

Net Zero implementation on transportation projects

Sachin, Ashwinikumar Thakur

WS Atkins India Pvt Ltd, Gurgaon, India

Contact: ashwinikumar.thakur@atkinsglobal.com

Abstract

Net zero has been a hot topic in discussion in the current timeline. Since the effect of global warming impacting the coastal zones, lot of attention have been garnered by Net Zero. The carbon emission has increased significantly from 8 billion tons CO₂ per year to almost 40 billion tons CO₂ per year.

Global atmospheric carbon concentration has gone up rapidly from 290 PPM to 370 PPM in 2000 and finally up to 413 PPM in 2020. The rate of CO₂ concentration has increased from 0.61 PPM per year to 2.15 PPM per year now.

The current global warming is alarming at the rate of 0.18 °C per year which has caused significant reduction of polar ice and increase in sea levels.

Atkins - Member of SNC Lavalin group have developed an extensive system to reduce carbon footprint and to approach Net Zero in transportation and infrastructure projects based on PAS 2080 framework. It starts with building nothing to build efficient. A lot of our work focuses on capacity enhancement of existing structures where we have been able to reduce material and labour use to make it future proof and take us towards the Net Zero goal.

This paper will discuss few case studies on transportation projects where carbon reduction has been achieved.

Keywords: PAS 2080: rehabilitation; bridges; rails, assessment; transportation.

1 Introduction

Carbon dioxide (CO₂) is the most common component of the earth's atmosphere after nitrogen, oxygen, and argon when water vapour is disregarded. The amount of CO₂ in the atmosphere has increased significantly and rapidly in recent years. It has gone from 290 ppm in year 1870 to 370 ppm in year 2000 with annual mean growth rate of almost 0.61 ppm. Since year 2000, the growth has been even more rapid and reaching to 413 ppm in year 2020 with an annual mean increase of 2.15 ppm. The steep increase in atmospheric CO₂ concentration is alarming, and it has been attributed as a major factor in the increase in the earth's temperature. In other words, CO₂ must be considered the most important greenhouse gas, as it has the largest volume and is the fastest

increasing greenhouse gas known today. Carbon concentration in atmosphere is given in figure 1.

In order to avoid the potentially devastating consequences of global warming and climate change, the CO₂ emissions into the atmosphere caused by human activities should be reduced considerably. There are several suggestions to achieve this reduction, but nothing has turned mainstream till now.

The Paris Agreement was a legally binding international treaty on climate change. It was adopted by 196 Parties at the UN Climate Change Conference (COP21) in Paris, France, on 12 December 2015. It entered into force on 4 November 2016. Its overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue