

GREEN VEHICLE TECHNOLOGIES

Topic #4. Policy and Regulation in Green Vehicle Technologies

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Sustainable Transportation within the Framework of Green Deal - SPHERE

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Agenda

- Overview of Global Policies, EV Incentives, Emission Standards, and International Climate Goals
- Overview of Global Green Vehicle Policies
- Incentives and Subsidies for EV Adoption
- Global Examples of EV Incentives
- Vehicle Emission Standards
- International Agreements and Climate Goals
- Challenges in Policy Implementation
- Future Policy Trends
- Conclusion

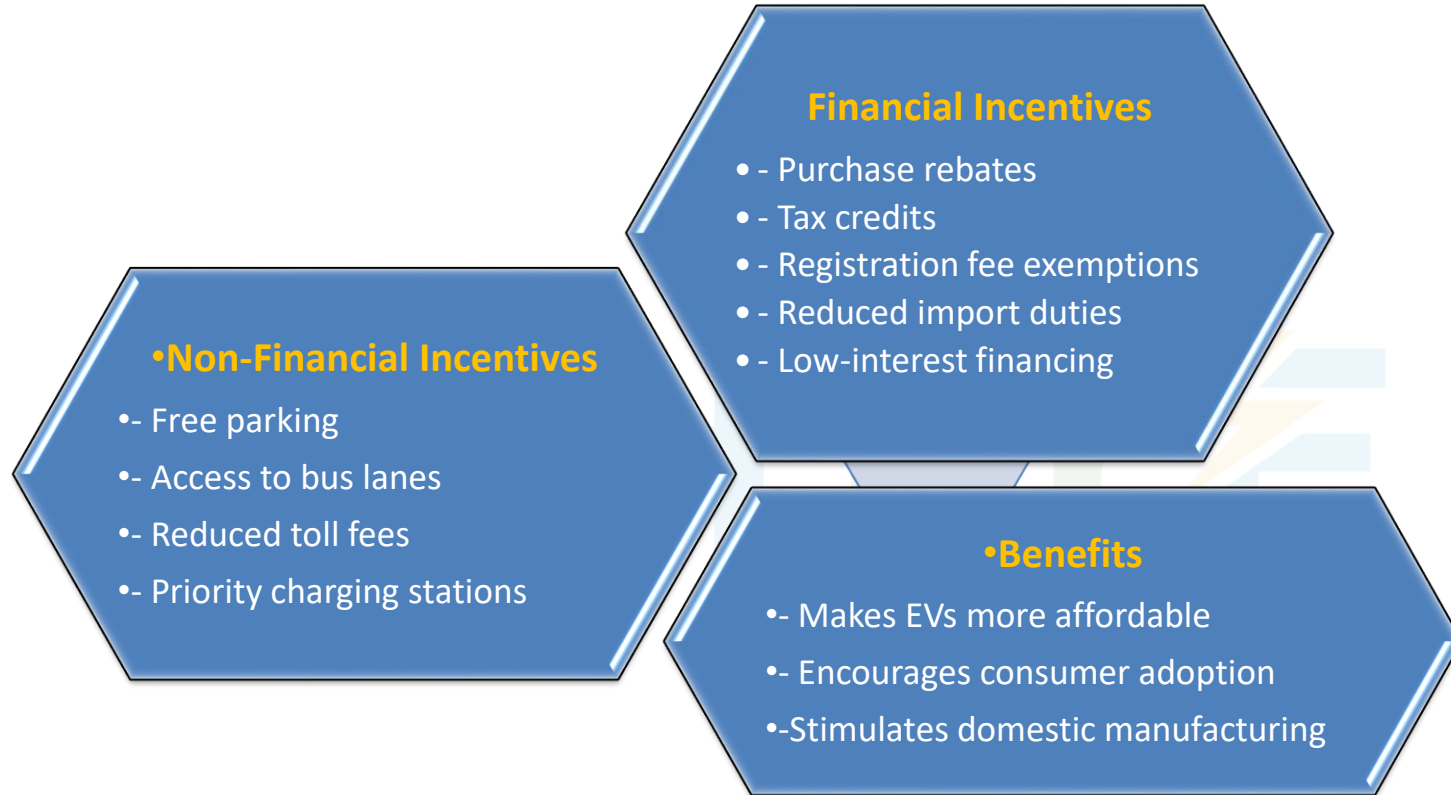
Why Policies Matter

- Governments play a crucial role in accelerating the transition to sustainable transportation by:
 - Reducing greenhouse gas emissions
 - Improving urban air quality
 - Promoting energy security
 - Supporting technological innovation
 - Encouraging investment in green mobility
- Without supportive policies, the adoption of green vehicle technologies would be much slower.

Overview of Global Green Vehicle Policies

Policy Type	Purpose
Fuel Economy Standards	Improve vehicle efficiency
Zero Emission Vehicle (ZEV) Mandates	Increase EV sales
Carbon Pricing	Reduce fossil fuel use
EV Purchase Incentives	Lower purchase costs
Charging Infrastructure Programs	Expand charging access

Incentives and Subsidies for EV Adoption



Global Examples of EV Incentives

Country	Main Incentives
Norway	VAT exemption, road tax exemption, toll reductions
China	Purchase subsidies, charging infrastructure support
United States	Federal tax credits, state rebates
Germany	Purchase bonuses, tax exemptions
India	FAME Scheme for EV incentives
Uzbekistan	100% tax for ICE vehicles, 0% for EV and 30% for HEV

Countries with strong incentives generally have higher EV market penetration (example Norway with more than 95% of EV market share).

