

India's Vehicle Retro-fitment - Next Mobility Revolution

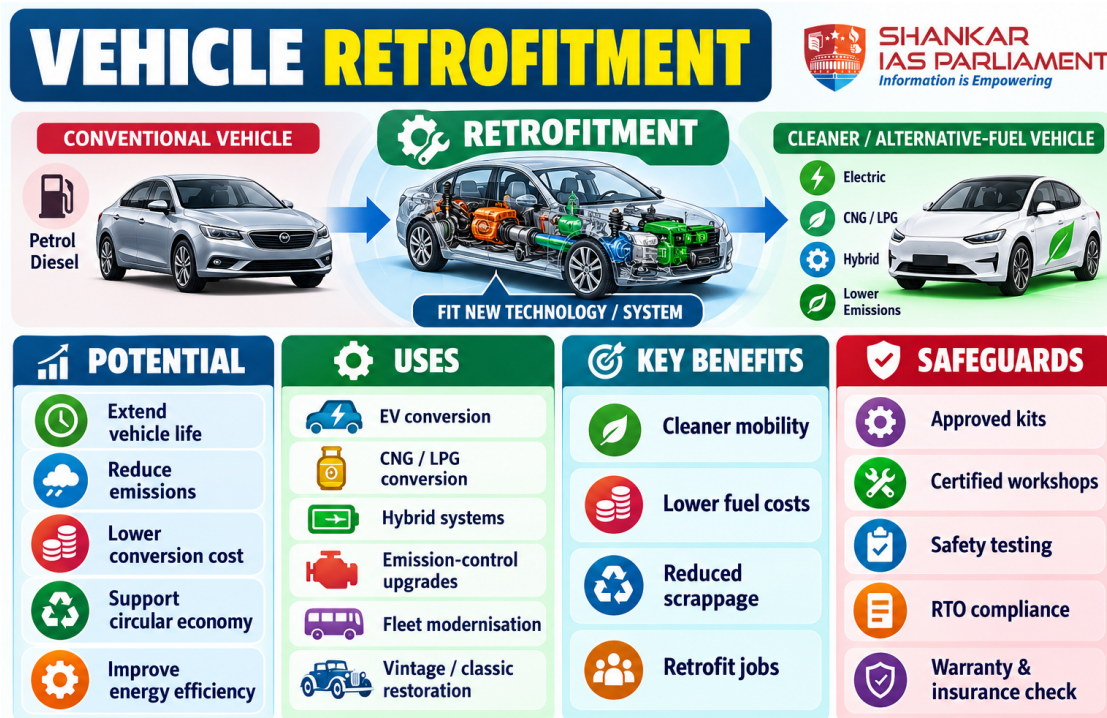
Mains - GS III - Infrastructure

Why in News?

The India's potential of vehicle retrofitment to transform India's mobility sector highlights creating decentralised employment and establishing India as a global provider of affordable EV conversion solutions.

What is Vehicle Retrofitment?

- **Vehicle retrofitment** - It involves converting an existing petrol or diesel vehicle into an electric vehicle (EV) by replacing its conventional powertrain while retaining the chassis.
- **Promotes** - The reuse of existing vehicles, reduces dependence on fossil fuels and offers a potentially affordable pathway to electric mobility.



What is the Potential of Vehicle Retrofitment in India?

- **Accelerating the EV Transition** - Converts existing petrol and diesel vehicles into EVs, making electric mobility more affordable and reducing dependence on imported crude oil.

- **Promoting a Circular Economy** - Reuses existing vehicle parts, reduces material waste and extends vehicle life while meeting safety standards.
- **Generating Decentralised Employment** - Creates local jobs by enabling mechanics and technicians to convert and maintain EVs through workshops and service centres.
- **Encouraging Indigenous Innovation** - Promotes the development of affordable batteries, motors and conversion technologies using India's engineering skills.
- **Strengthening Energy Security** - Reduces oil imports by electrifying existing vehicles, with benefits depending on clean electricity and proper battery recycling.
- **Creating Global Export Opportunities** - Enables India to export EV conversion kits, training and safety standards to developing countries with ageing vehicles and high fuel-import dependence.

How Can India Promote Decentralised Vehicle Retrofitment?

*India can draw lessons from the **PM Surya Ghar - Muft Bijli Yojana (PMSGY)**, which has expanded rooftop solar through a network of empanelled vendors.*

- **Establish Local Retrofitment Centres** - Set up certified conversion and service centres in cities, towns and rural areas, following the PM Surya Ghar Yojana model.
- **Train Local Mechanics** - Provide skill training and certification to existing mechanics to convert and maintain EVs.
- **Strengthen Local Service Networks** - Ensure easy access to repairs and after-sales services to build consumer trust.
- **Ensure Safety and Quality Standards** - Encourage government and private-sector collaboration to establish common safety, testing and certification standards.

Existing Laws Governing Vehicle Retrofitment in India

- India has a legal framework for vehicle retrofitment, particularly for converting petrol and diesel vehicles into electric vehicles (EVs).
- The main provisions are under
 - **Motor Vehicles Act, 1988 (Section 52)** - Regulates vehicle alterations and permits approved conversions subject to prescribed conditions.
 - **Central Motor Vehicles Rules, 1989 (Rule 115D)** - Governs hybrid and electric vehicle retrofitment and requires compliance with applicable standards.

What Measures Are Needed to Scale Up Retrofitment?

- **National retrofitment framework** - Establish uniform safety, performance, certification and inspection standards.
- **Skill development** - Train local mechanics and technicians through recognised vocational programmes and industry partnerships.
- **Financial support** - Explore targeted credit, incentives and insurance products to reduce conversion costs.
- **Research and development** - Encourage indigenous innovation in batteries, motors, power electronics and vehicle-specific conversion technologies.
- **Quality assurance** - Develop accredited testing centres, approved conversion kits, warranties and post-conversion inspections.

- **Pilot projects** – Begin with suitable vehicle categories, such as commercial fleets and high-utilisation vehicles, where fuel savings may justify conversion costs.

What lies ahead?

- Vehicle retrofitment can complement new EV manufacturing by making India's electric mobility transition more affordable, employment-intensive and decentralised.
- By integrating local workshops, indigenous engineering, robust safety standards and accessible financing, India can transform retrofitment from a stopgap solution into a scalable mobility industry.

Reference

[The Hindu|Can India turn retrofitment into the next mobility revolution?](#)

