



## Chapter News

### Executive Committee Meeting

The seventh Executive Committee was held on 30<sup>th</sup> October 2010. The architect for the auditorium / lecture hall renovation work has been selected and the drawings, tiles, paneling materials, chairs etc. are under approval stage. The progress of MMMM 2011 and Technical Conference, which are being held during 11-14 February 2011 is satisfactory. The action has already been initiated for a dedicated website of IIM-DC.

### Global and Indian Steel Scene – A Brief Status Review

S C Suri

Life Fellow, IIM & Chairman

Technical & Publication Committee

#### Introduction

The write-up makes a brief status review of the Indian Economy and also the Global and Indian Steel scene during 2009-10.

Details of Top 10 steel producing countries are also given:

The paper also gives details of short range outlook for apparent steel consumption for the period 2009-11.

#### Indian Economy

The revised estimate for 2009-10, has projected a GDP growth of 7.4% compared to 6.7% for the previous year. The impact of bad monsoon is visible on performance of agriculture sector which has declined by 0.2%, however, strong growth of 9.3% for industry and 8.5% for services have led to the recovery of overall GDP growth.

The index of industrial production has grown at 10.4% for April to March 2009-10 compared to 2.8% in 2008-09. The growth of core infrastructure industries during this period was 5.5% against a growth of 3% in the previous year. Manufacturing sector with a growth of 10.8% and mining at 10.6% have been the growth contributions for industry. On the demand side, capital goods and consumer durables have led the recovery at 19.2% and 26% respectively.

Exports which registered a negative growth of 4.7% during 2009-10 started showing a recovery in the later part of the year while the imports declined by 8.3%. Inflation continues to be a worry with the point to point measure for March 2010 at 9.9%. There is however a degree of optimism regarding the performance of Indian economy. IMF has projected a growth of 9.4% for 2010 and 8.4% for 2011.

#### Global Steel Industry

The recovery in the global steel industry became evident from June 2009 when the crude steel production crossed 100 Million Tonnes after a gap of 8 months. The capacity utilization which had dropped from 86% in July 2008 to 58% in December 2008, recovered to 80% in February 2010. It has become stagnant around this level for last 6 months.

World Steel Association (WSA) in its latest demand forecast has projected a world wide consumption growth of 10.7% during 2010 and 5.3% in 2011. This is a strong reversal from a negative growth of 1.6% in 2008 and 6.7% decline in 2009. The emerging economies which remained positive in growth through the crises will be driving the world growth. In the major developed economies, growth will be slower with projected demand for 2011 below the

2007 level. Only Asia and Middle East showed increased production in first six months of 2010 above the corresponding period in 2007.

The sharp recovery in global steel demand is attributable to Govt. stimulus packages and inventory restocking. The risks to the growth are items of fiscal balancing, dealing with inflationary pressure and increased raw material price volatility for the steel sector.

China where consumption of finished steel reached 542 million tonnes in 2009 – a growth of 25% over the previous year – will see a lower consumption growth in subsequent years. The projected finished steel consumption for China during 2011 is 595 million tonnes. The year 2011 is projected to take the global steel consumption to a new peak of 1.3 billion tonnes.

### 10 Top Steel Producing Countries

Details are as given below:

Top 10 Steel Producing Countries (in MMT)

Rank	Country	2009	2008	% Change 2009/2008
1	China	567.8	500.3	13.5
2	Japan	87.5	118.7	-26.3
3	Russia	59.9	68.5	-12.5
4	US	58.1	91.4	-36.4
5	India	56.6	55.1	2.7
6	South Korea	48.6	53.6	-9.3
7	Germany	32.7	45.8	-28.6
8	Ukraine	29.8	37.3	-20.1
9	Brazil	26.5	33.7	-21.4
10	Turkey	25.3	26.8	-5.6

### Short Range Outlook for Apparent Steel Consumption

Details are as given below:

Short range outlook for apparent steel use, finished steel (2009-2011) by WSA

Region	Apparent Steel Use (MMT)			Growth Rates (%)		
	2009 (e)	2010 (f)	2011 (g)	2009 (e)	2010 (f)	2011 (g)
European (27)	118.4	134.6	145.2	-35.5%	13.7%	7.9%
Other Europe	23.9	27.2	30.4	-12.5%	13.5%	11.9%
C I S	35.8	39.8	43	-28.2%	11.0%	8.0%
N.A.F.T.A	80.9	99.9	107.1	-37.4%	23.5%	7.2%
Central & South America	33.6	40.4	43.1	-24.1%	20.0%	6.7%
Africa	26.4	28.7	31.3	9.6%	8.6%	9.3%
Middle East	40.7	44.7	48.4	-8.0%	10.0%	8.2%
Asia & Oceania	761.5	825.7	857.7	8.7%	8.4%	3.9%
<b>World</b>	<b>1,121.2</b>	<b>1,240.9</b>	<b>1,306.2</b>	<b>-6.7%</b>	<b>10.7%</b>	<b>5.3%</b>
China	542.4	578.7	594.9	24.8%	6.7%	2.8%
BRIC	640.9	692	720.7	17.5%	8.0%	4.1%
MENA	57.5	62.9	68.2	0.8%	9.5%	8.4%
World excl. China	578.8	662.2	711.3	-24.5%	14.4%	7.4%
World excl. BRIC	480.3	548.9	585.6	-26.8%	14.3%	6.7%

(e) estimate; (f) forecast

## Indian Steel Sector Outlook

The consumption of finished carbon steel in India in 2009-10 has been estimated at 53 million tonne – a growth of 7.8% over the previous year. While the exports at 3.4 million tonnes declined by 13%, imports at 6.7 million tonnes grew by 14%. Overall saleable carbon steel production has been estimated at 56.8 million tonnes for the year 2009-10. WSA has projected a growth of more than 13% for India during 2010 and 2011, with the overall consumption reaching 72 million tonnes by 2011.

## Conclusion

The medium to long term outlook for steel in India is robust. India has entered the steel intensive phase of economic development, with sustained investment in infrastructure, construction, urban renewal and high activity level in manufacturing. While there may be short term fluctuations in response to domestic and global concerns, the medium to long term prospects appear very bright.

## The Indian Steel Scenario: Role of Electric Steel Making

Neeraj Gupta  
Member

Technical and Publication Committee, IIM DC

We feel proud that due to sustained efforts of Established Business houses, Entrepreneurs, Government and Financial Institutions, India is on the verge of becoming world's third largest steel producer. The growth rates look impressive and have been hugging the GDP growth rates. Government of India has set a target of 110 Million tons by 2019-20. This translates into approximately 100 Kg/capita- annum that will be within the accepted range for the developing countries (50 – 250 kg/capita-annum) Indian government, since independence, has concentrated on promoting the development of different industries in the country and the steel industry has always occupied pride of place. The efforts to develop the steel industry in India started during the first five year plan but the real developments started happening from 1970s onwards. Till 1990s India had to import huge quantity of steels to meet the growing demand in the country.

Prior to 1970s all steel production in the country used the conventional BF- Open Hearth/BOF route. In 1970s, Government of India allowed a member of EAFs to produce steel in the Secondary Steel Sector by recycling the steel scrap. Between 1970s and 1985, nearly 150 EAFs were installed with a capacity of over 9 million tons in various parts of the country. It was during this period that entrepreneurs started using scrap-DRI based EAF method for the production of steel and India witnessed the emergence of the secondary steel sector. The Medium Frequency Induction Furnaces technology appeared in 1980s on the Indian Crude steel scenario and India is perhaps the only country in the World using Induction Furnaces on a large scale to manufacture secondary steel.

IFs were first installed in India to make Stainless Steel from imported Stainless Steel Scrap. In 1981-82, some entrepreneurs who were having small size Induction Furnaces and making Stainless Steel experimented for making Mild Steel from steel melting scrap. It succeeded. More firms in northern India started producing Pencil Ingots by using 500 kg to 1 ton Ifs. The power consumption was found to be about 650 KWh/tonne, which were nearly 100 units less than EAFs. Bigger size IFs were then installed first in North India and then in other states of India. By 1985-86, the technology of making Mild Steel by Induction Furnace route was

mastered by Indian Technologists. By 1988-89 period 3 ton IF became standard all over India. The chemistry of melt was adjusted by adding mill scale if opening carbon of bath was more. Good quality of steel melting scrap was used. In 1991-92, the Government license and control on steel making and rolling was removed. Then more Induction Furnaces were installed all over India. Backward and forward integration took place. The use of sponge iron made adjusting melt chemistry easier.

