Science & Technology · GS - III

Examine the role of regulatory certification in promoting electric vehicle adoption in India. What measures are needed to ensure that the expansion of the EV industry is safe, sustainable and consumer-friendly?

EXAM YEAR	PAPER	SUBJECT
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MARKS	WORD LIMIT
10	~150 words

Answer Hint

Vehicle safety; regulatory compliance; electric mobility; consumer confidence; battery standards; charging infrastructure; lifecycle emissions; recycling; technological innovation

Model Answer

Introduction

Electric vehicles (EVs) are an important component of India's strategy to reduce transport-related emissions and dependence on imported fossil fuels. Effective regulatory certification helps ensure vehicle safety and build consumer confidence.

Role of Regulatory Certification

1. Safety and Reliability

Testing helps assess vehicle performance and compliance with applicable requirements for batteries, electrical systems and other critical components.

2. Consumer Protection

Certification provides assurance that vehicles meet prescribed standards, reducing risks associated with unsafe products and misleading claims.

3. Market Development

Clear and predictable approval procedures help manufacturers plan launches, encourage innovation and strengthen competition.

Key Challenges

- Battery fires, thermal management and electrical safety.
- Uneven availability of charging infrastructure.
- Battery disposal, recycling and mineral supply-chain concerns.
- Affordability, repair costs and consumer awareness.

Way Forward

India should strengthen testing facilities, enforce production-conformity requirements, improve battery traceability and promote safe charging infrastructure. Extended producer responsibility and battery recycling can reduce environmental impacts. Regulators should also provide transparent information about vehicle range, warranties and safety performance.

Conclusion

Reliable certification, robust enforcement and sustainable battery management can support EV adoption while protecting consumers and advancing India's clean-mobility transition.

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