

ENVIS NEWSLETTER

CENTRE FOR ENVIRONMENTAL STUDIES
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 (Forest & Environment Department, Government of Orissa)

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The country's industrial heritage was built upon indigenous coal. India ranks 3rd among the coal producing countries in the world which fulfills 63% of the country's energy need. It is expected that coal production in India will soon double. Orissa shares 24.60% of the country's reserves covering an area of 18482.857 ha in 26 mines located in Talcher & Ib valley area. Although coal supplies the bulk of energy needs, its mining and usage cause environmental damage, such as air pollution, noise pollution, land degradation and water pollution.

Coal Mines and Related activities Versus Environment in Orissa

Coal is the most important and abundant fossil fuel in India. It accounts for 63% of the country's energy need. India now ranks 3rd among the coal producing countries. Most of the coal production in India comes from open pit mines contributing over 80% of the total production. 247.85 billion tonnes of coal reserves are estimated by the GSI (as on 1.1.2005), out of which Orissa accounts for 60.98 billion tonnes (24.60%). This is next to Jharkhand, which accounts for 72.20 billion tonnes (29.13%) of total coal reserve. The major coal mines are located in Talcher and Ib valley in Orissa. Although coal plays an important role in catering to energy needs, it also causes environmental damage during mining, transportation and processing.

Table - I
Coal Reserves in Million Tonnes

	Proved	Probable	Inferred	Total
India	84414	98546	38023	220983
Orissa	11308	23729	23729	51571

As per 2001 estimate.

Table - II
Distribution of Coal mines

	Open cast	Under ground	Mixed	Total
India	147	366	48	561
Orissa [Talcher & IbValley]	12	14	0	26

Coal Production and Demand:

Coal production in India has increased from 30 million tonnes in 1940 to 416 million tonnes in 2001-02 and it is expected to reach 700 million tonnes during 2009-2010. Average annual production growth rate during 1980 was about 6.5%. Bulk of electricity generated (about 65.7%) is from thermal power stations, which depend upon coal as feedstock. In addition, other industries like steel, cement, fertilizers, chemicals, paper and thousands of medium and small-scale industries are dependent on coal for their process and energy requirement.

Orissa is ideal for thermal power projects. Large coal reserves in Talcher-Ib Valley coal fields of Mahanadi coalfields Ltd. and abundance water in Hirakud and Rengali reservoirs in close proximity of these coal mines make these locations perhaps the best sites for pithead power plants in the country. The state power sector consumes about 23 million tonnes of coal per annum for power generation. (See Table - III)

