FICCI-INSDAG Seminar on
`Steel – The Preferred Choice of Material for Infrastructure Construction'
18-19 February, 2011 - New Delhi

Speech by Mr. C.S. Verma, Chairman, SAIL

As we are aware, steel in integral to the growth of any economy and is one of measures for assessing the prosperity and economic development of a nation. The demand elasticity of steel is more than 1 for most developing countries which implies that if a GDP growth of 8% to 10% is to be achieved, steel industry would grow higher than that percentage.

We are aware of the story of China where massive economic growth over the last decade is closely linked to its steel production which got increased from 127 MT in the year 2000 to 627 MT in the year 2010.

Steel industry has undergone huge changes in the new millennium.

The global crude steel production which was 190 MT in the year 1950 has crossed 1.4 billion tonne in the year 2010.

One of the most important features of this development in the Global Steel Industry was the shifting of the equilibrium, from the predominant regions in North America and Europe to Asia, primarily led by China and followed by India.

Share in World Crude Steel Production

	1990	2000	2010
China	9%	15%	44%
India	2%	3%	5%

Indian Steel Industry - the opportunities ahead

The Indian Steel Industry has also grown multi-folds, from a production of about 2 million tonnes of crude steel in 1950-51 to nearly 67 million tonnes in 2010. From producing routine grades earlier, emphasis is now on production of value added and special grade products, many of them being for specific purposes like earthquake resistance, corrosion resistance etc.

The per capita consumption of steel in India has increased from 29 kg. in 2000 to 49 Kg. in 2010. However, the per capita consumption in rural areas is just 2 Kg. This offers a vast potential for increasing steel production in India. In other countries, the consumption levels are much higher, for example, 936 kg in South Korea, 419 kg in Japan, 405 kg in China, 187 kg in USA etc. The world average is about 180 kg.

Indian economy has recorded an impressive GDP growth in the last few years. This financial year also, it is expected to be around 8.5%.

The expected gross domestic savings at 35.7% and Gross Domestic Capital formation at 38% (as % of GDP) are also positive indicators.

The projected investment in infrastructure in the 11th five year plan is US$514 billion which is 9% of GDP as against 5% of GDP in the 10th five year plan.

Of this 514 billion dollars of investment in infrastructure,

- 32% will be in Power sector
- 15% will be in Roads sector
- 13% will be in Telecommunication
- 13% will be in Railways & MRTS
- 12% will be in Irrigation
- 7% will be in Water Supply
- 4% will be in Ports
- 2% will be in Airports

In the 12th five year plant, the spending on infrastructure shall be of the order of US$ 1 trillion which will be 10% of the GDP

Approximately 125 MT of steel will be needed to achieve these investments in Infrastructure in 11th five year plan. Assuming even if 75% of these Investments materialize, then about 100 MT of steel is needed on incremental basis just for infrastructure. Therefore, large potential for steel consumption is expected in India.

Based on these parameters and the large potential, especially in the rural sector, the steel market in India is expected to reach a level of 110 MT by 2012, 180 MT by 2020 and about 500 MT by 2050.

Major Challenges - have to be overcome to double steel production

While the world remains confident of India's consumption potential, there is a concern about the major challenges and the capacity breakers the industry is facing today. These pertain to:

- Issues related to Land Acquisition
- Security of Raw Materials
    - **Iron Ore**: India has the lowest per capita reserves of iron ore of about 23 tonnes against the highest of Ukraine of 1417 tonnes.
    - **Coking coal**:

- Only 2% of the coal found in India is Prime Coking coal ideal for steel making.
- Out of the total coking coal reserves, around 20% lies below 600 mts of depth, posing difficulty in mining.
- Indian coking coal suffers from high ash content and low calorific value.
- Huge quantities of coking coal reserves are blocked by large and small towns, mine fires and water drainage from old abandoned mines.

