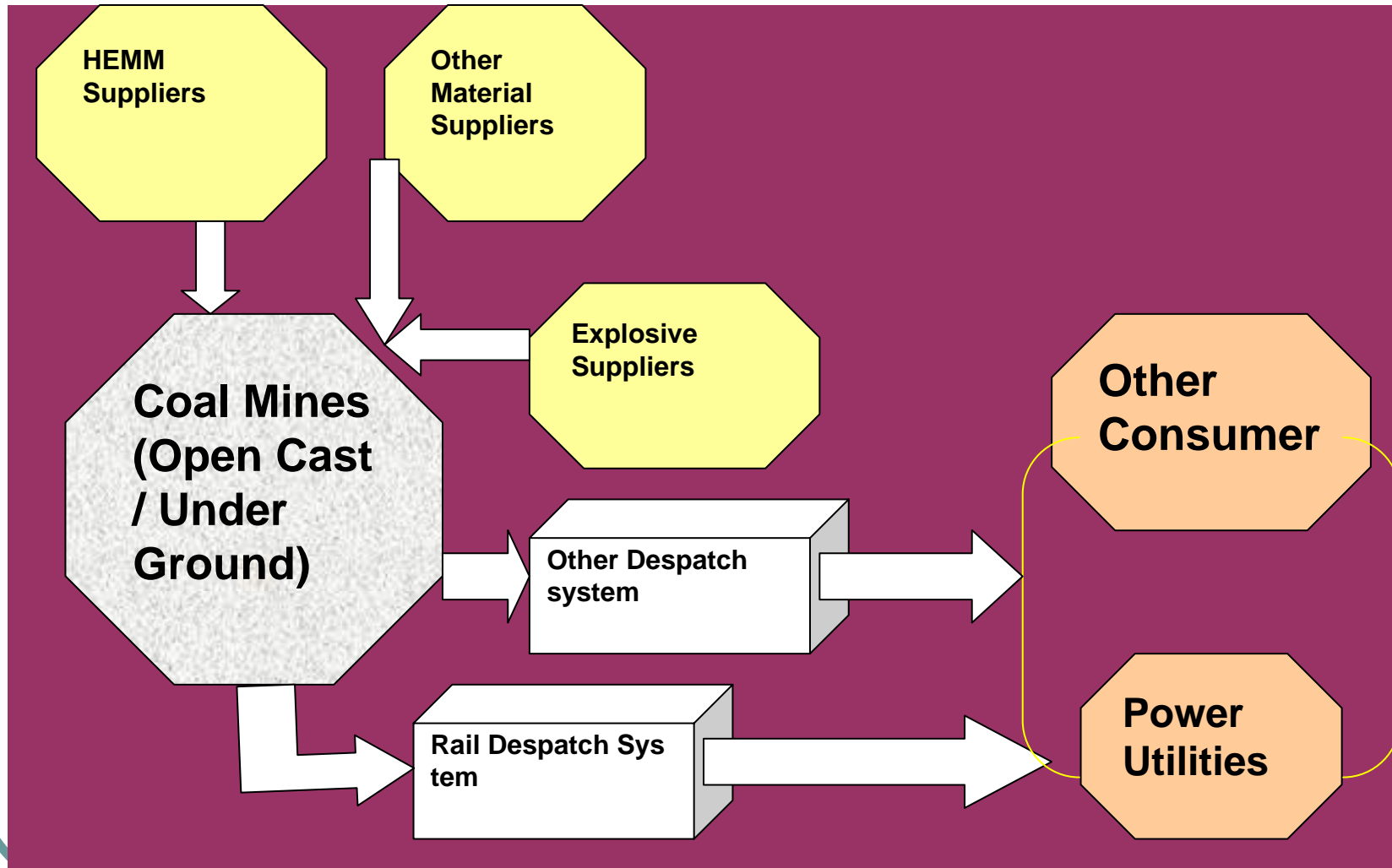


# **INFRASTRUCTURE & LOGISTIC TO DEVELOP COAL MARKET**

**17<sup>th</sup> September 2008, Kolkata**

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# LOGISTIC – Coal producer's perspective



