Organisation de Coopération et de Développement Economiques
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30-May-2006

English text only

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
STEEL COMMITTEE

DSTI/SU/SC(2006)35
Unclassified

INDIA

RAW MATERIALS AND TRANSPORTATION: ISSUES AND OUTLOOK

Joint India/OECD/IISI Workshop, New Delhi (India), 16-17 May 2006

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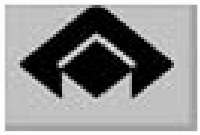
JOINT INDIA / OECD / IISI WORKSHOP ON STEEL

RAW MATERIALS AND TRANSPORTATION :

ISSUES AND OUTLOOK



By
Mr. A.K.Pandey, General Manager

STEEL AUTHORITY OF INDIA LIMITED

17th May'2006

PRIMARY FOCUS

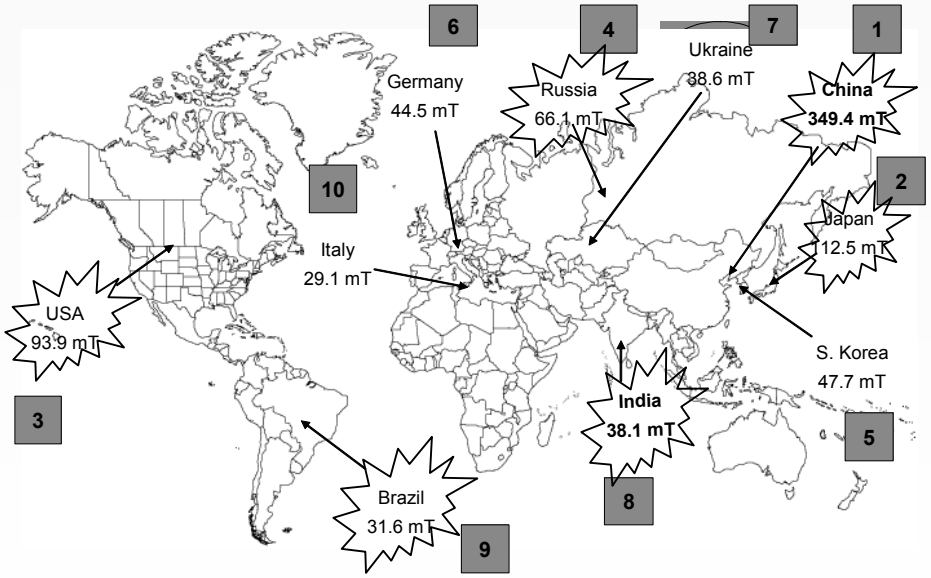
1. India: A future growth hub

2. Critical Raw Materials Scenario: Indian Perspective

3. Critical Infrastructure: Indian Perspective

4. Key Issues

World Steel Industry – Top Ten



Global crude steel Production: *1130.0* million tonnes (mT) Source: IISI 2005

Indian Potential for Steel

Huge Potential for Demand

- High GDP growth rate of 7%
- 1 billion population
- Low per capita steel consumption of 33kg (World av. 181 kg)

Growth factors for India

Skilled Human Resources

Abundant Iron Ore
Reserves 23 billion tonnes

Government Policy

- Stable currency
- Easing of regulations
- Strong Banking & judicial system
- Encouraging trade relations with ASEAN and other countries
- Infrastructure building
- Exploring new Energy resources

National Steel Policy-2005

- Approved by Government of India in September 2005

Milion Tonnes

	Steel Production	Imports	Exports	Consumption
2004-05	38	2	4	36
2019-20	110	6	26	90

Major Emphasis:

- Critical Input Raw Materials: Iron Ore and Coking Coal
- Infrastructure facilities like Roads, Railways and Ports.

Focus:

- Human Resources
- Technology
- Research and Development
- Market outlook on prices of steel
- Environmental Concerns.

