

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_x 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_x, or oxides of nitrogen, are also expected to reduce.