Although entrepreneurs initially took EAF/IF mainly to cater to the growing demand at the local level in a fast, flexible and pro active manner, however its importance has been on a continuous rise. The EAF/IF steel making today is even perceived as the growth driver for DRI units on one hand and merchant mills on the other. The primary producers, despite the three new generation steel plants (Essar Steel, Ispat Industries and JSW) would not have been in position to handle the rapidly growing demand for steel without help from this sector. Today almost 50 % Indian steel production uses this route and the share is expected to rise to 53% by 2012. Highest number of EAFs is in the western region followed by the north and the east and a small number in south, where IF dominates over EAF. This Geographical spread of these units greatly helps in making steel a more available commodity for local industry and common man. It has ensured lessening of burdening on ports and railways, thus making them free to cater to other demands. This emergence of this sector has greatly mitigated inventory carrying costs and helped ensures proper prices for the ferrous scrap.

Traditionally during the developing stage of any country the demand for the long, non alloyed products constitutes up to 70 % of the total demand for steel. The secondary steel sector has been playing a very important role and meeting almost 2/3<sup>rd</sup> of the total flat non-alloy finished steel demand. This sector is even more important in the finished alloy steel segment and caters to almost 91 % of the demand. The secondary steel sector has definitely come of age in last 40 years in India in terms of spread, capacity, production and commodity basket.

Data of JPC indicate that between 2001 and 2005 DRI units increased 10 times and therefore started contributing significantly to the India Steel production. This rapid growth has been due to a host of factors. Growth in domestic steel demand, techno-economics like relative low cost of investment, ease of setting up of a sponge iron plant, clear-cut technology of direct reduction, better quality in end-product; availability of mineral resources, abundant labor as well as professional / technical expertise and frequent problems in procurement of scrap (affordability and availability both) but definitely this would not have been possible without a matching tenacity of EAFs and Induction Furnaces based steel producers which are the end users of DRI.

Our present per capita steel consumption (46 Kg ) is much below the world average of 145 Kg and pales in comparison to Singapore (1200 kg), South Korea 860 (Kg), Taiwan( 900 kg), Germany (540 kg), USA (410 kg), Malaysia (345 kg), Thailand (150 kg) and China (160 kg) etc. In fact per capita steel consumption is just above the average level in most of Africa. Today, a per capita steel consumption of around 500 kg is considered close to the saturation point. The steel production and consumption per capita have been taken as important parameters to measure the development of a country. This is very clear that the consumption/ production of steel is to be increased at rapid rates to keep Indian growth story on track, the secondary sector has to maintain or may be increase its role. The technology, spread and market gearing would have to be increased further. The old EAFs units which have failed to upgrade and reduce power consumption are no longer in

operation. The importance of this sector can be judged by the fact that India produces 50 % by this route while the world average is only 30 %.

EAF of bigger capacities say 150 tones/charges are being planned. The recent developments in EAF technology allow reduced power consumption (so as to come at par with IF) and decrease in tap to tap time. Most of the EAFs and IFs are quality conscious and competitive and many shall go for new Panel Circuit design which may lower the power consumption to 580KWh/ton. Chemical testing laboratories and spectrometers are quite common as well as gas analysis (for N, H & O) and maintaining proper records. Some units already have BIS Certification mark. Various alloy steels (En18, En19, En24, En8, En9) are produced in huge quantities in the form of ingots (3 ½ " x 4 ½" to as much as 6 ½ " x 7 ½ "). The products of Ifs/EAFs units have been acceptable to ISRO, BHEL, NTPC, Railways, and Defense etc for crucial needs as well. Exports are there to USA and Europe etc. Some EAF/IF units are installing Ladle Refining and Concast equipment. It is expected that EAF/IF industry will have detailed manufacturing and quality assurance protocols in near future.

In short the Indian secondary steel sector has come of age and is readying itself for bigger responsibilities in future.

## CARBON DIOXIDE CAPTURE MATERIALS

Dr. Malti Goel

Member, Technical Committee, IIM, Delhi Chapter

### Introduction

The cost-effective capture of carbon dioxide (CO<sub>2</sub>) from the point sources for its reduction the atmosphere offers many challenges in materials science. Novel CO<sub>2</sub> capturing approaches using chemical, physical and biological methods are in the research stage. Appropriate materials development, which can withstand required temperature or pressure as the case may be, recyclability of materials and cost of capture are the priorities. Nano-materials and composites can be more effective in selective capture of CO<sub>2</sub> and can offer solutions for large-scale separation process. This paper reviews some of the recent industrial scale developments.

### 1. Materials for Carbon Capture

The process of carbon capture at source is not new, CO<sub>2</sub> as gas has been separated from natural gas and in other industrial processes using well developed techniques. However, when these methods are applied to power plant flue gas (containing 8-12% CO<sub>2</sub> in presence of other impurities) the cost of power generation increases immensely. In search for high adsorption capacity adsorbents for CO<sub>2</sub> at power plant environment, a series of physical sorbents, chemical solvents, membranes and physico-chemical sorbents/ solvents have been investigated for CO<sub>2</sub> capture. Desirable process parameters and materials under research are summerized in Table 1.

