registry to administer or estimate the health burden created due to mining activities and ancillary industries in the region.

Bimala Maji, ex Panchayat Pradhan and Panchayat Sabhapati says, "The mining Company wants to relocate us at Madhudanga but it's no acceptable to the villagers as we asked to resettle us at Sirisdanga. We have been given throwaway price of our land acquired by the company. Earlier we were given accommodation of 10'X10' but after our protest it was changed into 12'x10'. The relocated houses have sloppy roofs, which is not acceptable to us as there can't be further construction. In sweltering summer it's like hot chamber and in winter it would chilly and cold. I haven't taken any compensation as we're not interested to resettle in Madhudanga."

Sanathan Besra of relocated Dulalpur village said, "22 families owning 10 to 12 *bighas* of land were evicted and were given 2 room houses, without electricity and water. None of the villagers were given jobs neither any money. Now we work as sharecroppers or daily wage labourers. We don't own these houses and if the mine expands we would be displaced again." Standing nearby, elderly Akhru Mardi, "Living for generations on the land, which was our only means of sustenance that has been snatched away from us and we have been turned into paupers."



It is whimsical to ascertain a development pathway when coal mining expansion (given the fact that coal subsidiaries of BCCL and ECL have business domain over Jharkhand-West Bengal) and production is increasing vis-à-vis abysmally low impetus on renewable energy promotion and expansion. Both West Bengal and Jharkhand collectively target producing 4800 MW in next 5-7 years period but could one imagine the coal and thermal power projects lined up for clearances and maybe they surpass the joint target of renewable energy generation target by both the states. The short description below underlines the current situation in terms of available generation and renewable energy policy guidelines.

### Installed Capacity (in MW) of Power Utilities in State of Eastern Region

As on 31.12.2015

AS ON 31.12.2013

		Modewise Breakup							
		Thermal				Nuclear	Hydro	RES#	G Total
State	Ownership	Coal	Gas	Diesel	Total				
West Bengal	State	5720	100	0	5820	0	977	91.95	6888.95
	Private	1941.38	0	0	1941.38	0	0	39.76	1981.14
	Central	922.45	0	0	922.45	0	271.30	0	1193.75
	Sub Total	8583.83	100	0	8683.83	0	1248.30	131.71	10063.84
DVC	State	0	0	0	0	0	0	0	0
	Private	1050	0	0	1050	0	0	0	1050
	Central	6110.66	90	0	6200.66	0	193.26	0	6393.92
	Sub Total	7160.66	90	0	7250.66	0	193.26	0	7443.92
Jharkhand	State	1190	0	0	1190	0	130	4.05	1324.05
	Private	900	0	0	900	0	0	16	916
	Central	314.93	0	0	314.93	0	70.93	0	385.86
	Sub total	2404.93	0	0	2404.93	0	200.93	20.05	2625.91
		18149.42	190	0	18339.42	0	1642.49	151.76	20133.67

Source: Central Electricity Authority, GoI

# RES include SHP, BP, U&I, Solar and Wind Energy

The obvious correlation with coal mining and installed capacity in two states of West Bengal and Jharkhand is high in the eastern region, these two state (including DVC) have 59.31% of the total installed capacity in the eastern region. The share of thermal is 90.14% followed by hydro at 8.15% and RES at 0.75%. The total Renewable energy sources (RES) in India as of 30.09.2015 was 37415.53 MW, majority of which was wind power, a little above 65%.

In terms of total RES of above states to total India RES is merely 0.4%. West Bengal has brought out renewable energy policy in the year 2012 named “Co-Generation and Generation of Electricity from Renewable Energy Sources of Energy”. The policy puts a target of generation of 1040 MW from renewable energy sources including co-generation by 2017 and 2706 MW by 2022. The West Bengal Electricity Regulatory Commission (WBERC) had mandated 4% of total procurement of electricity from RE sources as Renewable Purchase Obligation (RPO) by 2012-13. But the policy is still far from achieving 4% procurement and stands at merely 1.2% mark.