Table - III

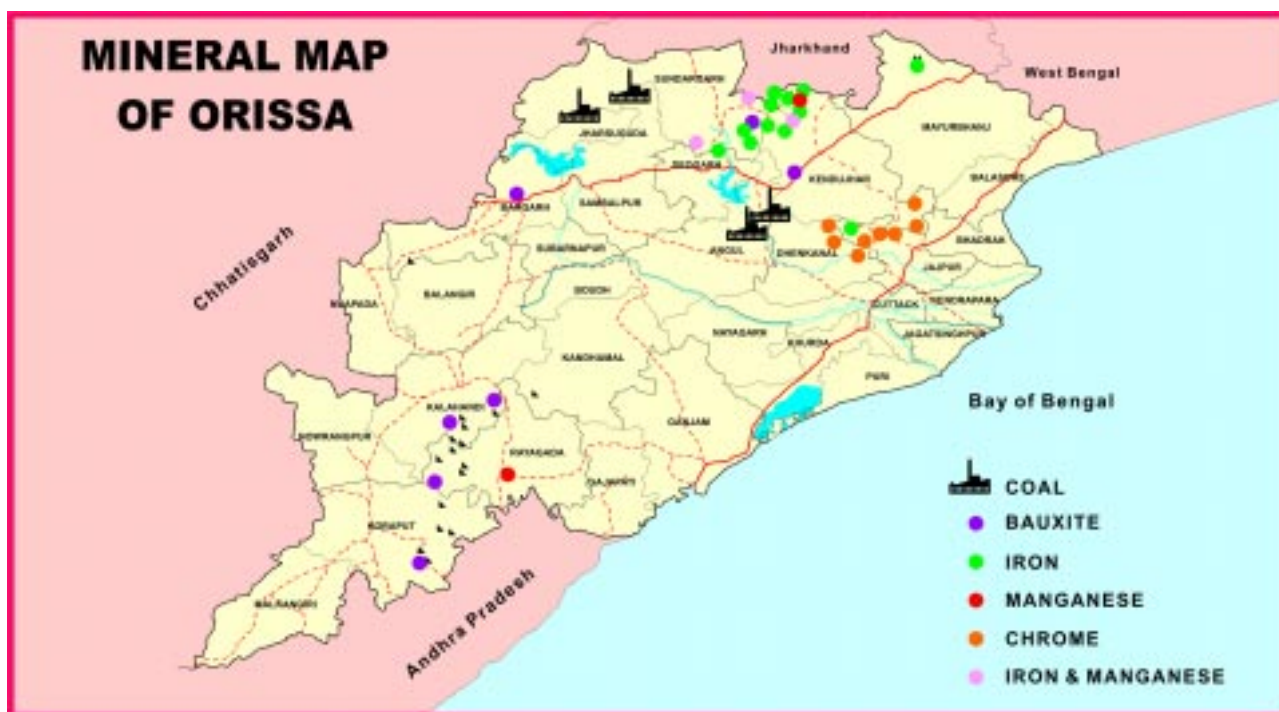
Coal consumption in Industries of Orissa

Thermal Power Plants	Coal Consumption in Tons per Day
NTPC, Kanhia	30000
TTPS, Talcher	7000
NALCO, CPP, Angul	12000
ICCL, Choudwar	2100
Ib Thermal Power Station	6500
RSP-CPP, Rourkela	1500
NSPCL, CPP	2500
Hirakud Power, Hirakud	1500
Nav Bharat Ferro Alloys, CPP	500
OCFL-CPP, Paradeep	1000

Coal Mining practices in Orissa:

Out of the total twenty six coalmines in Orissa, 12 are open cast and 14 are underground coal/mines. 18482.857 hectares is covered by coal mining activities in Orissa.

The coalfields in Orissa occupy 7.6% of the area (2723 Sq. Km). Talcher coalfield accounts for 12 coal mines (See Table - IV) and 44.57 MT of coal had been produced in 2004 - 05. The Ib valley coalfields has 14 coalmines and 21.51 MT of coal was produced in the year 2004 - 05. [See next page *Table - IV*]