Table 1: Post-combustion Carbon capture processes

<u>Process</u>	<u>Solvent Materials</u>	<u>Desirable Parameters</u>
Physical Absorption	Methyl based solvents Selexol, perfluorinated compounds Polymeric sorbents	Temperature >75°C High pressure >3M Pa

Chemical Solvents	Amine based solvents like MEA, DEA, MDEA, TEA Biomimetic solvents Amino functionalized polystyrene	Temperature >40°C Intermediate Pressure
Solid Adsorbants	Zeolites Activated carbon, molecular sieves Metal organic frameworks Composite materials, hydrotalcites Lithium Silicates Nano porous materials	Ambient conditions to different range of temperatures
Mineral Carbonization	Metal oxides like CaO, MgO, Natural Silicates Alkaline and alkaline earth oxides Industrial waste	High temperature High pressure
Biological Capture	Photosynthesis Microalgae, Micro Organisms	Ambient temperature Ambient pressure

## 2.1 [Physical processes](#)

Physical capture processes are based on cryogenic cooling or solvents with low binding energy. A cryogenic cooling result in high purity CO<sub>2</sub> stream through multiple compressions and is highly energy consuming process. It has not been demonstrated on 'technical scale' for power plant flue gas. The liquid physical absorption solvents such as polyethylene glycol di-methyl ether (Selexol), fluorinated based and propylene carbonate can create an advantage of continuous process, but energy penalty and additional equipment requirement for circulating large volumes of absorbents add significantly to cost. Material selection for physical processes relies on pressure induced recovery and the cost of separation is inversely proportional to CO<sub>2</sub> sequestration.

## 2.2 [Chemical solvents](#)

A large number of chemical solvents have been investigated for carbon capture. High molecular weight amines are extensively studied and can be loaded with carbon dioxide capture. Monoethanolamine (MEA), diethanolamine (DEA), mixed amines and tertiary amines have been used. As chemical processes rely on heat induced recovery and strong bonding make them less efficient compared to physical processes, but their efficiencies are constantly improving. Polymer system amines like amine functional polystyrene perform better and can be regenerated at 60°C temperature. However, amidine polymer binding processes are not yet fully understood.

## 2.3 [Solid Adsorbents](#)

Solid adsorbents are promising as they reduce regeneration and recirculation costs and increase binding capacity for CO<sub>2</sub>. Materials such as zeolites, activated carbon, carbon molecular sieves (CMS) are being studies extensively. Binding energy estimates and thermo gravimetric analysis are used as screening tools to identify possible options. New class of nano-materials, which attracts CO<sub>2</sub> molecules in large number at 220°C, i.e. nearer the temperature at which water gas shift reaction occurs are under development. A low cost reusable material hyper-branched polyamidoamine polymer-ultrafine silica hybrid composite is suggested for capturing CO<sub>2</sub> from stack gases waste of a coal fired plant. When such a material is heated to 100-120°C, the CO<sub>2</sub> can be extracted and absorber could be used again.

## 2.4 [Mineral Carbonation](#)

Mineral carbonation process is an interesting concept which involves permanent storage of CO<sub>2</sub> in metal oxides or natural silicate minerals and hazardous solid wastes. Chemical reactions produce carbonate minerals, which are stable and can be deposited on earth. The advantages are that fixation is permanent and the potential is large as the material, either manmade or natural, is freely available. The carbonation process is however energy intensive and need more field studies on the ways to assess its technical feasibility.

## Carbon Capture Challenges in Materials research

New processes in carbon capture are based on combination of more than one process significantly reducing energy penalties associated with carbon capture. Novel materials and processes are under development.

### 3.1 [Air Capture of CO<sub>2</sub>](#)

Nanomaterials based metal-polymer frameworks such as chromium terephthalates have shown promise in capturing CO<sub>2</sub> directly from air or flue gas. A nanomaterial structure measuring 2.9 to 3.3 nm with a surface area of 6000m<sup>2</sup> is capable of absorbing about 2 mcum of gas. Such carbon capture devices mounted on towers would allow reduction to take place irrespective of where carbon emissions occur, thereby make active management of global CO<sub>2</sub>.

