Fuel Economy Norms for Transport Sector

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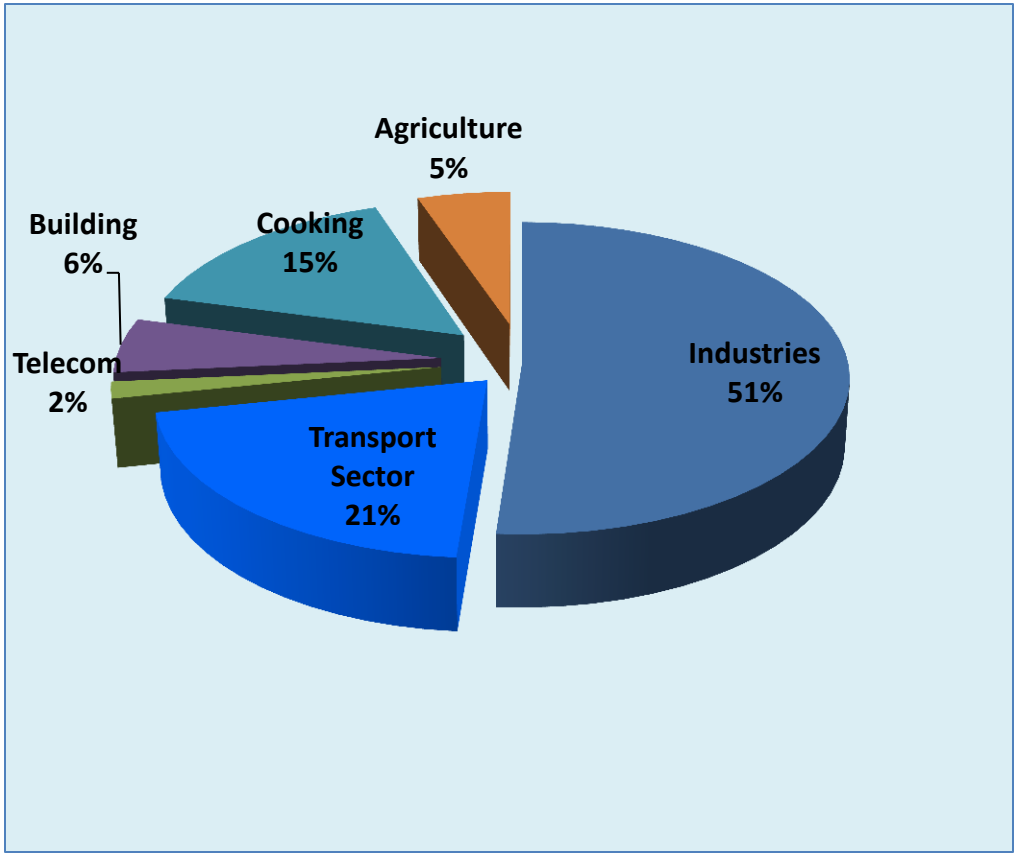
Energy Consumption share of Different sectors in India (2017 Estimated)

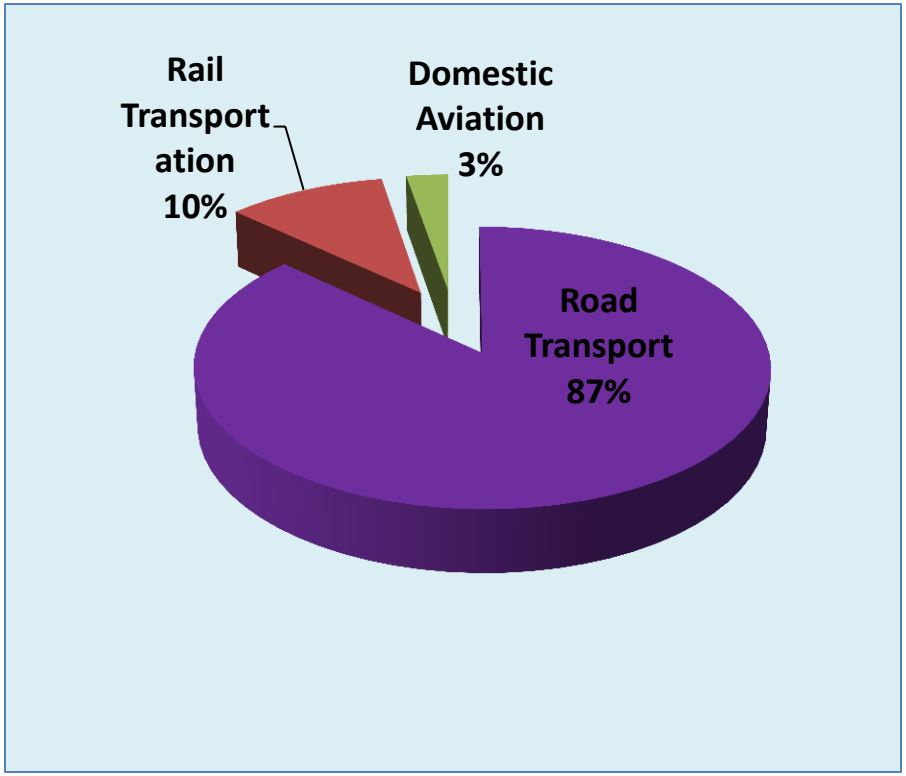
Category	Energy Demand in TWh
Industries	3109
Transport	1255
Telecom	105
Building	343
Cooking	949
Agriculture	317
Total	6078