Raw Materials Requirement

Critical inputs for Steel Production

- Iron Ore
- Coking Coal

Projected Requirement of Critical inputs

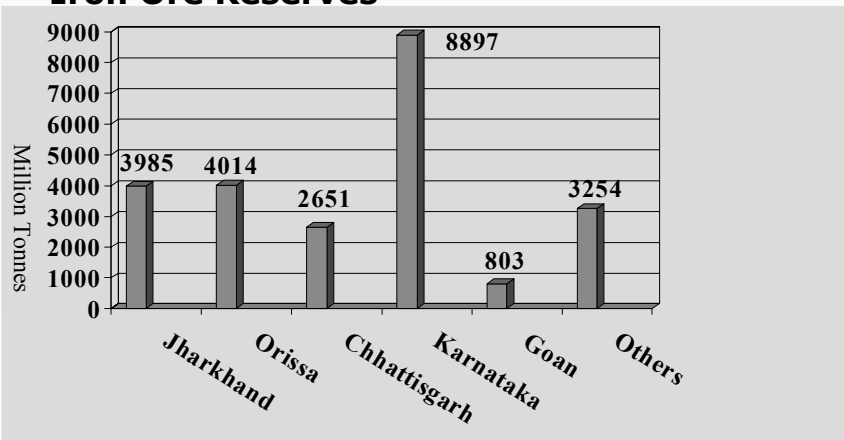
Million Tonnes

	Iron Ore	Coking Coal	Non Coking Coal
2019-20	190	70	26
2004-05	54	27	13

New Additions through BF Route (60%), Electric Arc Furnace (33%), others (7%)

Iron Ore - Reserve Availability

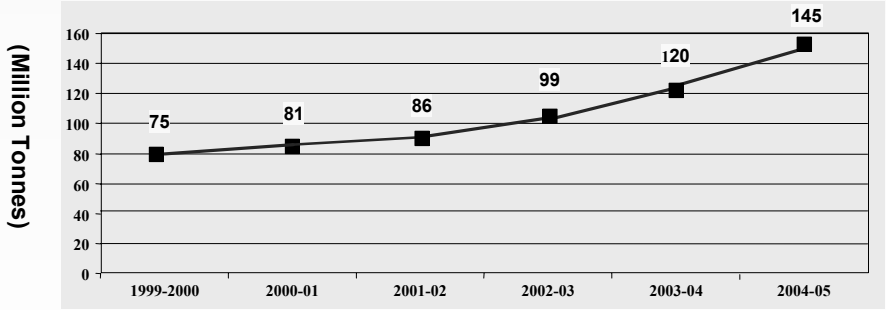
Iron Ore Reserves



- **Total Reserves – about 23 BT (P)**
- **Haemetite (11.43 BT) and Magnetite (10.68 BT).**
- **High grade haemetite (65%) only 14% of total reserves.**

Iron Ore – Production Scenario

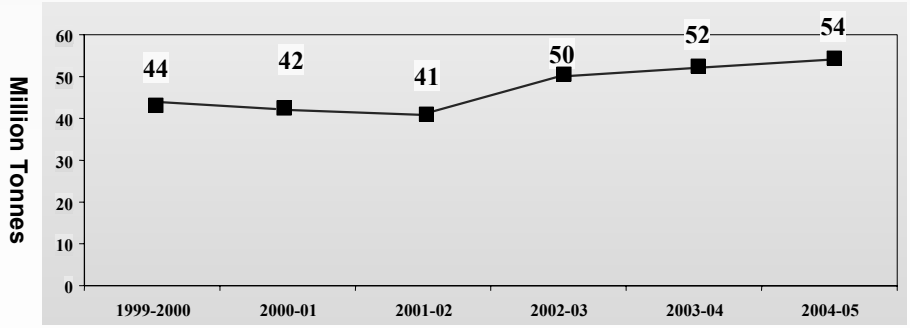
Iron Ore Production



- **Increase in production driven by export**
- **Chhattisgarh, Karnataka, Jharkhand and Orissa - major share**

Iron Ore – Domestic Consumption

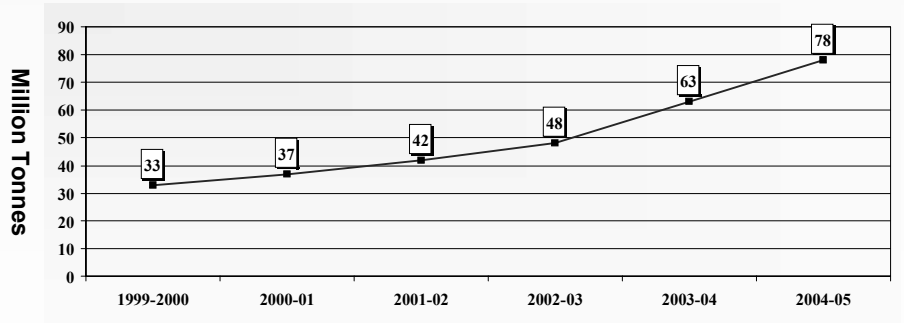
Iron Ore – Domestic Consumption



- **Major consumer SAIL and TISCO - captive mines**
- **RINL - NMDC**
- **ESSAR, Ispat, Vikram Ispat, JVSL - NMDC & others**

