

Decarbonizing the Transportation Sector

Anjaneyulu Krothapalli*
Chief Technology Officer
etrio Automobiles Ltd., India (etrio.in)

Along with other greenhouse gases, such as nitrous oxide and methane, CO₂ is important in sustaining a habitable temperature for the planet. Since the Industrial Revolution, however, energy-driven consumption of fossil fuels has led to a rapid increase in CO₂ emissions, disrupting the global carbon cycle and leading to a planetary warming altering the climate in a disconcerting way. The transportation sector is responsible for a significant part of the CO₂ emissions and as such its mitigation has been the main impetus for Electric Vehicle (EV) resurgence and popularity. However, the current approach of using Lithium Ion battery technologies as energy storage may not be sustainable. A sustainable Electric Vehicle paradigm is proposed using hydrogen as energy storage and/or fuel for all transportation needs. The economics and efficiency of hydrogen production using renewable electricity, its distributed delivery system and utilization are discussed. A particular example presented is the Indian scenario, where circular economic ideas are more appropriate for climate change mitigation, especially in the transportation sector.

* Don Fuqua Eminent Scholar Professor Emeritus, Florida State University, Tallahassee, FL.