Inflation Reduction Act (IRA), Incentivized company-car schemes & green fleet depreciation

Vehicle Emission Standards

Emission standards limit pollutants emitted by vehicles.

•Major Pollutants

- Carbon dioxide (CO₂)
- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Hydrocarbons (HC)
- Particulate Matter (PM)

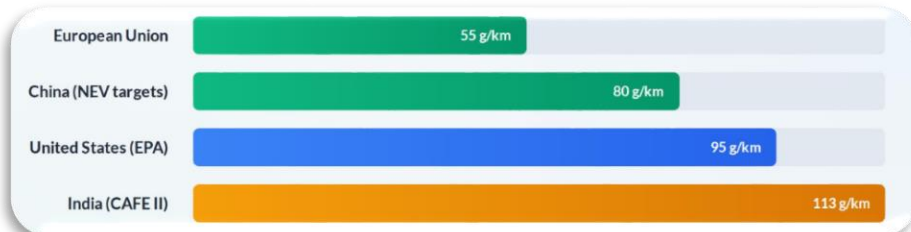
Major Standards

- - Euro 6 and Euro 7 (Europe)
- - Corporate average fuel economy (CAFE)
- - EPA Standards (United States)
- - China VI
- - Bharat Stage VI (India)

•Impact

- - Cleaner air
- - Improved fuel efficiency
- - Faster adoption of electric vehicles

Comparative Fleet CO2 Targets by 2030



International Agreements and Climate Goals



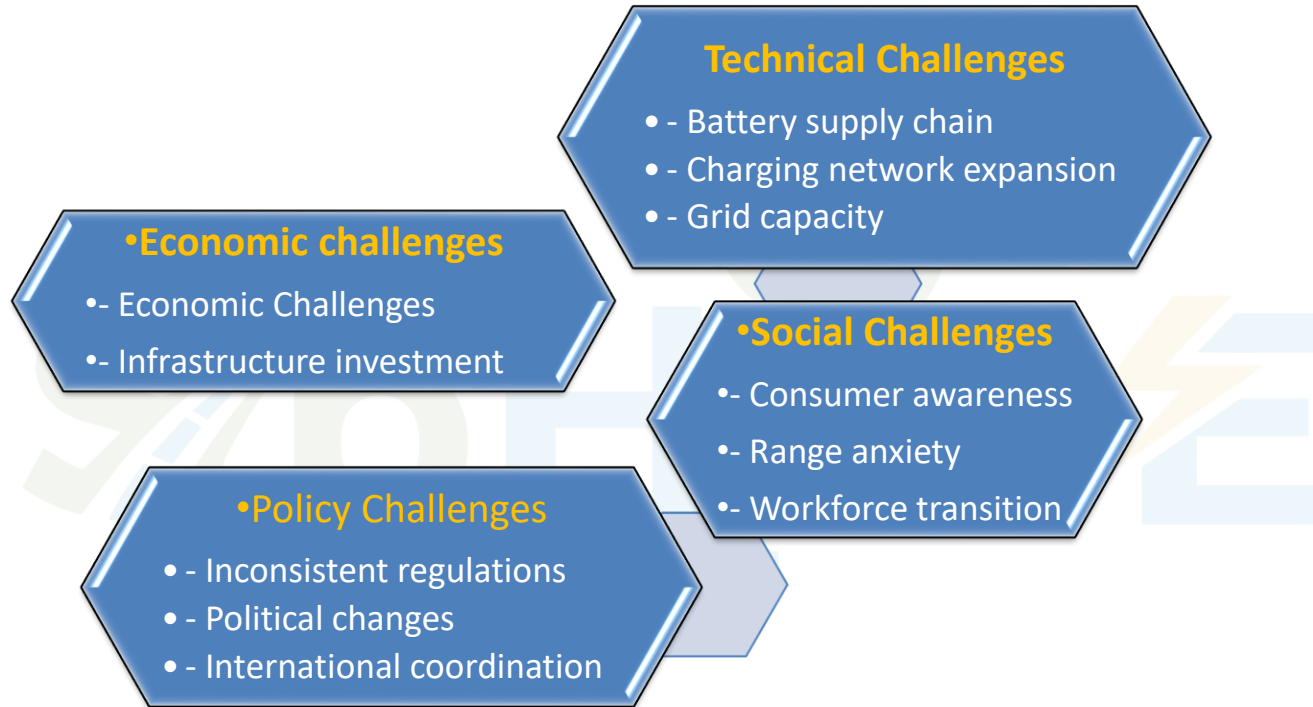
Transportation Sector Targets

- Reduce transport emissions
- Increase renewable energy
- Promote zero-emission mobility
- Expand public transportation

Other International Initiatives

- UN Sustainable Development Goals (SDGs)
- COP Climate Conferences
- International Energy Agency (IEA) Roadmaps

Challenges in Policy Implementation



Future Policy Trends

Emerging Directions

- Ban on new internal combustion engine vehicles
- Carbon neutrality targets (2050)
- Smart charging policies
- Vehicle-to-Grid (V2G) integration
- Battery recycling regulations
- Renewable energy integration with EV charging

With regard to future outlook, the policy will increasingly support:

- Electrification
- Clean hydrogen
- Circular economy
- Sustainable mobility

Conclusion

- Government policies are essential for green vehicle adoption.
- Incentives significantly increase EV market growth.
- Emission standards improve air quality and reduce environmental impacts.
- International climate agreements guide national transportation policies.
- Future regulations will focus on achieving net-zero emissions and sustainable