Similarly Jharkhand Renewable Energy Development Agency (JREDA)<sup>2</sup> targets to achieve 2650 MW by 2020 with the participation of private sector. The policy states that the state has 300 days of clear sun and has high solar insolation thereby a potential of 4.5 to 5.5 kWh/m<sup>2</sup>/day can be harnessed from solar energy. For the plan till 2020 it envisages 2100 MW from Solar Photovoltaic Power Plants (minimum size of 1 MW per location), another 500 MW from Rooftop Solar Power Plants (minimum at 1 KW) and 50 MW from solar thermal power plants. It incentivizes solar projects to be exempt from pollution clearances, CDM benefits, exempt distribution losses, renewable energy certificates benefits, incentives on grid connectivity and evacuation facility upto 10km @ minimum 2MW or more.

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<sup>2</sup> Jharkhand State Solar Power Policy 2015 dated 10.08.2015

## 4. Contrasting Phases

### 2000-2015, now transformed to SDGs till 2030

The United Nations framework on Millennium Development Goals (MDGs) is a set of eight international development goals which were to be achieved by 2015. Given this context, it would be prudent to understand the MDG context in coal regions whose extraction for meeting energy needs has several repercussions on physical, socio-cultural and economic environment – these factors would never get reflected in the country assessment of MDGs. While physical infrastructure would remain a favourite of Government establishments, the reflection of precautionary principle will evidently remain absent due to great urge to industrialize. It would be interesting to understand and develop a template to take a stock of actual situation with qualitative angle in the study region.

### 2009-2015 and Ongoing

Another approach to look at the context of coal mining and health is the Comprehensive Environment Pollution Index developed by CPCB, Asansol and Dhanbad were two CEPI<sup>3</sup> severely polluted districts in the states of West Bengal and Jharkhand. In case of Asansol, the Asansol-Burnpur area is marked as critically polluted which has around 5 lakh population.

<b>Table 8 CEPI scores for industrial areas/clusters</b>				
Industrial Cluster / Area	Air Score	Water Score	Land Score	CEPI
Dhanbad (Jharkhand)	64.50	59.00	65.50	78.63
Asansole (West Bengal)	58.38	56.25	50.50	70.20

States have to come up with action plans to combat pollution and implement for improvement of CEPI. This has particular importance with respect to steps outlined for abatement of pollution. From gaseous to particulate to chemical releases, the communities in these regions bear the impact of this pollution. The overall health sector focus is on maintaining health and family welfare functions but it has least for causative health impacts identification and resolution for the same. Respiratory diseases<sup>4</sup>, for example are a direct consequence of industrial pollution but hardly one finds any central registry outlining the disease burden. Coal mining creates a series of pollutants like gaseous releases, coal dust, coal handling, coal transportation, fugitive dust, heavy metals, flyash, wastewater which are point, line and area source potential pollutants. Add to it household level dependence on open wells, coal as cooking fuel (indoor –

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<sup>3</sup> Comprehensive Environmental Pollution Index (CEPI) is a descriptive index of pollution. It is a rational number between 0 and 100, assigned to characterize the environmental quality at a given location following the algorithm of source, pathway and receptor and aggregated CEPI, indicates severe adverse effects on environment. It is also an indication of large percentage of population experiencing health hazards. The CEPI index is based on the parameters related to incidence of pollution in water, land (ground water) and air.

<sup>4</sup> The smoke from combustion of solid fuels such as dried dung, wood and crop residue used for cooking and heating, is an important cause of indoor pollution which is responsible for a large number of COPD cases in the rural areas and women in particular. Air pollution due to exhausts from vehicles and industrial units; dusts, fumes and smoke from burning of crop residues in the field act as airborne allergens and irritants (for example, tobacco smoke) causing allergic responses triggering asthma and cause other chronic respiratory disease as well. [Report of the Working Group on Disease Burden for 12<sup>th</sup> Five Year Plan, Planning Commission]

outdoor variance) which add to the burden of pollution. It has to be seen if the action plans so formulated restrict the pathways of pollutants, how effective their reduction on receptors is.

More than 80% of the coal extracted by ECL & BCCL is from open cast mines over the last few years. While complexities in underground mining are plenty in terms of safety and low production, surface expansion of coal mines present a challenge of environment pollution; mine closure and reclamation, however, is an outstanding issue in both underground and open cast coal mines. In one of the studies<sup>5</sup> conducted in Jharia coalfields for over a period of one year revealed high concentration of total suspended particulate, respirable particulate matter and benzene soluble matter was higher in work zone than ambient air. This is a clear contrast among underground mines which stand better in terms of air pollution from surface coal mines but have other peculiar problems of environmental hazard and workers safety. A conclusion can be drawn from the study that work zone pollution parameters quadrupled the ambient air concentration parameters.