**Table - IV
Coal mines in Orissa**

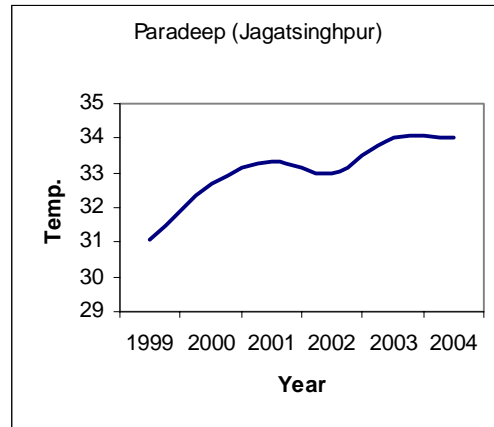
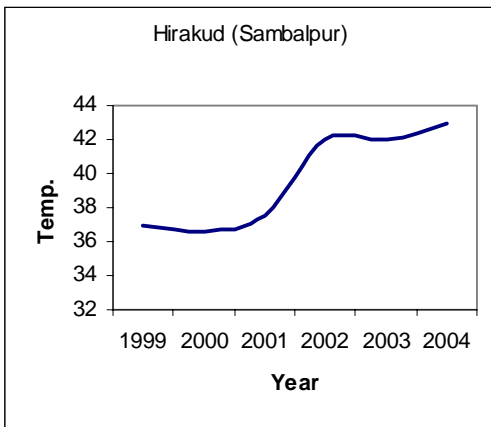
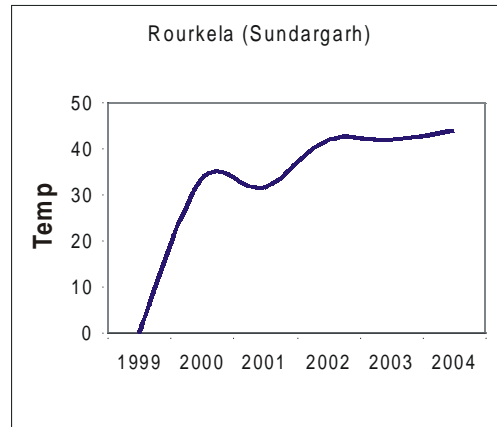
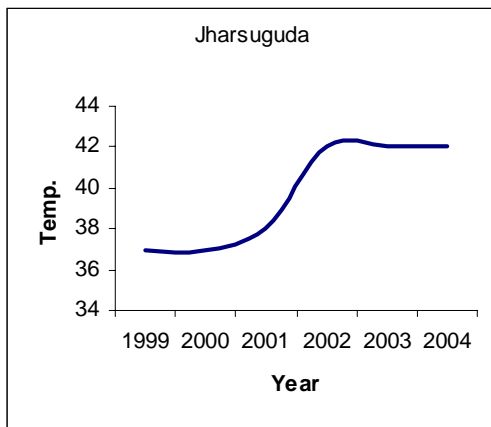
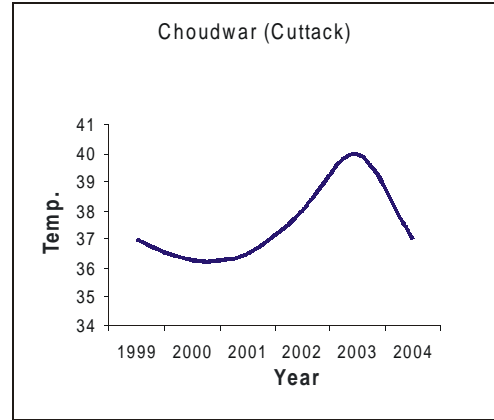
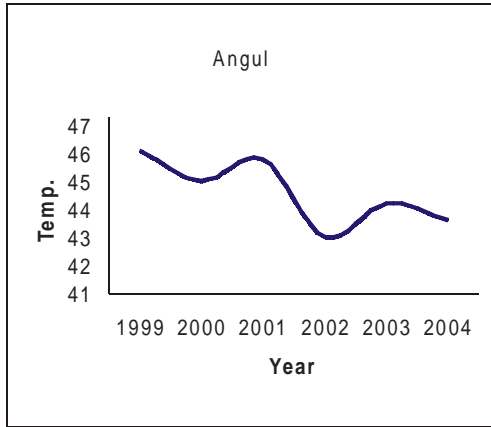
Name of Coalfield	Name of the mines	Underground / Opencast	Area in hectare
Talcher Coalfield	Talcher Colliery	Underground	1140.000
	Deulbera Colliery	Underground	518.981
	Handidhua Colliery	Underground	671.276
	Nandira Colliery	Underground	1785.750
	Southbalanda Colliery	Underground	1045.330
	Jaganath Colliery	O.C.P	590.853
	Bharatpur Colliery	O.C.P	1237.180
	Kalinga Colliery	O.C.P	117.350
	Hingula Colliery	O.C.P	1063.560
	Ananta Colliery	O.C.P	242.810
	Lingaraj Colliery	O.C.P	1248.510
	Chhendipada Colliery	O.C.P	24.300
	Ib Valley Coalfield	Ib River Colliery	Underground
Ib Property Colliery		Underground	270.409
Orient Colliery		Underground	487.359
Orient-III Colliery		Underground	601.522
Ib Block 5th Colliery		Underground	254.550
Gondghora Colliery		Underground	121.730
New Gondghera		Underground	161.101
N-Workshop Block (Gondghora)		Underground	397.737
Rampur Colliery		Underground	1095.687
Belpahar Colliery		O.C.M	2123.792
Lajkura		O.C.P	270.109
Lilari		O.C.P	224.300
Samaleswari		O.C.P	1095.598
Lakhanpur		O.C.P	4708