## LOGISTIC – Coal producer's perspective

- ***Logistic management is the most important function of coal mining business as –***
  - *Coal Mining is dependent upon efficient supply of earth moving/ excavating machinery / explosives and wide multitude of stores.*
  - *Evacuation facility of coal produced at the mines*

## LOGISTIC – Coal producer's perspective

- *Coal -- a natural product available at remote places --no scope for considering economical and physical constraints in accessibility.*
- *The consumption / supply points are mostly located at long distance from the mine.*
- *This essentially requires a solid material handling and bulk distribution system.*
- *Railway is the largest logistic provider for delivering coal/coal products to consumption points.*

# COAL– THE PRIMARY ENERGY SOURCE FOR COUNTRY

- *Coal accounts for over 55% of India's commercial energy consumption.*
- *About 80% of domestic coal production is utilized in power generation.*
- *Coal sector registered robust growth of 5.75% in X Plan period.*
- *Demand of coal projected to grow almost by 10% in XI Plan period so is growth in coal production.*

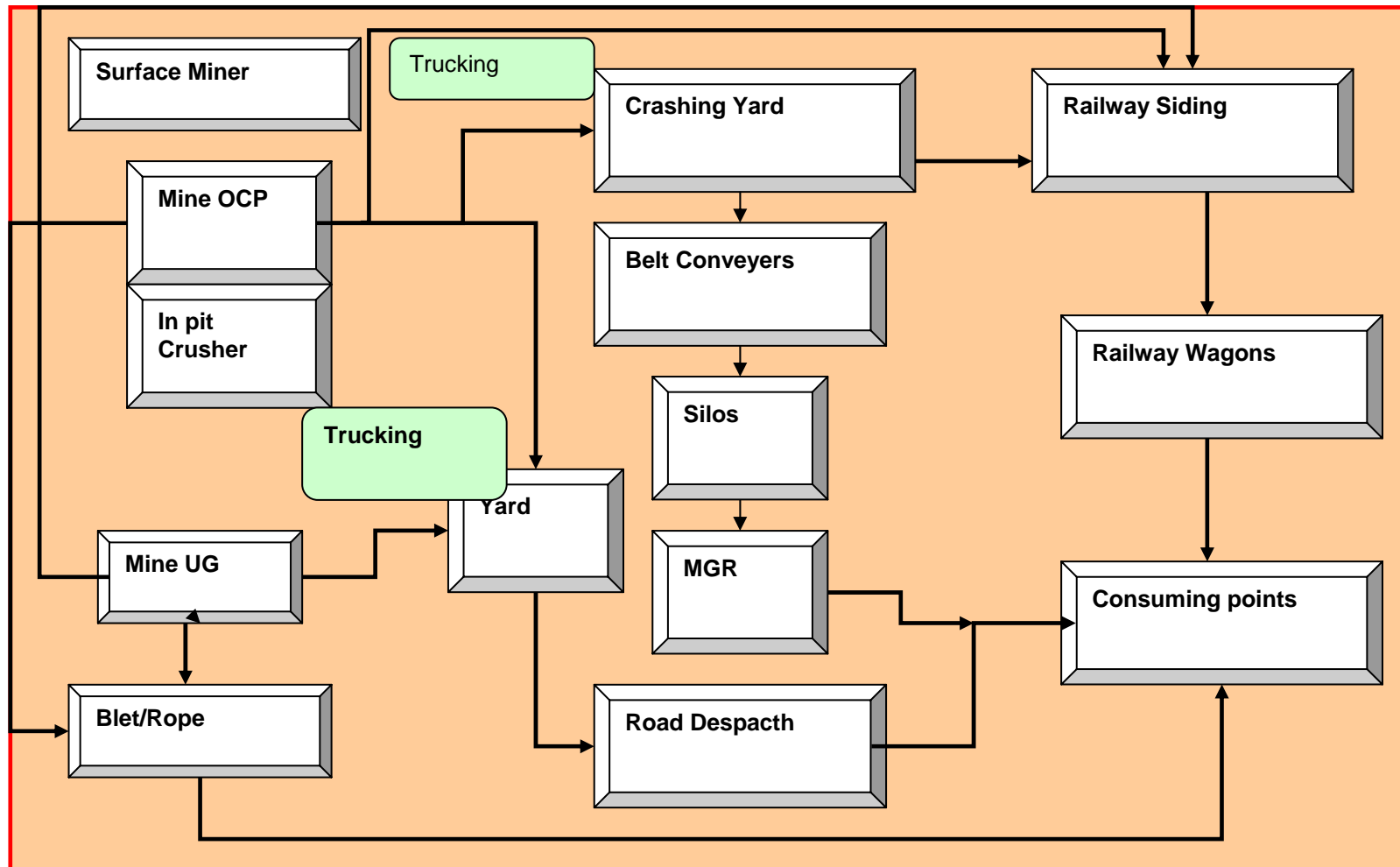
## COAL– THE PRIMARY ENERGY SOURCE FOR COUNTRY