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<sup>5</sup> Journal of Scientific and Industrial Research, Volume 62, September, 2003



## 5. Health At a Glance: Barddhaman: Health, Nutrition, Healthcare Infrastructure – Indicators and Assessment

Government's health infrastructure is the backbone of rural health care but its delivery and added pollution load in terms of water, land and air pollution demands more robust and community health oriented mechanism. In the Human Development report, Paschim Barddhaman i.e. industrial belt and coal mines in Asansol Sub division reflects poor health owing to environment pollution.

Blocks	Inst. Delivery Index	Fully Immunised achieved index	Index of safe drinking water	Cinnfrex	Sanitation	CHInx
Raniganj	0.086	0.180	0.095	0.73	0.81	0.3294
Jamuria	0.088	0.370	0.110	0.36	0.92	0.3205
Salanpur	0.020	0.150	0.087	0.35	0.88	0.2494
Barabani	0.001	0.130	0.114	0.32	1	0.313

Source: Human Development Report, Barddhaman District, 2011

In contrast the agricultural belt is better placed than the industrial-urban complexes or regions, the indices above indicate demand for focused public health assistance. The increase or efficient health and public utility services can offset a bit of deteriorating environmental quality but if efficient public health systems taking into account improvement in environmental quality vis-à-vis targeted health assistance i.e. cause based cure can make some difference in quality of life. A raw analysis of health infrastructure reveals requirement of more PHCs, CHCs and Sub Centres as per population norm for these facilities. It becomes even more important in an industrialized region to have more accessibility, care and referral facilities to higher hierarchy to tackle health issues caused by environmental pollution. Currently there exist 765 sub centre which is the most peripheral and first point of contact between PHC and community (each for every 3000-5000 population); 104 PHCs catering as referral to sub centres (for every 20,000-30,000 population); 35 CHCs catering as referral cases from PHC (for 80,000-1,20,000 population); 3 Sub divisional hospitals (above a CHC at tehsil/block level ) and 1 District Hospital.

### Performance of Health Indicators in West Bengal and Barddhaman

		HMIS (Apr 13 - March 14)		HMIS (Apr 14 - March 15)		
	i) Infant Deaths Details	West Bengal	Bardhaman	West Bengal	Bardhaman	Net +/- for Barddhaman
a	within 24 hrs (Nos.)	1884	157	1615	49	-108
b	upto 1 week of Birth (Nos.)	11842	1220	11521	1349	+129
c	Between 1 & 4 week of Birth (Nos.)	2367	255	2267	251	-4
d	Between 1 & 11 months of Birth (Nos.)	3543	337	3784	357	+20
e	Total reported infant deaths	19636	1969	19187	2006	+37
	Total reported infant deaths (INDIA)	123213		137568		
f	Annual Estimated infant deaths*	46283	3913	46702	3949	
	% of Annual Estimated infant deaths covered	42.4	50.3	41.1	50.8	

g	under HMIS					
H	Newborns weighed at birth (to reported live births) %	83.8	94.7	84.2	96.9	
I	Newborns weight less than 2.5 kg (to total newborns weighed at birth) %	15.6	15.2 (21414)	15.4	13.3 (18025)	-3389
J	Newborns weight less than 2.5 kg (to total newborns weighed at birth) % (INDIA)	14.4		12.9		
k	Total reported live births	1496602	148766	1378357	139860	-8906

