

Bharat Stage VII (BS-VII) Emission Standards

Prelims: Current events of national and international importance | Environment

Why in News?

The Ministry of Road Transport and Highways (MoRTH) has proposed the implementation of Bharat Stage VII (BS-VII) emission standards.



BS – VII
Cleaner Vehicles for a Greener Future

SHANKAR IAS PARLIAMENT

Feature	Details
Existing standards	Bharat Stage VI (BS-VI)
BS-VI nationwide implementation	April 2020
Proposed new standards	Bharat Stage VII (BS-VII)
Nodal ministry	Ministry of Road Transport and Highways
Relevant rules	Central Motor Vehicles Rules, 1989
First vehicle category	M1 – primarily passenger cars
Proposed first implementation date	1 April 2029
Additional phases	2031 and 2035
Main objective	Reduce vehicle-related pollution and improve emissions monitoring

LOWER EMISSIONS
CLEANER AIR
GREENER TOMORROW

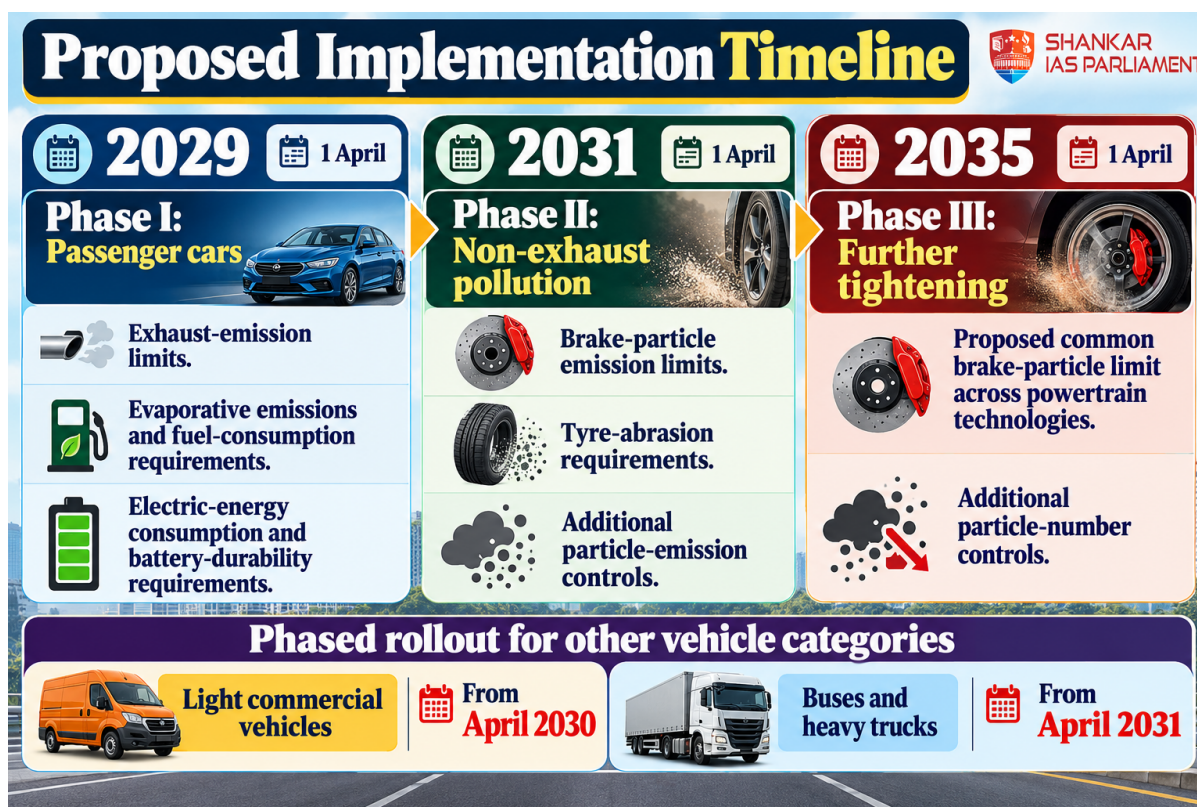
- The implementation for passenger cars in the M1 category is scheduled to commence on 1 April 2029.
- The draft introduces enhanced monitoring requirements for real-world emissions, brake particle pollution, tyre abrasion, and electric vehicle battery durability.
- The government has solicited public feedback on the proposed amendments to the **Central Motor Vehicles Rules, 1989**.

