

# Disadvantage of Electric Vehicles

Trinetra Pankaj Bhonde, Tushar Sukram Patil, Lakshya Vilas Dhagate, Divesh Kalpesh Chordiya

Department of Mechanical Engineering  
Guru Gobind Singh Polytechnic, Nashik

**Abstract:** *Electric vehicles (EVs) offer environmental benefits but face challenges hindering widespread adoption. Key obstacles include limited range, long charging times, and high upfront costs, largely due to battery technology limitations. Charging infrastructure is also underdeveloped, creating a "chicken-and-egg" problem. Auxiliary loads like air conditioning further reduce range. Strategies to overcome these challenges include expanding fast-charging infrastructure, improving battery technology (energy density, cost, charging speed), and developing smart charging solutions. Research into advanced battery materials like graphene and innovative thermal management systems is crucial. Government incentives and public-private partnerships are essential for building robust charging networks and driving EV adoption. Addressing these issues will pave the way for EVs to become a dominant force in sustainable transportation.*

**Keywords:** Electric Vehicles (EVs), Charging Infrastructure, Range Anxiety, Sustainability, Innovation, Graphene, Battery Technology