

## Emission Control and Sustainability: Evaluating Bharat Stage - 6 (BS6) Technology in Indian Automotive Industry

**Puneet Bansal**

Asia Pacific International College, 655 Collins Street, Docklands, Melbourne

**Parvesh Saini \***

Asia Pacific International College, 655 Collins Street, Docklands, Melbourne

Higher Education Leadership Institute, 655 Collins Street, Docklands, Melbourne

**Jahangir Alam**

Asia Pacific International College, 655 Collins Street, Docklands, Melbourne

**Fizza Sabir**

Higher Education Leadership Institute, 655 Collins Street, Docklands, Melbourne

### Abstract

India's Bharat Stage 6 (BS6) standards represent a step-change in vehicular emission control, mandating ultra-low-sulphur fuels and advanced after-treatment (DPF, SCR) to curb NO<sub>x</sub> and particulate emissions. This paper evaluates BS6 through four lenses—vehicle performance and fuel efficiency, cost and pricing implications, consumer perception, and environmental outcomes—framed by Diffusion of Innovations. We conducted a structured survey (N=50) comprising five binary items to gauge awareness and perceived impacts; responses were summarized using proportions with confidence intervals. Results indicate broad consumer recognition of BS6 benefits: 70% report improved fuel efficiency, 90% perceive performance gains over BS4, and 90% believe BS6 contributes to cleaner air. At the same time, 80% observe higher vehicle prices and 70% acknowledge costlier, more sophisticated components, pointing to manufacturer and lifecycle-cost pressures. Synthesis with prior literature highlights enabling factors (fuel quality, after-treatment reliability) and implementation challenges (service capability, real-world emissions monitoring, and legacy vehicle fleets). We discuss policy and industry implications, including incremental ICE efficiency, hybridization as a bridge to electrification, and robust compliance/diagnostics. The study provides a concise, consumer-level view of BS6 adoption and outlines practical pathways to strengthen environmental performance while managing affordability and operability.

### Keywords

Bharat Stage 6 (BS6), Emission Standards, Automotive India, Consumer Perception, Vehicle Performance, Cost Implications, Environmental Outcomes.