

Pollution Control

August 23-24, 2021 | webinar

Volume: 09

Applying 3D-eco routing model to reduce environmental footprint of road transports in Addis Ababa City

Seifu Woldemichael Busho

Dire Dawa University, Ethiopia

Background: Climate change has emerged as a very important threat to economic development, atmosphere, and public health. One of the driving factors behind global climate change is road transportation. Therefore, the sector needs to take on the responsibility of addressing its negative impacts on the environment. This study seeks to find ways of mitigating the impacts of climate change. It pays particular attention to greenhouse gas emissions and other selected air pollutants based on a new navigation concept called eco-route, a 3D eco-routing transportation planning method that can help reduce the environmental footprints of Road transports in Addis Ababa city for distribution vehicles. The model applied in this study considered the road gradient, varying velocity or speed of vehicles, and weight of vehicles to evaluate gradient effects on consumption of fuel, CO₂ and also other air pollutants emission. The model is applied in three scenarios within different vehicle weight ranges and three different cases in Addis Ababa.

Result: The finds of the study imply the eco-routes emission reduction potential from fuel and CO₂ in the tested scenarios is up to 39.81% while other air pollutants account for 25.65%. The results prove that eco routes have the ability of reducing Fuel consumption, CO₂ and other air pollutant emission rate.

Conclusions: Eco routes have the potential to provide sustainable transportation opportunities for Addis Ababa city. This study recommends that eco-routes should be used instead of shortest and fastest routes where significant road gradients exist.

Biography

Seifu Woldemichael Busho has completed his MSc at the age of 27 years from Addis Ababa University School of Civil and Environmental Engineering . He is Lecturer in Dire Dawa University. He has published 2 papers in reputed journals.