- *Committee on Integrated Energy Policy forecasts coal consumption for power generation likely to increase by two and half times from about 800 Mt in 2016-17 to about 2000 Mt (816 MTOE at 8% GDP growth) in the beginning of thirties.*
- *Total demand of coal predicted by the same Committee being 2230 Mt in 2031-32, at a growth rate of 6.5%, dependence of power sector on coal continues to be around 80% for next more than two decades.*
- *Going by the current trend of GDP growth The demand is likely to touch somewhere at 2500Mt by early thirties*

# This presentation aims

- *To identify bottlenecks in the process of coal transportation from mines to consuming ends, especially at power stations, and*
  - *To suggest plausible solutions to remove the bottlenecks from the viewpoint of*
- 
- **Enhancement of reliability of logistics**
  - **Reduction of logistics cost, and**
  - **Developing a healthy coal market**

# Schematic diagram of basic coal transport logistics in India



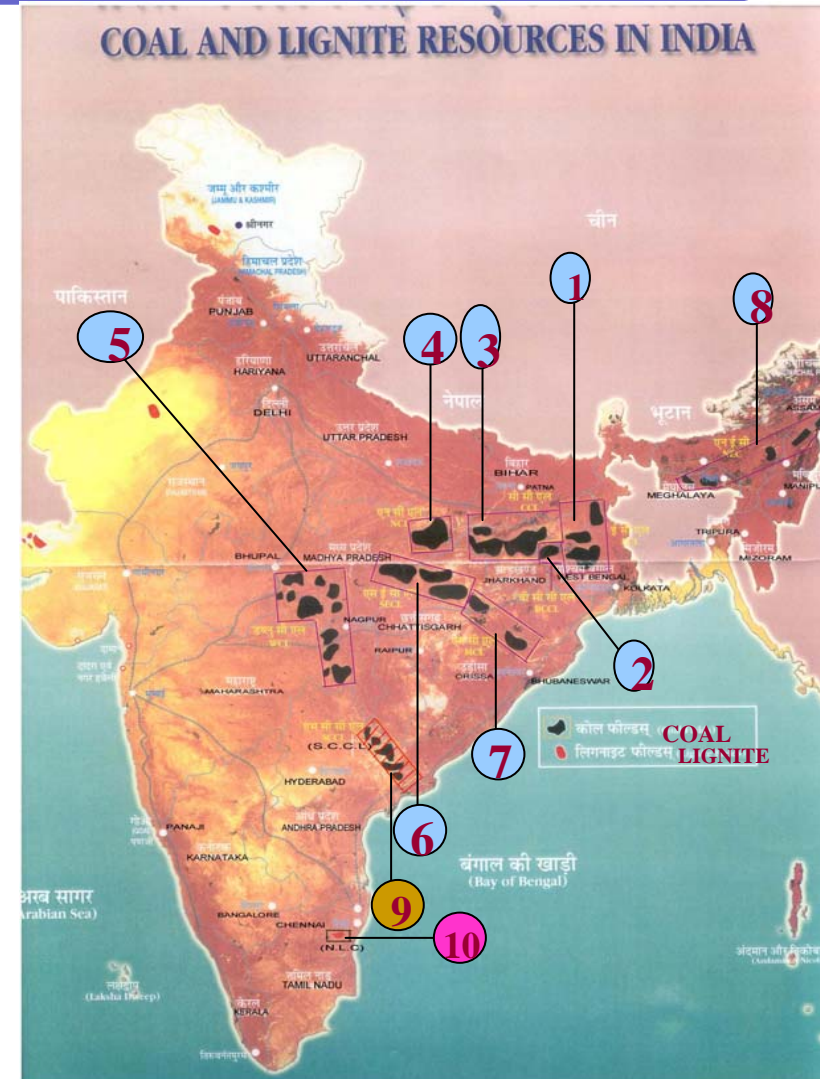
## Coal transport logistics -- current scenario