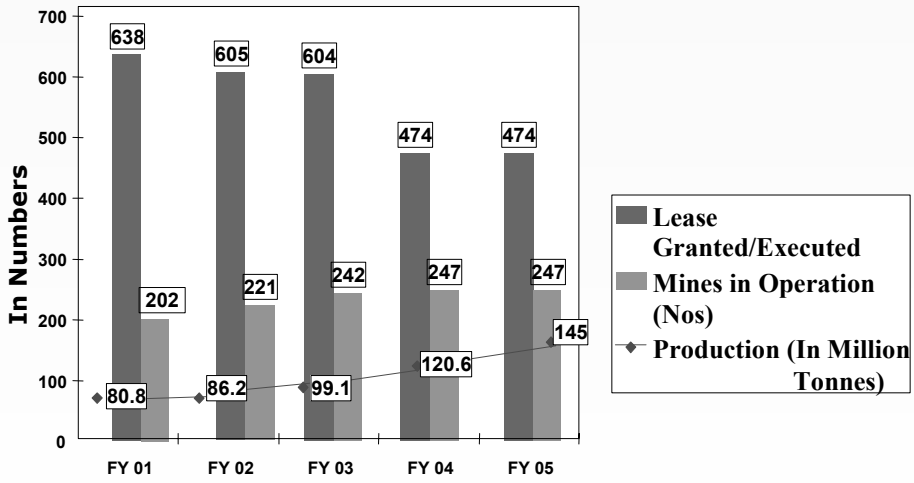
Iron Ore – Exports

Iron Ore – Exports



- **Exports to China has increased due to surge in demand**
- **More than 90% of exports comprise of iron ore fines**
- **Low demand of iron ore fines in Indian segment**

Mine in Operation & Production



Rapid Growth in Productivity per mines at a CAGR of 10%

Source : IBM, Nagpur

Iron Ore Scenario

Present Capacity **(Million Tonnes)**

ORGANISATION / STATE	PRODUCTION CAPACITY
NMDC Bailadila (11A,11B,11C), Donimalai, Kumarswamy	22
SAIL Kiriburu,Meghahatuburu,Bolani, Barsua,Rajhara,Dalli,Gua,Kalta	25
TISCO Noamundi,Joda	10
GOA	30
Karnataka,Orissa,Jharkhand	58
Total	145

Iron ore - Future Perspective

New Capacities by 2011-12

Sl.No.	Area	Mine	Expected Capacity (mT/annum)
1.	Chhattisgarh	Bailadila-10&11A	7.0
2.	Chhattisgarh	Bailadila-11B	7.0
3.	Chhattisgarh	Rowghat	14.0
4.	Jharkhand	Chiria	10.0
5.	Orissa	Daitari	3.0
6.	Orissa	Sundergarh	10.0
7.	Bellary-Hospet	Kumarswami	7.0
8.	Bellary-Hospet	Ramandrug	10.0
9.	Andhra-Pradesh	Ongole Magnetite	3.0
	Total		71 MT

Total expected capacity in 2011-12 =215MT(approx.)

Iron Ore – Future Perspective

	2019-20
Domestic requirement	190 mT
Exports	100 mT
Total Requirement	290 mT
Additional modern mining and beneficiation facility	200 mT.
Likely investments	Rs.20000 cr (4.5 B US $)

Iron Ore – Future Perspective

Strategies envisaged

- Investments plans for **idle mining leases**.
- **Speedy renewal of existing mining leases**
- **Grant of new mining leases**:
- **Environmental & Forestry Clearances** in fixed time frame
- **Incentives for Value addition** for iron ore fines.
- **Encouragement for scientific and large scale mining**

Iron Ore – Future Perspective

IRON ORE EXPORTS (2019-20)

Projected iron ore exports ⟶ 100MT

No appreciable increase in quantum envisaged

Future Policy envisaged

- High grade lump to be leveraged for imports of coking coal or for investment in India.
- Maintain balance between exports and domestic consumption

Iron Ore – Key Issues

1. **Slow pace of growth of the mineral sector**

- Time taking procedures in grant of RP/PL/ML viz-a-viz other countries like Australia, Canada etc

2. **Review of existing procedures for granting RP/PL/ML**

- Delay in obtaining statutory clearances:

Iron Ore – Key Issues

3. **Less utilization of iron ore fines in iron and steel industry.**

4. **Iron ore resources to be further established by more exploration.**

Coal

- **In-situ Reserves** of Coal in India – **246 billion tonnes** at depth of 1200 meters (as on 1.1.2004).