Environmental problems in Coal Mining and Coal based projects:

Air Pollution-

It is generally caused due to the fugitive emission of particulate matter during drilling, blasting, movement of heavy earth moving machinery on haul

roads, collection, transportation, handling of coal, screening, sizing and segregation units. Methane emission is higher in case of high degree underground mining. A rising trend in the temperature in coal mine and coal-utility area is being recorded over the past few years (See Chart).



Source : Climatological data of Orissa

Although coal mining activities and thermal power plants are major sources of suspended particulate matter, low to medium level of SPM have been recorded in these areas in Orissa. (See Table IV)

Land degradation-

Land degradation is common in coal mining. Large no. of waste dumps result in the coal mining area which occupy huge area.

Ambient air quality of coal mine area of orissa.

Table-V

Location	1998			1999			2000			2001			2004		
	SPM	SO ₂	NO _x	SPM	SO ₂	NO _x	SPM	SO ₂	NO _x	SPM	SO ₂	NO _x	SPM	SO ₂	NO _x
Angul	L	L	L	M	L	L	M	L	L	M	L	L	M	L	L
TTPS	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L

NB: H – High, M – Moderate & L – Low.

High, Moderate & Low category has been calculated as per the exceedance factor.

Exceedance factor = Observed annual mean concentration of criteria / Annual standard for the respective pollutant and area class H = 1 – 1.5, M = 0.5 – 1 & L = < 0.5

Source: Orissa State Pollution Control Board

Noise Pollution-

Blasting, drilling and movement of heavy earth moving machine are the main sources of noise pollution.

Current Practices of Environment management in coal mines of Orissa-

The common management practices that are followed in coalmines in Orissa are as follows-

Mine drainage water & surface run off water are being treated in settling tanks and used in water sprinkling. Most of the Effluent Treatment Plant (ETP) which are used for treatment of mine drainage water comprises of sedimentation tank and chemical dosing system. Dust suppression on haulage roads and transport on road are being reduced by sprinkling water through mobile water sprinklers, fixed water sprinkling and making transportation roads black-topped. Drilling machines are provided with dust extractors.

In some cases, wet drilling system is being used. In some mines, water misters are used in the coal handling plant to subside fugitive dust. Trucks & Tippers are instructed to be covered.

Garland drains are usually provided around Overburen (OB) dumps and quarries to prevent surface run off during rain. Plantation is being raised on vacant land & OB dumps.

Workshop effluent is treated in O&G trap and sedimentation tank. In under ground mines, generally water sprinkling on roads and sand stowing are being carried out.

Compensatory Afforestation-

29,362 hectares of forest area have been diverted in Orissa for different development activities including coal-mining sector, as per the provision of Forest (Conservation) Act, 1980 granted by Ministry of Environment & Forests, Government of India. The Government of India while giving permission, have stipulated compensatory afforestation in lieu of forest area diverted for non-forest purpose. Though separate data for coal mining activities is not available, compensatory afforestation in 23,364 ha in forest and non-forest has been done since 2004. A remote sensing survey carried out in 1988 indicated that reserve forest constitutes about 4 % of the mining area in coalfield.