*Since CIL accounts for more than 85% of indigenous coal production, a reasonably fair picture of transport logistics of total indigenous coal sector may be extrapolated from the facts and figures pertaining to CIL.*

- *Availability of coal limited to a few States concentrated mostly in East and East-Central parts, demand spreads over length and breadth of the country*
- *This situation leads to over dependence on railway transportation in coal movement logistics.*

# Geographical location of coal fields in India

- EASTERN COALFIELDS LTD. (1)
- BHARAT COKING COAL LTD. (2)
- CENTRAL COALFIELDS LTD. (3)
- NORTHERN COALFIELDS LTD. (4)
- WESTERN COALFIELDS LTD. (5)
- SOUTH EASTERN COALFIELDS LTD. (6)
- MAHANADI COALFIELDS LTD. (7)
- NORTH EASTERN COALFIELDS. (8)  
( A UNIT UNDER CIL(HQ) )
- SINGARENI COLLIERIES CO. LTD. (9)
- NEYVELI LIGNITE CORPORATION (10)





# Railways – mainstay of transporting coal

- **Percentage contribution of different modes of transport in coal dispatch**

Period	Rail	Road	MGR	Belt/others
2001-02 (IX Plan)	53.3	18.2	22.7	5.8
2006-07 (X Plan)	47.1	25.0	23.2	4.6
2007-08	49.2	26.5	18.7	5.6
2011-12 (XI Plan)-- Projection	49.0	27.2	19.1	4.7

## Plan - wise trends of Mode - wise coal despatches from CIL

Year	Rail	Road	MGR/ Rope / Belt etc.	Total	% contribution		
					Rail	MGR	Road
<b>1996-97 (8<sup>th</sup> Plan)</b>	<b>141.26</b>	<b>43.97</b>	<b>62.84</b>	<b>248.07</b>	<b>57</b>	<b>18</b>	<b>25</b>
<b>2001-02 (9<sup>th</sup> Plan)</b>	<b>154.56</b>	<b>47.39</b>	<b>78.83</b>	<b>280.78</b>	<b>55</b>	<b>17</b>	<b>28</b>
<b>2006-07 (10<sup>th</sup> Plan)</b>	<b>196.1</b>	<b>59.8</b>	<b>91.8</b>	<b>347.7</b>	<b>56</b>	<b>17</b>	<b>27</b>
<b>2011-12 (11<sup>th</sup> Plan Proj)</b>	<b>272.6</b>	<b>97.9</b>	<b>144.6</b>	<b>515.1</b>	<b>53</b>	<b>19</b>	<b>28</b>