### 3.2 [Chilled Ammonia Process](#)

Energy major ALSTOM has proposed capture of CO<sub>2</sub> using chilled ammonia under ambient conditions from a coal based power plant. It isolates CO<sub>2</sub> in a highly concentrated, high-pressure form. The cooled flue gas flows upwards in counter current to the slurry containing a mix of dissolved and suspended ammonium carbonate and ammonium bicarbonate. More than 90% of the CO<sub>2</sub> from the flue gas is captured in the absorber. The process is energy efficient and can be used for low CO<sub>2</sub> concentrations in the flue gas.

### 3.3 [New Material Synthesis](#)

Metal-Organic Frameworks (MOFs) are versatile metal ion clusters having porous structures and are used for gas separation. Using technique of high throughput synthesis used in drug delivery systems and screening of drug molecules, Zeolite Imidazolate Framework (ZIF) as porous metal structures are shown to exhibit unusual selectivity of CO<sub>2</sub> capture from CO<sub>2</sub>/CO mixtures. A no. of metal organic framework compositions are examined in different topologies and a comparative study of gas separation properties have shown that ZIF-69 and ZIF-70. have significantly higher porosity and selectivity as much as five times compared to current commercial materials. It is estimated that 1 lt. of molecular sponge ZIF-69 can hold 83 lt. of CO<sub>2</sub> under ambient pressure and 0°C temperature.

### 3.4 [Membrane Separation](#)

Membranes science is an important area as it is are possible to develop membranes for both pre combustion and post combustion capture. Novel approaches, materials, and molecules for the abatement of carbon dioxide (CO<sub>2</sub>) at the pre-combustion stage of gasification-based power generation point sources include membranes that consist of CO<sub>2</sub>-philic ionic liquids encapsulated into a polymeric substrate for permeability and selectivity. Polymeric and ceramic membranes are under development for low temperature and high temperature applications. Materials for both hydrogen selective membrane and CO<sub>2</sub>



selective membrane are targeted. Denaturation card type polyimide membranes, asymmetric hollow yarn membranes, dendrimer membrane with CO<sub>2</sub> molecular gate function from pressurized gas are some of the recent developments.

### Applications to Industry

Globally direct and indirect CO<sub>2</sub> emissions from industry in 2005 are estimated at 345Mt, about 70 % of these are from manufacturing processes and remaining from fuel combustion. Besides improvement in energy efficiency and use of available waste heat, use of oxy fuel combustion in boilers with the application of post combustion carbon capture process can cut emissions up to 85%. Manufacturing industry in India accounted for about 40% of total energy use. Potential areas for CCS applications are discussed below.

(i) In fertilizers industry carbon dioxide capture is usually adopted for production of urea. First industrial size Carbon Di-Oxide Recovery (CDR) unit in India has come up at Aonla and Phulpur plants of Indian Farmers Fertiliser Cooperative Ltd. (IFFCO). CO<sub>2</sub> captured from the steam reformer flue gases could be captured and utilized to meet the CO<sub>2</sub> requirement for producing urea. The project has 450Mtpd capacity of CO<sub>2</sub> with a turn down capacity of 40% and employs structure packing in the flue gas water cooler and CO<sub>2</sub> absorber and is based on Mitsubishi Industries CO<sub>2</sub> recovery technology which employs KS-1 solvent.

(ii) In steel production, a large no. of solid residue are present in the steel slag generated during production through blast furnace, basic oxygen furnace or electric arc furnace route. Acidic nature and basicity of metal oxides show high strength for chemisorption of CO<sub>2</sub> leading to carbonate formation in the following grading CaO, MgO, Al<sub>2</sub>O<sub>3</sub>, Cr<sub>2</sub>O<sub>3</sub>, TiO<sub>2</sub>, MnO<sub>2</sub>, iron oxides > SiO<sub>2</sub>.

(iii) In aluminum industry, ALCOA has proposed innovative residue treatment for carbon dioxide capture that involves mixing CO<sub>2</sub> with bauxite residue from alumina production containing alkaline liquor. Mixing with CO<sub>2</sub> reduces pH and the resulting product can be beneficially used in applications such as for road base to improve soil strength.

Industry specific material requirements in some energy related carbon capture choices are provided in Table 2.

