

## Bharat Stage Emission Standards (BS Norms)

The Supreme Court of India banned the sale and registration of BS-IV compliant motor vehicles in India from April 2020 signifying the shift from BS-IV emission norms to BS-VI. In this article, you can read all about BS emission standards and its implementation in the country for the [IAS exam](#).

### Bharat Stage Emission Standards

Bharat Stage or BS Emission Standards are government-instituted emission standards that all motor vehicles have to comply with if they are to be sold and driven in India.

- Currently, all new vehicles sold and registered in India should be compliant with the BS-VI iteration of emission standards.
- The standards and timelines for their implementation are set by the [Central Pollution Control Board \(CPCB\)](#) under the Minister of Environment, Forests and Climate Change.
- The BS norms are based on the European Emission Standards (Euro norms) and were first set in 2000. Equivalent to the Euro-1, the first iteration was known as 'India 2000', and not BS-I.
- Subsequent emission standards were called BS-II, BS-III, and BS-IV.
- The government decided to jump directly from BS-IV to BS-VI skipping BS-V in view of the long time it took to move from BS-III to IV.
- With the implementation of the new norms, pollution levels are expected to reduce to a large extent as the particulate matter (PM) concentration should decrease. About one-third of the air pollution is caused by motor vehicles and cars.

### History of Emission Standards in India

- It was in the early nineties that the first emission standards were introduced in the country.
- Other regulatory norms followed in the form of making the catalytic converters mandatory for petrol vehicles and then, by the introduction of unleaded petrol.
- In 1999, the apex court of the country made it mandatory for all vehicles to meet the India 2000 norms by June 2000, in a ruling.
- In 2002, the Mashelkar Committee report was accepted by the Indian Government.
  - The committee had recommended a roadmap for the implementation of the Euro norms based emission standards for India.
  - It also recommended that the roll-out of the norms be implemented in major cities first to be followed by the rest of the country in a phased manner.
  - Based on the committee's recommendations, in 2003, the government released the National Auto Fuel Policy.

### Bharat Stage Emission Standards Timeline

The following table gives the timeline of the BS norms being implemented in India starting from the India 2000 till the latest BS-VI norms.

Standard (Reference)	Year/Region
India 2000 (Euro 1)	2000 - Nationwide
BS II (Euro 2)	2001 - Metro cities
	2003 - 10 more major cities

	2005 - Nationwide
BS III (Euro 3)	2005 - Metros and major cities
	2010 - Nationwide
BS IV (Euro 4)	2010 - Metros and major cities
	2017 - Nationwide
BS V (Euro 5)	Skipped
BS VI (Euro 6)	2018 - Delhi
	2019 - NCR
	2020 - Nationwide

The above table gives information for four-wheeler vehicles.

## BS-VI Norms (and how it is different from BS-IV)

Emission norms are made further stringent with the introduction of the Bharat Stage VI. BS-VI is the highest vehicle emissions standard specification in the world currently.

- The volume of particulate matter 2.5 is between 20 to 40 micrograms per cubic metre in BS-VI fuel, whereas, in BS-IV, it was up to 120 micrograms per cubic metre.
- The sulphur content in the BS-VI compliant fuel is brought down five times when compared to the BS-IV version. (It is 10 ppm of sulphur as against the previous 50 ppm).
  - Sulphur in the fuel contributes to fine particulate matter emissions. High sulphur content in the fuel also leads to corrosion and wear of the automobile engine.
- Under the BS-VI fuel, for 1 KM, a car will emit 80% less PM and almost 70% less nitrogen oxide (in a diesel engine).
  - In a petrol engine, the emission of nitrogen oxide would be less by 25%.
- BS-VI norms will lead to the reduction of the emission of certain hydrocarbons (that are produced because of the incomplete combustion of fuel).
- BS-VI fuel contains lesser air pollutants compared to BS-IV fuel.
- Car manufacturers will have to fix three new pieces of equipment for their vehicles to comply with BS-VI:
  - Diesel Particulate Filter (DPF)
  - Selective Catalytic Reduction (SCR) system
  - LNT (Lean NO<sub>x</sub> trap)
- Real Driving Emission (RDE) will be introduced in India for the first time.
  - This will measure a vehicle's emissions under real conditions as against factory conditions.
- Onboard Diagnostics (OD) has been made compulsory for all vehicles.

### Impact of shifting from BS-IV to BS-VI

- The cost of production of automobiles will be higher on account of the shift and this would be translated to higher costs for the vehicle buyer.
- In particular, the diesel and the economy segment cars will see a higher increase in the prices.

- Driving a pre-BS IV car using BS-VI fuel can be detrimental to engine life. There may be trouble with injection pumps, oil seals and injectors leading to higher wear and tear, consequently higher emissions.
- The government is yet to announce a scrap policy for old vehicles.
- Automakers say they have a huge stock of BS-IV vehicles and they might have to face huge losses.
- This shift is, however, set to have a positive impact on the quality of air.
- By reducing the emission of toxic substances, BS-VI will definitely reduce the air pollution in cities in India.
- The levels of poisonous, highly reactive gases that form when fuel is burned at high temperatures such as NO<sub>x</sub>, or oxides of nitrogen, are also expected to reduce.