## ELEMINATING THE LOGISTIC OBSTACLES

- *Movement of coal from production points to consuming end in different modes of transportation, excepting rail, depends mostly on producers' and consumers' systems efficiency.*
- *These movements by and large confined to coal consumptions at pithead or in the vicinity of mines and therefore being closely monitored at both ends*

## ELEMINATING THE LOGISTIC OBSTACLES

- *However, more than 50% of coal being linked on Railway system, producers and consumers in coal sector mostly remain dependent to a transport infrastructure with minimum control.*
- *Less than 5% of Indigenous coal transported through ports. However, almost 50% of existing major port capacities being utilized by indigenous coal, including capacities of unloading ports.*
- *Thrust areas for indigenous coal sector– Identification of bottlenecks in Rail Transport and introducing remedial measures to remove those*

# Bottlenecks of Rail transportation

## AT PLANNING LEVEL

- *Lag in synchronization of railway infrastructure build-up with developments of up-coming projects – delay or under-utilization of projects*
- *Mines forced to find out alternative stop-gap arrangement – transport cost escalation, discontinuance of the stop-gap arrangement leads to socio-economic disturbance .*
- *Planning normally restricted to developing infrastructure at trunk routes—supply chain in coal bearing areas remains clogged*

# Bottlenecks of Rail transportation

## AT PLANNING LEVEL (Contd.)

- *Planning concentrates on track development- mismatch between track and rolling stock capacity*
- *Plan for rolling stock in totality without taking into consideration sector-wise nature of requirement – inadequate availability of wagons during peak production periods*
- *Lack of coordinated efforts between Local administration and Coal Companies in planning of roads and other comprehensive area development*

**Bottlenecks of Rail transportation leads to .....**

## Bottlenecks at Operational level

### AT PRODUCTION POINT

- *Natural adversities -- unavoidable seasonal fluctuations in coal production/demand*
- *Difficult warehousing conditions – stocks exposed to pilferages and natural weathering*

## Bottlenecks at Operational level

- *Linking coal to siding from large number of small mines in traditional coalfields*
- *Poor road infrastructure, fair weather bridges -- -- transportation to Railway sidings gets affected*
- *Link-roads mostly through congested locality – socio-economic disturbances*
- *Fluctuating schedule of arrival of empties – idling of loading equipment*

# Bottlenecks of Rail transportation

## IN RAILWAY ROUTES

- *Movement of Freight and passenger traffic through same track – transit delay*
- *All trunk routes including Golden quadrilateral and its diagonals saturated or super saturated – constraint for throughput handling*
- *Multi-commodity handling rolling stocks – prioritized movement of foodgrains, fertilizers affects wagon supply for coal in peak production months.*

# Bottlenecks of Rail transportation

- *Limited yard availability – restricting load and empty rakes handling capacity*
- *Smaller rake size, higher dead load – restricting haulage quantity*
- *Absence of electrification in coal moving tracks – delay for changing locomotives*
- *Bifurcations of Zonal Railways – indulging intra-zonal wagon movement, particularly in peak season*

# Bottlenecks of Rail transportation

## At unloading points (power stations)

- *Unloading system equipped to handle particular type of wagon – flexibility of rolling stock throttles*
- *System not equipped to work 24X7, delay in unloading during shift changes – Railway operation continues un-interrupted*
- *No time schedule available for arrivals of loads – idling infrastructure & restricting planned maintenance*

# Bottlenecks of Rail transportation

## At unloading points (Power Stations)

- *Monthly requirement of coal not equitably distributed --- bunching of rakes at unloading points*
- *Delay in cross-over, exchange-yard --- bunching of rakes often creating problems even in main operational lines.*

# TOWARDS ELIMINATING THE BOTTLENECKS

## For bringing efficiency at operational level

- ❑ *Coal production and infrastructure development plans to be amalgamated in a comprehensive plan*
- ❑ *Dedicated freight corridors in trunk routes to be planned with adequate capacity to handle demands for at least coming 20 years.*