Table 2: Industry Specific Carbon Capture Material needs

<u>Capture process</u>	<u>Energy Cycle</u>	<u>Material needs</u>
H <sub>2</sub> /CO <sub>2</sub> separation	Gasification, IGCC H <sub>2</sub> /CO <sub>2</sub> separation	Silicates, Metal compounds Hydrotalcite porous membranes Material for refractory, Gas turbine
O <sub>2</sub> /CO <sub>2</sub> Cycle	Oxyfuel combustion	Membrane for air separation, Polymers, Ceramic membranes, Metal- organic frameworks
Solid adsorption	Chemical Looping	Calcium Oxides and Carbonates
Chemisorption	Iron & Steel works	Steel slag
Residue treatment	Alumina production	Bauxite waste

## Conclusions

It is noteworthy that carbon dioxide capture research worldwide has been advancing rapidly attracting prompt response from materials scientists, and the interest in field trials on industrial scale demonstration plants has been growing. Climate change is the driving force. Cost-effective carbon capture is still a challenge, worldwide. Regenerability and recyclability of the suitable materials are other issues. Novel material synthesis and processing techniques are developing. New materials and processes in microporous, nanoporous structures, polymers, composites and MOFs are under development.

In India, energy technology is being up-graded for achieving sustainable economic growth and a strategy is required for research aimed at low carbon future. Carbon capture research has just begun. In this context, a survey of CO<sub>2</sub> capture technology is needed to assess technologies capacities. Issues of CO<sub>2</sub> sequestration in some direct and indirect comparisons with other clean technology options are also envisaged. Many R&D challenges exit in Materials science. These challenges could be met through strengthening of research network and taking capacity building measures through an Institutional mechanism.

*(Excerpts from the paper presented in the TMS 2009 and Int. Conf. on Towards Global Leadership In Materials And Minerals, IIM New Delhi, November 13-14, 2008)*

## [Bulk of India's investments in US in metals, IT sectors: USIBC Report](#)

▶ Top 10 sectors	
Metals	47%
Software & IT	14%
Machinery, Equipment	6%
Leisure & entertainment	6%
Financial Services	5%
Communications	4%
Plastics	3%
Pharma	2%
Textiles	2%
Chemicals	2%
Total investment - \$5496 million 2004-09)	

(Source: Indo-US World Affairs Institute report)

With India already the third fastest growing investor in the US, it's the metals and manufacturing sectors that are clear favourites when it comes to Indian investments in the US.

During the last five years (2004-09), 90 Indian companies made 127 greenfield investments worth \$5.5 billion, of which nearly half was in the metals sector, with the software and information technology (IT) sector coming in a distant second with less than 15 per cent of the investment pie. Industrial machinery and the equipment tools sector cornered six per cent of the total investments, as was the case with the leisure and entertainment sectors, according to a report titled 'US India Business-Advancing bi-hemispheric partnership' prepared by the US India Business Council (USIBC), KPMG and Everstone Capital.

Prominent amongst the greenfield investments is the acquisition of the privately-owned Minnesota Steel plant by Essar Steel to build a new integrated steel plant at the same location, entailing investments to the tune of \$1.6 billion.

## [Top destinations](#)

The top three destination states for Indian greenfield investments were Minnesota, Virginia and Texas, in that order.

During the five-year period, a total of 239 Indian companies made 372 acquisitions in the US.

Five states that attracted the most M&A (mergers and acquisition) investments from Indian companies, accounting for 75 per cent of total deal value, were Georgia, New Jersey, Michigan, California, and Texas.

The bulk of M&A investments by India Inc. in the US were in manufacturing and other industrial sectors, rather than in services for which India is well known.

The five leading US sectors receiving M&A investments from India were namely — manufacturing, IT and IT-enabled services, biotech, chemicals and pharmaceuticals, automotive, and telecom, which accounted for 83 per cent of the total deal value

Source: The Hindu Business Line: 9.11.2010

## National News

### Government update on steel projects in India

Mr A Sai Prathap minister of state in the ministry of steel said that as per the information available in the ministry of steel, 222 MoUs have been signed by various state governments for setting up various steel units in their respective states for total capacity of approximately 276 million tonnes, out of which 65 investors have signed MoU or agreements with government of Jharkhand to set up iron and steel projects.

In a written reply in the Rajya Sabha, Mr Prathap said that steel sector in the country is deregulated and hence, the projects are being implemented by the individual investors, based upon techno commercial considerations. He informed that "There is no information available in the ministry of steel on time and cost overrun. However the status of some of the important steel projects is reviewed in the ministry of steel, on regular basis.

He said, in July 2008, ministry of steel has constituted an Inter Ministerial Group under the chairmanship of secretary steel. The group is represented by other ministries and department of the central government such as Industrial Policy & Promotion, Railways, Shipping, Road Transport & Highways, Mines, Environment & Forests, as well as the chief secretaries of the concerned state governments.