HMIS – Health Management Information System

\* Represents estimated value for complete financial year

Estimated no. of infants death=IMR\*Est. Live Births/1000

- **Infant Deaths & Underweight Children:** Total reported infant deaths in India rose by 14.355 and in Bardhaman (+37) whereas state trend indicates less infant deaths in the reporting period (-449). The critical factor seems to be infant deaths within the first week of birth which might point to specific health care (intensive) during that stage. Another disturbing fact is the underweight newborns weighing less than 2.5 kg, in percentage terms there is a decline at District level but the absolute numbers reflect the large numbers and targeted care requirement either at village / community level through nutritional programmes. The trend remained almost constant for the reporting period for West Bengal and if equated to All India level, the state still lags behind the national figures for the reporting period.
- **Under 5 Mortality:** UNICEF in its press release has praised India for realizing impressive gains in improvement of IMR & U5M but it cautioned that at the current pace, the country is unlikely to achieve MDG 4 by 2/3<sup>rd</sup> between 1990 – 2015 unless socio-economic, maternal and demographic; and environmental determinants are urgently addressed. MDG target was 39/1000 live births. It estimates that West Bengal can achieve this target. In 2011, the U5M remained at 41<sup>6</sup>/1000 live births in Rural West Bengal, a decrease of 4 points over 3 years. But the UNICEF factsheet also points to three relevant aspects while assessing U5M i.e. “What Determines Child Survival in India” which are;
  - Maternal and demographic factors
  - Socio economic factors
  - Environmental factors

The rural areas show high U5 mortality across the spectrum. Regarding environmental factors, UNICEF in its factsheet states that U5 mortality rates are consistently lower among children living in families who accessed drinking water from a safe source as compared to those who accessed drinking water from an unsafe source; the same is true for those having access to improved toilet facilities compared to those who don't.

This refers more to environmental quality of amenities like potable water, environmental sanitation etc. but rural areas are where the natural resources exist like minerals (coal and non-coal) and their exploitation over the decades has definitely impacted the environmental health and quality of life. The state level statistics do not provide relevant hints about which areas (in administrative terms, say block level) have high mortality overlaid with environmental factors like mining or industrial pollution.

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<sup>6</sup> Read Blog [alongtheburntcoalcorridor.wordpress.com](http://alongtheburntcoalcorridor.wordpress.com) (Missing the MDGs, Collecting Thoughts)

- Looking at Census of India's statistics, the drinking water needs are met from 4-5 kind of sources but qualitatively how drinking water fares in rural areas is a story known.
- Strikingly high percentage of cooking fuel<sup>7</sup> is coal in most of the coal mining regions (here we talk of Bardhaman District which has 70-80% of coal and fuelwood usage in rural areas) again indicate poor environmental factors that might lead to high mortality over long term exposure. High incidence of exposure and environmental health impacts is further validated by high reliance on cooking inside the house. These environmental factors improvement is crucial for the sustainability of basic facilities and services like potable water availability, environmental sanitation, improved cooking and better quality of life.
- While the GOI plans to double the coal production capacity in this second half of this decade (2020), it is also time to roll out decentralized community based renewable energy programmes to help transform atleast cooking requirements at household level, this would be in line with the Environment sustainability goal and provide impetus to household level exposures.

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<sup>7</sup> Read Blog [www.alongtheburntcoalcorridor.wordpress.com](http://www.alongtheburntcoalcorridor.wordpress.com) for more

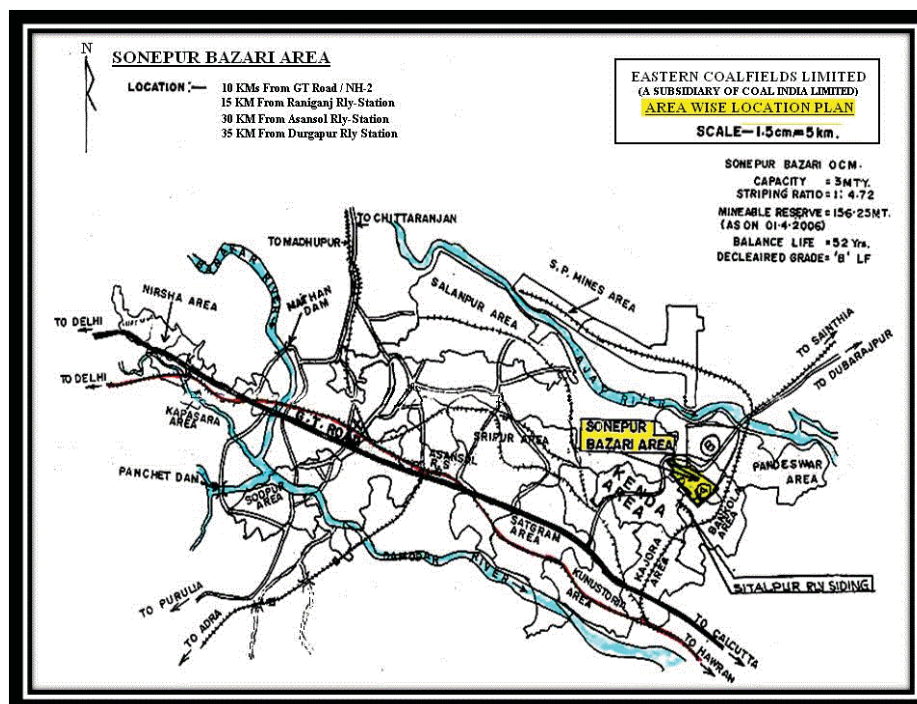
## 6. Development Paradigm and Consequences to Public