1768 ha of land has been reclaimed out of the total excavated area of 21166 ha till 2005 in coal mines area of Orissa. Biological reclamation accounts for 1045 ha . And 37.52 lakhs trees have been planted since 1992-93 in coal mines area of Orissa. (Source MCL – Website)

Coal Beneficiation – A tool to reduce pollutants?

With a hike in the price of petroleum in the international market, the global focus is now on increasing efficiency in the energy sector. Majority of the Thermal Power Plants get Coal from multiple sources. In the absence of proper blending facilities non-homogenous coal is often fed to power plants. These have a varied degree of flyash, moisture, volatile matter and sulphur content. This leads to higher emission and fly ash generation apart from reduced efficiency of power plants. Washing of the feed coal is an option to reduce emission, ash handling and increased efficiency of thermal power plants. The Ministry of Environment & Forests has stipulated the use of beneficiated coal of less than 34 % ash in all power plants located more than 1000 Km away from the coal services. The first coal beneficiation plant of 500 TPH capacity is installed at Dipka in Korba coalfields.

The Andhra Pradesh Power Generation Ltd. is establishing a coal beneficiation plant in the vicinity of Mahanadi Coalfields Ltd. in Talcher, Orissa on Business Built Own Operate (BOO) basis. There is a proposal to despatch 11 million tonnes of F grade raw coal per annum to APGenco TTPS.

Coal Beneficiation units in Orissa:

There are some coal beneficiation units operating in Orissa such as Global Coal & Mining Pvt. Ltd., Talcher, SMC Power Generation Corporation, Jharsuguda & NEPAZ Metallic Pvt. Ltd. in Rourkela and a few others will be established in the near future.

Use of beneficiated coal/ blended coal/washed helps coal in increase in generation efficiency, reducing cost for fuel and ash handling equipment, reducing operation and maintenance cost, increasing energy conservation in the transportation sector and reducing transportation costs, reducing impurities/waste and finally reducing amount of solid waste. The fly ash that has been already generated or to be generated in near future can be used in backfilling of mines pits, used in road work, preparing ash brick, and can be used the plantation in the degraded coal mines area. The next issue of this newsletter will cover a detail survey on fly ash management in Orissa.

What some dailies report :

(1) Life in plastic is not Fantastic-

Bombay Municipal (Corporation (BMC) plans to ban plastic bags as they pose a danger to city. The corporators blamed plastic carry bags as the reasons for choking of drains and nallah during the recent deluge that paralyzed the city about a month ago. They have suggested that polythene bags be banned. But the ban will take some more time since BMC's plan to ban plastic bags completely will require legal sanction by the state government.

The Afternoon, Bombay-India, Sep-14, 2005.

(2) Ban on loudspeaker after 10 O'clock at night-

Consequent upon a High Court order the district Administration of Cuttack notified to ban loud speakers after 10 O' clock at night during the Dussera festival. The permitted sound level has kept at maximum of 55dB.

The Sambad Daily, Sept. 23, 2005.

(3) India's success story in Montreal Protocol-

India had complied with its commitment under the Montreal protocol successfully. India had implemented more than 300 projects for phasing out ozone depleting substances (ODS). Dependence of Industry on ODS has been reduced substantially. Various regional initiatives with neighboring countries had been taken relating to Montreal protocol implementation.

The New Indian Express, Bhubaneswar sept 17, 2005.

(4) Study finds major shift in weather conditions-

A study conducted in collaboration with the UK Government and many Indian institutes, since last three years estimates that temperature will rise by six degrees by the turn of the century with higher annual rainfall and increased drought.

The New Indian Express, Bhubaneswar - sept 9, 2005.

(5) Kyoto Protocol becomes operational-

The controversial Kyoto Protocol, aiming to cut greenhouse gas emissions, became fully operational. The 34 signatory countries, which do not include the United States, passed the final regulatory measures by consensus at the Montreal Conference. They agree to limit emissions of gases that cause global warming until 2012.