The Minister said, the main terms of reference of the IMG are to review and coordinate measures for early completion of the major steel capacities and to address various problems concerning: for infrastructure, raw material, environmental clearance and land, water resources and rehabilitation. Inter Ministerial Group is a standing coordinating body and conducts coordination meetings at regular intervals.

Based on the information furnished by the investors, the brief status of each important steel project is as under:

#### 1. Brownfield Projects

##### TATA Steel, Jamshedpur (Jharkhand) Unit

From 5 million tonnes per annum to 10 million tonnes per annum

1.8 million tonnes per annum commissioned in May 2008.

##### JSW Steel Ltd Vijaynagar (Karnataka) Unit

From 4 million tonnes per annum to 11 million tonnes per annum

2.9 million tonnes per annum commissioned in February 2009

##### Essar Steel Ltd, Hazira (Gujarat) Unit

From 4.6 million tonnes per annum to 8.5 million tonnes per annum.

##### Jindal Steel & Power Ltd Raigarh (Chhattisgarh) Unit

From 1.2 million tonnes per annum to 6 million tonnes per annum where as 1.2 million tonnes per annum commissioned in 2008.

All Brownfield projects of private sector moving as per schedule.

## 2. Greenfield Projects

### Bhushan Power & Steel Ltd at Jharsuguda (Orissa)

Proposed capacity 6 million tonnes per annum. Proposed investment INR 3500 crore and 1400 acres of land acquired and 1.2 million tonnes per annum commissioned and operational.

### Bhushan Steel Ltd Dhenkanal (Orissa)

Proposed capacity 4 million tonnes per annum. Proposed investment INR 10000 crore and 2000 acres of land acquired in Dhenkanal and Angul. 0.8 million tonnes per annum already commissioned and working.

### TATA Steel Ltd Kalinga Nagar (Orissa)

Proposed capacity 6 million tonnes per annum in two phases of 3 million tonnes per annum each. Proposed investment INR 15,400 crores. Lease deed for 3040.37 acres of land signed in 2005. However physical possession of site could not be taken due to law and order problem and violent agitation.

### Essar Steel Limited, Paradeep (Orissa)

Proposed capacity 6 million tonnes per annum in two phase of 3 million tonnes per annum each. Proposed investment is INR 22,600 crore. Land requirement is 1895 acres, out of which 271 acres physically transferred. Company is focusing on 6 million tonnes per annum pellet plant.

### JSW Steel Ltd., Medinipur (West Bengal)

Proposed capacity 10 million tonnes per annum. Out of 4454 acres of land required, 3800 acres physically transferred to the company.

### Jindal Steel & Power Ltd. (JSPL), Angul (Orissa)

Proposed capacity 6 million tonnes per annum. Proposed investment Rs. 22500 crores and 1725 acres of land in physical possession, out of total requirement of 5750 acres. 2 million tonnes per annum capacity likely to be achieved by June 2011.

### Jindal Steel & Power Ltd. (JSPL), Patratu (Jharkhand)

Proposed capacity 6 million tonnes per annum. Proposed investment INR 22000 crores. Erstwhile Bihar Alloy & Steel company acquired through Debt Recovery Tribunal Auction. 600 acres land with original company. 964 acres further acquired. Total land requirement 3114 acres.

3 million tonnes per annum likely to be commissioned by March 2012.

### POSCO India Project at Jagatsinghpur district in Orissa

Proposed capacity 12 million tonnes per annum in 3 phases of 4 million tonnes per annum each. Proposed investment USD 12 Billion (approx INR 51000 crores). MoU signed in June 2005. Total land required 4004 acres for the project site (Government 3566 acres and private 438 acres). Administrative approval has been accorded for transfer of Ac 437.69 of private land. Forest Diversion Clearance (Stage - II) was communicated by Ministry of Environment and Forest on December 29th 2009, for diversion of 1253.225 Hectares of forest land.

However, based on reporting of violations of 'Scheduled Tribes and other Traditional Forests Dwellers Act 2006, Ministry of Environment and Forest government of India on 05.08.2010 has advised the State Government to suspend all works at POSCO site, until further advice in this regard.

### ArcelorMittal India Ltd - Orissa Greenfield Project

Proposed capacity 12 million tones per annum in two phases of 6 million tones per annum each. Project investment INR 40000 Crores. Total land required 7752 acres identified in village Patna, district Keonjhar Land under scheduled areas. Consent of Gram Sabha being obtained.