## TOWARDS ELIMINATING THE BOTTLENECKS

- *Up gradation of yards and signaling arrangement attuned to projected capacity of freight corridor*
- *Compatible linking of coal-bearing areas with the freight corridor to ensure express movement of coal rakes to destinations.*

## TOWARDS ELEMEINATING THE BOTTLENECKS

- *Developing dedicated rolling stock for coal traffic with state-of-the-art technology to reduce dead weight and to increase payload tare ratio*
- *Introduction of GPS tracking system for forecasting timings of arrivals of empties at loading points and loads at unloading points for optimum utilization of related plants and machineries*
- *Upgrade existing coal unloading terminals and develop new terminals for improving distribution network*

# TOWARDS ELIMINATING THE BOTTLENECKS

## FOR IMPROVING COST – ECONOMICS OF TRANSPORT LOGISTICS

- *Cost sharing in capital investment and introducing suitable freight rebates for attracting Coal Companies to rationalizing sidings*
- *Deciding free-loading time in consonance to loading potential wherever rationalization not possible due to economic reason*

## TOWARDS ELIMINATING THE BOTTLENECKS

- *Introduction of early loading credit points at one siding to off-set delay in other*
- *Introduction of timetable for rake placement for loading points of capacity less than one rake a day for optimum utilization of loading equipment.*

## TOWARDS ELIMINATING THE BOTTLENECKS

- ***Chargeable weight to be linked with bulk densities of commodities else instead of freight per tonne , freight per wagon system with cut-off limit as per prevalent safety rule of Indian Railways to be considered***

## Existing freight structure – Indian coal loses competitiveness in spite of being most economical at Pithead

Distance (Kms)	Freight for coal	Coal grade	FOR Price	Landed price at various distance(KMs) from pithead						
				500	750	1000	1200	1500	1800	2000
500	432	ECL/Rn g B - ROM	2211	2642	2843	3040	3198	3434	3644	3746
750	632	CCL/NK P E- ROM	828	1259	1460	1656	1815	2051	2261	2363
1000	829	CCL/SK P C- ROM	1473	1905	2105	2302	2461	2697	2907	3008
1200	987	WCL D- ROM	1296	1728	1928	2125	2284	2520	2729	2831
1500	1223	SECL/K -R C- ROM	1296	1728	1928	2125	2284	2520	2729	2831
1800	1433	SECK- Krb F- ROM	620	1051	1252	1448	1607	1843	2053	2155
2000	1535	MCL F ROM	547	978	1179	1375	1534	1770	1980	2082

# TOWARDS ELIMINATING THE BOTTLENECKS

- ***Elimination of cross-subsidy to passenger traffic from freight traffic***
- ***Allowing dedicated movement for wagons owned by Consumers and Coal producers***
- ***Inviting logistics companies to run their rolling stock on wheeling charges***

## Technological innovation in coal transport logistics:

- *“Coal-by-wire” – power-grid networking helps to install pithead power stations for replacing transportation of coal by transmission of power. Generation capacity at pithead power stations in the country expected to grow @ 13.3% in XI Plan from a level of 2.7% in X Plan.*
- *CIL by end of XI Plan to dispatch only beneficiated coal excepting to the pithead consumers*
- *‘Coal-by-pipeline’ – In-situ coal gasification and CBM exploration would bring a new vista in transportation logistics*

# CONCLUSION

- *Planned production of coal requires matching development of transport logistics*
- *Railways would continue to be mainstay for evacuation of coal*
- *Unless steps are taken to develop Railway infrastructure production potential likely to face severe jolt*

# CONCLUSION

- *Even with growth in production coal scarcity in different consuming ends likely to persist unless infrastructure develops to haul coal*
- *Operational and commercial bottlenecks in transportation logistics to be addressed at planning level*
- *Opening up railway transportation to logistics providers likely to improve reliability of supply chain at affordable cost*
- *Technological innovation in transport logistics should be the thrust area for developing a robust coal market and ensuring energy security of the country*



*Thank You*