Billion Tonnes

Type of Coal	Proved	Indicated	Inferred	Total
Coking	16.4	13.5	2.1	32.0
Non-Coking	75.1	102.7	35.8	213.6
Total	**91.5**	**116.2**	**37.9**	**245.6**

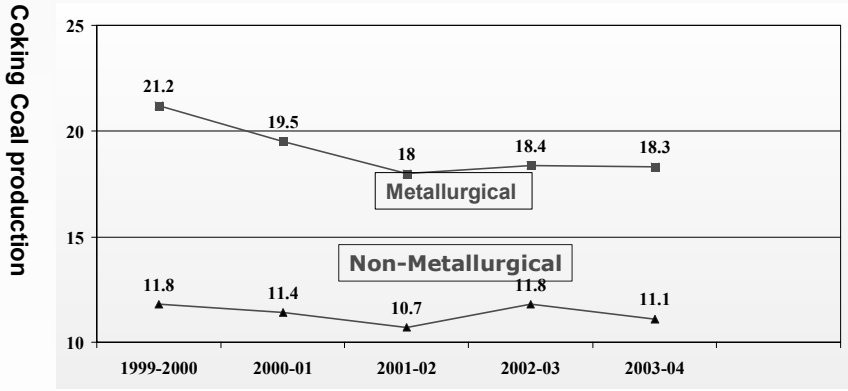
- **Majority of reserves lies in the states of Jharkhand (29%) and Orissa (25%).**

Coking Coal – Indian Scenario

- Proven Coking Coal Reserves (as on 1.1.2004) - **16.4 BT**

Category of coking coal	**Proven Reserves in BT**
Prime Coking Coal	4.6
Medium Coking Coal	11.3
Blendable/Semi-Coking	0.5
Total	16.4

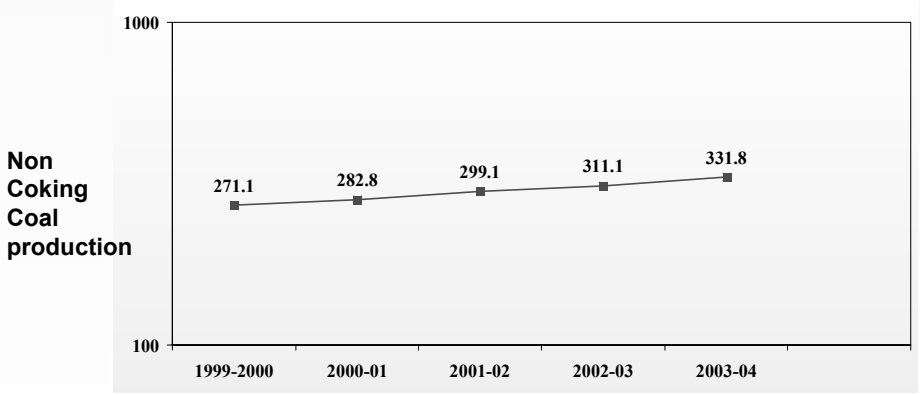
Coking Coal – Indian Scenario



- Coking Coal declined from 33 MT (99-00) to 29.4 (03-04)
- Significant proportion of coking coal not suitable for metallurgical purpose.
- Production of raw coking coal has fallen
- Washed coal availability would be much lower.

Non Coking Coal – Indian Scenario

- Proven Non Coking Coal Reserves (as on 1.1.2004) - **75.1 BT**
- Constitutes **82% of the total coal reserves in India**.



- Quantitatively, no problem faced by Indian Steel Industry.
- Qualitatively, require high grade of non-coking coal for sponge iron industry.

Coking Coal – Future Perspectives

	2019-20
➢ Requirement of coking coal	**70 MT**
➢ Likely % available from imports	**85%**

Strategies envisaged

- ➢ Allotment of new coal blocks to steel industry
- ➢ Joint Ventures and Equity participation abroad by steel and coal companies.
- ➢ Development and Adaption of technologies in synergy with natural resource base (non-coking coal).
- ➢ Investment in beneficiation of coal.

Non-Coking Coal – Future Perspectives

	2019-20
➢ Requirement of non coking coal	**26 MT**
➢ Higher grades of non coking coal will be essential	

Strategies envisaged

- ❖ Priority for steel industry and sponge iron of higher grades of non-coking coal (below 12% ash).
- ❖ Greater flexibility in
  - -sale of surplus coal.
  - -Re-allocation of existing unused linkages with CIL
- ❖ Joint Ventures of Public Sector and Private Sector for larger investments.