### ArcelorMittal India Ltd - Jharkhand Greenfield Project

Proposed capacity 12 million tones per annum in two phases of 6 million tones per annum each. Project investment 40000 Crores. Total land requirement 8845 acres. Already identified in Topra - Kamdara in Ranchi area. Land under scheduled area. Law and orders situation not allowing company for further progress.

Source: Steel Guru

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### News about Members

Shri S C Suri, Vice Chairman, IIM DC and Life Fellow of IIM has been conferred "IIM CERTIFICATE OF HONOUR" for the year 2010 by IIM Chapter Relations Committee as a gesture of recognizing his outstanding chapter office bearer for his devotion, contributions to technical activities, membership development etc.

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Shri L Pugazhenty, Past President, IIM (2008-09) addressed the MBA and BBA students of Integrated Management College, New Delhi on 22 October 2010 on "Indian Metals Industry - Emerging Career Opportunities". In his address, he highlighted the massive investments in our steel as well as non ferrous metals sectors, overseas acquisitions of mines and manufacturing units and thus the employment potential that is unfolding in the metals sector. About 100 students interacted during the meeting.

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Shri Kuldip Singh, Past Honorary Secretary of IIM Delhi Chapter has been conferred "Life Time Achievement Award" instituted by Interiors Architects Designer's Engineer Body on 24<sup>th</sup> October 2010 in New Delhi.

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### Obituary

Two minutes silence was observed in the Executive Committee Meeting held on 30.10.2010 about the fond memories of Dr. P L Agrawal, Past President IIM and Ex. Chairman, SAIL, who left for his heavenly abode on 1<sup>st</sup> August 2010.

Shrimati Krishna Kanta Kashiva, the mother of our member Shri Deependra Kashiva left for her heavenly abode on 10<sup>th</sup> November at the age of 93 years. Our heart-felt condolences to the bereaved family of Shri Kashiva.

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**8<sup>th</sup> International Exhibition & Conference on  
"INDIAN METALS INDUSTRY – SHAPING THE NEXT DECADE"**

For Conference contact: iim.delhi@gmail.com

For Exhibition contact: shailendra.kumar@ite-india.com; pallavi.roy@ite-india.com

India of today, one of the fastest growing economies in the world, with consistent and impressive GDP growths for the last few years and the predictions by renowned policy planners & economists is that India may surpass the growth rate of China soon. Thus the 'Asian Drama' has well begun.



Fri 11th – Mon 14th February, 2011  
Pragati Maidan, New Delhi, India

With massive investments in infrastructure, construction, power, telecom, automobiles, manufacturing, nuclear energy etc., the demand for steel, non ferrous metals, nuclear materials and emerging nano materials etc., is likely to see quantum jump growths in the coming years. And the forthcoming Conference will deliberate on the current and future demand, supply, production capacities, foreign trade, raw material constraints, Infrastructural bottlenecks, R&D, Sustainable Development, new materials and technologies etc., in the areas of metals, minerals and materials engineering. Conference will come out with appropriate actions plans and strategies to make India a global economic power house. The Conference will witness very thought-provoking and informative presentations by global and Indian experts, CEOs, policy planners and top notch scientists. The Panel Discussion Session is expected to come out with a set of concrete, blue print and action plan, so that India truly shapes the next decade and shows the way forward in metals and materials disciplines.

### **ABOUT THE CONFERENCE**

The high level International Conference will be organized by The Indian Institute of Metals, Delhi Chapter. Eminent speakers from India and overseas will present technical papers. The conference will provide an excellent opportunity to interact with leading luminaries of the industry, academia, research bodies including "who's who" from the host country, India.

### **CONFERENCE THEME**

The conference "Indian Metals Industry – Shaping the Next Decade" will have the following technical sessions:

- ❖ Inaugural Session
- ❖ Raw Materials Security for Metal Industry
- ❖ Current and Futuristic Metal Technologies
- ❖ Value added Products for Strategic Applications
- ❖ Material Science Technologies including Nano-Structures
- ❖ Environmental Challenges and Nuclear Fuels
- ❖ Infrastructural Challenges
- ❖ Valedictory Session

### **REGISTRATION FEES**

The applicable registration fees for participants are:

<b>Registration Fees</b>	<b>Per Delegate*</b>
IIM Members	Rs. 2,500
Non Members, IIM	Rs. 5,000
Retired IIM Members/Academia	Rs. 2,500
Student Members/Spouses	Rs. 1,000
Overseas delegates	USD 150

\* Plus Service Tax @ 10.30% as per Govt. Rules

Cheque/demand draft may be drawn in favour of "The Indian Institute of Metals-Delhi Chapter", payable at New Delhi.