

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

**Keynote Address by Secretary (Steel)**

I am happy to address the august gathering of distinguished participants of the Conference on 'Steel Intensive Applications' jointly organised by Federation of Indian Chamber of Commerce and Industry (FICCI) and Institute of Steel Development and Growth (INSDAG). Conferences of such nature, concerning steel application areas are really a welcome gesture and I must congratulate the organisers for their initiative.

Steel is a highly engineered material serving as a backbone of the modern society. It has enormous application in people's everyday life, be it in household applications, personal and public transportations, infrastructure or industrial applications. Steel is truly one of the most versatile materials, which man has discovered. It can be given the desired shape to meet the specific needs of end-users. It has the strength, durability and flexibility to suit an infinite number of applications. Another strong characteristic of steel is that it is continuously evolving in quality, shapes and applications. Steel can be re-used or recycled endlessly. Repeated recycling of steel does not lead to any degradation of properties or performance. Steel is an environment friendly material.

Construction sector is one of the largest consumers of steel. A rough analysis of global steel consumption shows that around 42 per cent of world steel production goes to the construction sector. Share of steel consumption in the construction sector is higher in developing economics than in the developed ones. Chinese construction sector accounts for 55 percent of the total finished steel consumption in that country. In India, nearly 50% of finished steel consumption is in the construction sector. Infrastructure sector, in India, has picked up in a big way with Government and Private Investments. There is thus, a vast potential for increasing steel consumption in construction in the country. It is apparent that growth in power, roads, railways, ports, civil aviation, petrochemicals, irrigation and communication will require huge amount of steel. The increasing rate of urbanisation in the country is indicative of growing construction activities, resulting in increased steel consumption. In India some of the positive factors like high investment in infrastructure, lower interest on housing loans and FDI in real estate are expected to boost up construction activities in the medium term, ultimately resulting into higher steel consumption in construction.

Other than volume steel use in construction what is of importance is increasing the intensity of steel application in construction. Building a good infrastructure is the key to economic, industrial and social development. While making plans for

modern infrastructure development, it is important to remember that quality of infrastructure is as important as quantity. Higher steel intensity in construction improves the quality, safety and durability of infrastructure as quality and durability comes from steel, which forms the core of the structure. Speed execution of steel intensive structure is also much higher than the conventional RCC based structures.

In developed and fast developing countries the share of steel use in construction is much higher due to predominant share of steel and steel-concrete composite structures. A relevant factor is low steel-cement ratio in construction while in India this ratio is nearly 0.3, in many developed countries the ratio is more than 1.0 and in UK it is as high as 1.5. Since the strength to weight ratio of steel is very high, use of more and more steel in the structure reduces the self-weight of the structure. Eye-catching aesthetics, environment friendly structure, fast track construction, higher durability and full safety against calamities like earthquake and cyclones are valid reasons for adoption of steel intensive structures. This should be the preferred choice for Indian Architects and Structural Engineers. But the change of this mindset is taking too long a time.

In India, steel intensive construction in modern form, particularly in urban India has begun in a limited way. Pre-engineered buildings are finding some place in Indian construction and some landmark buildings using composite construction are coming up. However, these are not enough. Technology, equipment and aesthetics are still lagging behind in most of the Indian structures. Construction industry centres around four major partners which comprise of the employers, contractors, engineers/ architects and construction workers. Cities and towns are fast emerging as centres of growth. It is estimated that 2025 more than 50% of the country's population will live in cities and towns compared to 28% as of now. This will generate enormous demand for infrastructure facilities due to urbanisation. Strengthening of water supply, sanitation, water transportation and housing will become essential.

We are standing at the threshold of the take off stage of our economy. The annual percentage growth in construction is expected to be around 15% currently. To move the engine of growth of our economy, housing for all and supporting urban and rural infrastructure has to be built. Construction Managers have to provide leadership and direction during construction and have to lead the team of owners, architects, engineers, construction agencies, equipment and material supplier, Government agencies and human resources to develop the best and most economical construction programmes. The construction industry must improve upon the conventional practices and adopt new construction technology to reduce the time of construction and improve the durability and elegance of future structures. Construction managers and decision makers should awaken and improve the quality of infrastructure by adopting new construction technologies. Steel intensive construction will be durable and speed up the pace of construction.

The architect's role in infrastructure development is quite important. They can help the construction industry by setting up appropriate standards. They can play an important role in improving the durability of the structure and its functional behaviour as well as in improving the speed of construction. Since they are the basic decision makers with respect to construction, they affect the construction methodology in a big way. The Indian architects have to make more efforts in adopting steel intensive structures, which are light, durable and elegant. Due to the use of conventional technologies construction time in India is very long compared to developed and new developing countries.

The Institute of Steel Development and Growth (INSDAG) is doing a commendable job in increasing awareness on steel intensive options. The Institute has been promoted by the Ministry of Steel and major steel producers of India and is having a large membership base of structural engineers, consultants, architects and academicians. The Institute has taken several steps for educating architects and structural engineers in the country for making them motivated and competent enough to opt for steel intensive structures with the increasing infrastructure development and faster rate of economic growth. Steel must get a much stronger foothold as steel intensive structures can be built much fast and can be built to last longer.

I would like to thank INSDAG & FICCI, the organisers in organising such types of programmes, where the use of steel in various applications can be highlighted. I wish the programme success.