

## Sustainable and Green Construction Technologies in India

**Sanjay Kumar Nirmal**

*Secretary General, Indian Roads Congress, INDIA*

Contact: [secygen.irc@gov.in](mailto:secygen.irc@gov.in)

### Abstract

India has taken up an ambitious Road Development Programme thereby planning Construction/Up-gradation of about 50000 km of National Highways in the next five years. This implies huge construction work in the road sector. As transport sector is responsible for about 14% of total energy related CO<sub>2</sub> emissions and share of road transport in CO<sub>2</sub> emissions is about 88% in India, there is huge scope to reduce CO<sub>2</sub> emissions generated during construction by deploying low carbon measures. With the global focus shifting to low carbon transport, the highways sector offers a significant opportunity of reducing the carbon footprint of road transport. Mainstreaming of Sustainable and green construction technology included various measures including preparation of National Standards and Guidelines for construction materials & methods and developing green rating systems for Indian road sectors. Indian Roads Congress is an apex body of highway engineers with the mandate to prepare National Standards for entire road sector in India. Recently, IRC has prepared several codes and guidelines for promoting sustainable and green construction technologies. This paper discusses recent IRC codes on Sustainable and green solutions for reducing the carbon footprints of construction and maintenance works in road sector. The paper also discusses the challenges in the use of green technology in India and their possible solutions. The green rating system for Indian roads will also be useful in incentivizing various green technologies/materials.

**Keywords:** -Sustainable, carbon footprint, Life Cycle Assessment, Climate change, GHG emission. Recycling.

### 1. Introduction

**1.1** India has taken up an ambitious Road Development Programme thereby planning Construction/Up-gradation of about 50000 km of National Highways in the next five years. This implies huge construction work in the road sector. Many a times, this development comes at the cost of disturbance to ecological balance. Loss of vegetation is an inevitable consequence of road development. Further, all stages of highway project i.e., construction, maintenance and operation require energy intensive inputs which are derived from burning of fossil fuels. This results in the release of massive amounts of greenhouse gases and other ambient air

pollutants. The share of road transport in overall CO<sub>2</sub> emissions of India stands at 12.32 %(approximately 457 million tonnes) which is expected to reach 966 million tons by 2030. Within the road transport, emissions from National Highways are significantly higher and presently stands at 140 million tonnes.

Transport sector is one of the major contributors to India's greenhouse gas (GHG) emissions and is responsible for 14 percent of India's total energy-related CO<sub>2</sub> emissions. Within transport, the share of road transport in CO<sub>2</sub> emissions stood at 88 percent. These large-scale emissions endanger the environment sustainability and is closely linked with global warming and climate change challenges.