Eastern Coalfields limited and Bharat Coking Coal Limited are two subsidiaries of Coal India Limited which are operational in Jharkhand and West Bengal. The affected area (unstable and unsafe) is 34.31 km<sup>2</sup> – 8.62 km<sup>2</sup> in Raniganj coalfield and 25.69 km<sup>2</sup> in Jharia coalfield as per Master Plan's estimate. The dimension of problem can be gauged from the table below. Assuming 1.2% per annum population growth rate, the final figure of affected population will probably increase. In terms of number of people, the table reflects the descending scenario whereas if in terms of risk, it is population density which is high in Satgram area followed by Sripur, Kenda, Kanustoria and so on. The map indicates colliery areas in ECL.

Estimated Affected Area, Population and Housing in Raniganj Coalfield

Colliery	Affected Area (Hectare)	Estimated Population 2006	Population Density (per./hec.)	Estimated Houses 2006
Sripur Area	200.66	74457	371.06	13104
Sodepur Area	384.82	35311	91.76	6818
Kanustoria Area	122.32	30221	247.07	5629
Satgram Area	42.03	18341	436.38	2746
Kenda Area	28.85	8596	297.95	1889
Kajora Area	36.38	6233	171.33	1668
Salanpur Area	30.28	5317	175.59	1053
Pandaveshwar Area	18	2164	120.22	537
Bankola Area	12.88	2027	157.38	337
Total	876.22	182667	208.47	33781

Source: ADDA, 2015







*In exercise of the powers conferred by sub-sections (5) and (6) of Section 9B of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957), the Central Government hereby makes the following rules in r/o of coal and lignite and sand for stowing specifying the amount to be paid by holder of a mining lease or a prospecting licence-cum-mining lease, in addition to the royalty, to the District Mineral Foundation of the district established by the concerned State Government by notification, in which the mining operation are carried on.*

*2. Amount of contribution to be made to District Mineral Foundation.—Every holder of a mining lease or a prospecting licence-cum-mining lease in respect of coal and lignite and sand for stowing shall, in addition to the royalty, pay to the District Mineral Foundation of the district in which the mining operation are carried on , an amount at the rate of:—*

*(a) ten per cent of the royalty paid in term of the second schedule to the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) (herein referred to as the said Act) in respect of mining lease or , as the case may be, prospecting licence-cum-mining lease granted on or after 12th January, 2015; and*

*(b) thirty per cent of the royalty paid in term of the Second Schedule to the said Act in respect of mining lease granted before 12th January, 2015.*

*3. Date from which contribution to be made.—The amount calculated at the rate prescribed in rule 2 shall be paid from the date of notification issued under Section 9 B (1) of the Act by the State Government establishing District Mineral Foundation or the date of coming into force of these rules, whichever is later.*

Coal mining which has become a curse for people living in the region; consistently under threat from subsidence have no other choice of livelihoods other than engaging in one or the other ancillary activities associated with coal mining.

The Master Plan implementation has thus to understand and link displacement with resettlement-relocation and hand holding. Now that the opportunities are clearly defined by the policy and laws on Companies Act 2013 (Schedule VII) and Mines and Minerals (Development and Regulation) Amendment Act 2015 (Section 9B and Pradhan Mantri Khanan Kshetra Kalyan Yojana), their upfront implementation with right spirit is call of the day. Whilst it is utopian to think about resolving coal belt issues in a short period, a robust and community driven programme monitoring, implementation and oversight will induce confidence and bring them forward to rethink about lives' and livelihood options.