Proposed Emission Standards for Passenger Vehicles

Pollutant	Petrol-type engines	Diesel engines
Carbon monoxide (CO)	1,000 mg/km	500 mg/km
Nitrogen oxides (NOx)	60 mg/km	80 mg/km

Particulate matter (PM)	4.5 mg/km	4.5 mg/km
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- Additional proposed regulatory requirements include the following:
 - Measurement of smaller particulate matter by reducing the particle-number measurement threshold from 23 nanometers to 10 nanometers.
 - Implementation of controls to reduce evaporative emissions from fuel systems.
 - Conducting emissions testing under real-world driving conditions.
 - Ongoing monitoring of emissions-control system performance throughout the vehicle's operational lifespan.



Major New Features of BS-VII

- **Real-world driving emissions (RDE)**
- Emissions will be evaluated under real-world driving conditions utilizing portable emission measurement systems.
- The draft regulation stipulates that on-road testing will be incorporated into the type approval process beginning in April 2030.
- The proposed conformity factor for nitrogen oxides (NO_x) and particle number emissions is set at 1.0.
- **On-board Monitoring Requirements** - Vehicles must be equipped with systems for the following functions:
 - On-board diagnostics (OBD).
 - Monitoring emissions and detecting instances where specified thresholds are exceeded.
 - Monitoring both fuel consumption and electric energy consumption.
- Ensuring that specified monitoring data are accessible via diagnostic systems and, when required, through over-the-air methods.
- **Brake Particle Emissions** - Braking systems emit particles as friction materials

degrade. The Bharat Stage VII (BS-VII) standards propose regulation of this non-exhaust pollution source.

Proposed effective date	Vehicle category	Brake-particle mass limit
April 2031	Pure electric vehicles	3 mg/km
April 2031	Other specified powertrains	7 mg/km
April 2035	All powertrains	3 mg/km

- **Tyre Abrasion**
- Tyres generate particulate matter during interaction with road surfaces.
- The draft regulation introduces abrasion requirements for C1 tyres, effective from April 2031.
- Specific numerical limits will be communicated in a separate notification.
- **Durability of Electric Vehicle Batteries** - The following minimum benchmarks for battery performance are proposed:

Period / distance	Minimum retained performance
First 5 years or 100,000 km	75%
Up to 8 years or 160,000 km	67%

- The applicable threshold is evaluated based on either the specified time or distance limit, whichever is reached first.
- Detailed test procedures and requirements will be communicated separately.
- **Environmental Vehicle Passport** - The proposed passport is designed to provide comprehensive information on the following aspects:
 - Fuel consumption metrics.
 - Electric energy consumption data.
 - Battery state-of-health indicators.
 - Pollutant emission levels.
- The primary objective is to enhance access to vehicle performance and environmental impact information.

Vehicles and Fuels Covered

- The proposed framework encompasses multiple powertrain configurations and fuel types, including the following:
 - Petrol and diesel.
 - Compressed natural gas (CNG).
 - LPG.
 - Ethanol blends, including E20.
 - Hydrogen.
 - Methanol.
 - Hybrid vehicles.
 - Electric vehicles, with respect to relevant energy consumption, battery specifications, and non-exhaust emission requirements.
- The draft further introduces provisions for the approval of geofencing-equipped petrol and diesel vehicles as BS-VII-G vehicles.

Reference

[The Hindu | BS IV](#)