Coking Coal – Key Issues

- **Limited proven coking coal reserves in India.**
- **Quality parameters to match to requirements of Indian steel plants.**
- **Huge dependence on imports.**
- **Beneficiation of low volatile medium coking coal (LVMC) for metallurgical purpose.**
- **Promote prospecting and exploration activities to establish further resources at lower depth.**

Non-Coking Coal – Key Issues

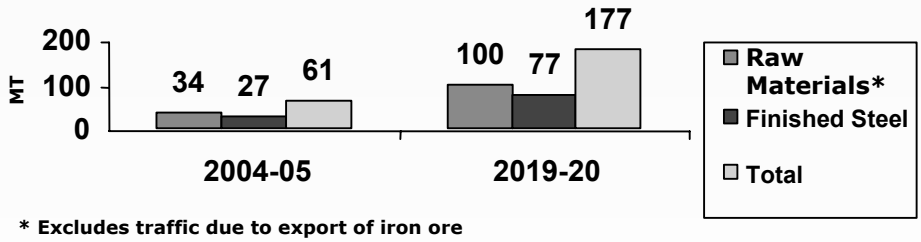
- **Inferior quality of non-coking coal with high content of ash percentage.**
- **Availability of high qrade non -coking coal for sponge iron industry.**

Transportation

- Modes of transport
  - ***-Roads***
  - ***-Railways***
  - ***-Ports***
- Facilitate transportation of Raw Materials, Finished Steel and other products.
- Every tonne of steel production involves transportation of 4 (four) tonnes of material.
- The envisaged addition of 75 million tonnes of steel production annually implies 300 million tonnes of additional traffic
- Gain competitive edge both in domestic and overseas market.

Roads: Future Perspective

Traffic handled by Road (MT)

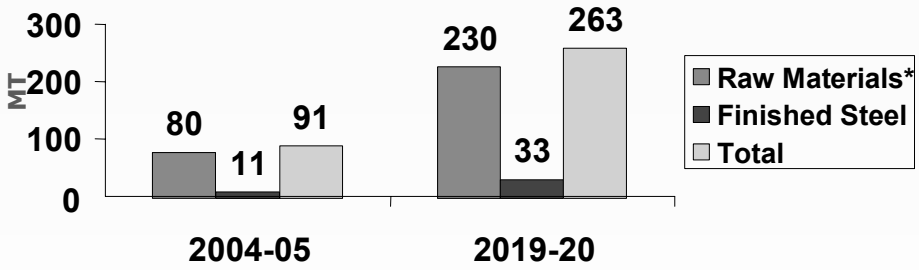


*** Excludes traffic due to export of iron ore**

- **Traffic for roads, due to steel industry by 2020, would increase by 300%(approx.).**
- **The road network needs would be expanded**
- **The steel plants and mines to be integrated with the national highway development**

Railways – Future perspective

Traffic handled by Railways (MT)



* Excludes traffic due to export of iron ore

Traffic for railways, for steel industry by 2020, would increase by 300%(approx.).The railway facilities would be expanded substantially

Participation by the steel industry in creation of railway infrastructure

Ports - Future Perspective

Port Traffic

	Bulks to be handled at ports (MT)						CAGR
	2004-05			2019-20			
	Import	Export	Total	Import	Export	Total	
Raw Materials*	19.3	78	97.3	85	100	185	4.4%
Steel	2	4	6	6	26	32	11.8%
Total	21.3	82	103.3	91	126	217	5.1%

* Including iron ore

- **Enormous dependency on port infrastructure is foreseen in the near future.**
- **Steel producers intervention in development of ports and berth facilities is needed for improving productivity, turn around time, capacity to handle larger vessels and other operational parameters of efficiency.**

Transportation - Issues

❖ **Roads**

Inadequate road linkages between mines and steel plants.

❖ **Railways**

Limited Rail linkages between mines and steel plants.

Need for high capacity wagons for improving carrying capacity.

Investments for promoting dedicated rail linkages.

❖ **Ports**

Capacity to hold larger size vessels at the ports.

Development of associated infrastructure like weighment facilities, coal holding facilities.More draft for handling larger size vessels.

Railway network needs to be strengthened for handling high capacity at ports

CONCLUSIONS

❖India - a dominant economy in 21st century.

❖Government focused approach and interventions are facilitating fast track growth.

❖Synergy in meeting iron ore and coking coal requirements

❖Iron Ore: Initiatives for simplification of procedures have begun……..

❖Joint Ventures and Equity participation abroad by steel and coal companies for augmenting supplies of coking coal.

❖Investments in beneficiation of non-coking coal as well as establishing Natural Gas as an alternative source for usage in sponge iron industry.