- **Logistic challenges**: Every tonne of steel produced requires transportation of four tones of material. This implies that closer to 200 million tonnes of steel production by FY'20 would require transportation of 800 million tones to material. This indicates the need for huge investments in key infrastructure including railways, ports and roads.

- **Low R&D: Indian steel producers are spending much less on R&D as compared to the international norms**. It is hardly about 0.2% of the turnover. World best is 2% of the turnover.

  The future orientation of R&D activity in steel sector should focus on:

  - Beneficiation and quality improvement of low grade iron ores (55% to 65% Fe).
  - Pelletisation of Indian Iron Ores/ concentrates
  - Use of inferior coking coals in blend.
  - Use of alternate fuels in blast furnaces

    - Stabilization of pulverized coal and coal tar injection
    - Natural gas/ coal bed methane gas injection

- **Environmental Challenges**: Manufacturing industry as a whole contributes about 21% of the total Green House emission of the world. Of this, 21%, 15% is contributed by the steel industry of the world which really means that about 3 to 4% of the total CO_2 emissions of the world is contributed by the steel industry. Indian steel industry has to be geared up to make investments in this area. Indian steel industry is generating 1.5 to 2 times more Green House Gases (GHG) than global standards which has to be corrected.

- Overall, the construction sector is the biggest user of steel in India. Within the construction sector, the residential segment accounts for nearly half the demand. Transportation, capital goods and infrastructure are the other large users of the commodity.

Sector-wise steel consumption

Sector	Share
Residential	22%

Non-residential	9%
Industrial	6%
Infrastructure	13%
Construction	**50%**
Passenger cars	7%
Trucks	6%
Aviation, shipping & rail	3%
Transport	**16%**
Machinery	14%
Metal products	14%
Domestic appliances	3%
Electrical equipment	3%
Capital and consumer goods	**34%**

Source: Equitymaster Research

- The steel - cement ratio in UK is around 1.5; 1.19 in the USA; in Germany around 1.1 and 1.07 in Japan, whereas in India it is presently around 0.3 only. Therefore, there is need to further improve the steel (cement ratio in line with that achieved in the developed countries.

- To meet the new challenges, already a lot of efforts are being made particularly with respect to development of new varieties of steel for the construction industry like:

    - Fire Resistant Structural Steel
    - High Weldability Steels
    - Special type of wide flanged beams
    - Extra heavy plates
    - Vibration damping sheets
    - Pre coated/ laminated steel sheets
    - Micro-alloyed hot rolled HSLA (High Strength Low Alloy) steels
    - Weather resistant steels.

- The concept of prefab structures is becoming popular in India. The prefab steel or the pre-engineered building industry consists of building systems, modular buildings and panelized pre-cast concrete systems.

    - Prefab structures are quite economical and offer cost savings of upto 30% in construction, 8% in freight and 15% in energy over conventional construction. Besides, it is 30-40% faster than concrete and masonry construction.
    - This sector is expected to reach to a level of Rs. 25 billion in 2011. If the low cost housing of about 2 million units is also taken into account, the market size may reach somewhere near Rs. 3 trillion.

- In most of the developed countries as well as China, majority of the construction is taking place from prefabricated structures including multi-storeyed high-rise buildings.

Recyclability of steel is one of the vital characteristics which make it a popular material for construction. Steel can be recycled again and again without loss of quality. This differentiates steel from many other materials where there is a loss in performance at each recycling.

Yet steel, as a material, is one of the most versatile item on earth and contributes to sustainability on a grand scale. Every year, about **one- third of the new steel produced worldwide comes from the recycled steel.**

Infinite recycling means that steel is perfectly aligned to meet the continuing and increasingly demanding requirements of the 21st century.

Therefore, we only need a firm commitment to build a sustainable steel industry on the above lines which cannot be implemented by force but has to be voluntary.

I wish the conference organized by FICCI along INSDAG all success. I am confident that the deliberations in the Conference will help the industry to charter a road map towards higher penetration of steel in the construction industry