The New Indian Express – Dec-02-2005

(6)Coal mining companies may sell surplus directly-

Even as it evaluates the prospect of allowing commercial coal mining by the private sector, the government has begun the exercise of liberalizing the captive coal mining activity in the country by allowing companies to sell surplus coal directly to end-users. The Planning Commission has also asked the coal ministry to increase coal from captive mines to 50 million tonnes by 2012. It has also suggested that the captive mines should be allowed to sell up to 15% of their production to CIL under pre-negotiated agreements or directly to end-users against current fuel supply agreements with the PSU.

The Financial Express – Dec-04-2005

(7) China is to shut down 12,000 small coal mines in 3 years-

China, the world's top coal producer will shut down 4,000 small coalmines annually in the coming three years as part of the efforts to cut down growing mine accidents.

China now has 24,000 small coalmines with an annual production output ranging from 10,000 tonnes, which account for 70% of the country's number of coal mining ventures.

The Financial Express – Dec-04-2005

ISBEID Workshop

A two-day workshop-cum-training programme on Indian State Level Basic Environmental Information Database (ISBEID) Software was inaugurated on 29 & 30 th August 2005 by the Centre for Environmental Studies, Bhubaneswar in association with Ministry of Environment and Forests, Govt. of India and National Informatics Centre (NIC), New Delhi. Shri. U.P. Singh, Commissioner-Cum-Secretary, Water Resources Department, Govt. of Orissa inaugurated the workshop. Sri. K. Jude Sekar, Special Secretary, Forest and Environment Department in his welcome address described information about ISBEID Software. He told that GIS for ISBEID is a web based GIS application for efficient management of Spatial/ non-Spatial information on various Environment areas through interactive maps that are capable of handling GIS operations. Prof. L.N. Patnaik, Chairman Pollution Control Board briefed the necessity of an Environmental Database in the State. Dr. D.Bandyopadhyay, Director (EI), Ministry of Environment & Forests, Government of India informed about the need and co-ordination of the program of all the line Departments and concerned organisations in Orissa in order to make a comprehensive information package on diverse parameters of Environment and its associated fields so that it could play a paramount role in developing the State of Environment (SoER) of the State. He also informed the usefulness of Software in accessing information upto Block/Mandal level for better environmental management and the role of ENVIS System of the Ministry in streamlining the data availability.

In the technical Sessions, Sri. Sanjay Singh Gahlout, Sr. Technical Director, NIC, New Delhi informed about GIS features implemented in ISBEID and GIS expertise of NIC which is used to further enhance the quality of the ISBEID software. Dr. P.K. Prusty, Member Secretary, State Pollution Control Board informed about ENVIS and its relevance in the state of Orissa for environmental information collection, collation and the dissemination to all concerned.

Shri. Vimal Bisht, Programmer, ENVIS Cell from MoEF, Mr. Ajay Kumar and Sri. S.P. Kartikeyan from GIS Division, NIC delivered lectures on GIS and its web based implementation on ISBEID as well as detailed the use of this software and its technical parameters. Mr. Anil Kumar and Arpita Gupta from Environment & Forests Informatics Division of NIC, New Delhi gave support in Environmental input to the workshop.



From Left to Right : Sri. Sanjay Singh Gahlout, Sr. Technical Director, NIC, New Delhi, Sri. K. Jude Sekar, Special Secretary, Forest and Environment Department, Shri. U.P. Singh, Commissioner-Cum-Secretary, Water Resources Department, Govt. of Orissa, Dr. D.Bandyopadhyay, Director (EI), Ministry of Environment & Forests, Government of India and Prof. L.N. Patnaik, Chairman Pollution Control Board.

Feedback

We would appreciate if you send us comments and suggestions.

K Jude Sekar
Director

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Sri G.K.Pujari, Programme Officer (CES) and P. M. Dash, Programme Officer (ENVIS) have prepared this newsletter with advisory support from
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