Source:-www.iess2047.gov.in

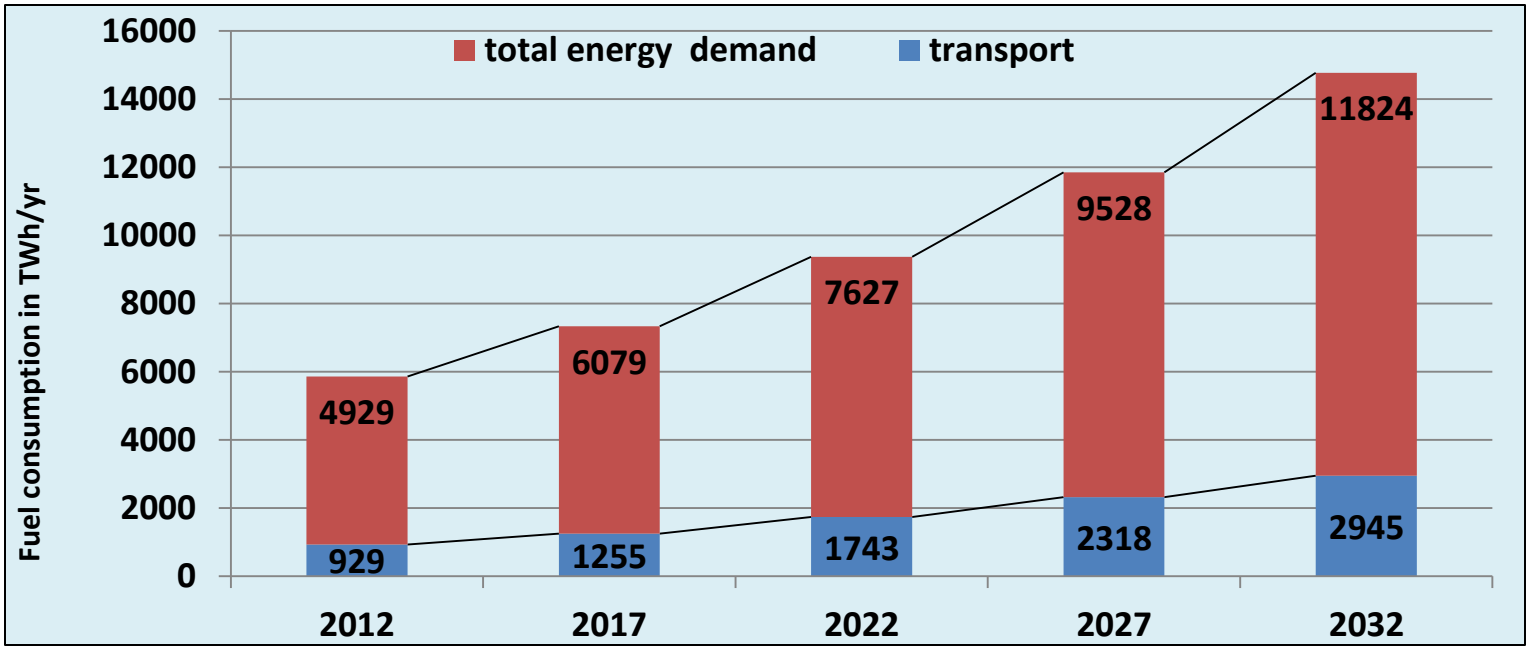
Energy Consumption share of Transport Sector in 2017 (Estimated)

Category	Energy Demand in TWh
Road Transport	1091
Rail Transportation	130
Domestic Aviation	34



Source:-iess2047.gov.in

Energy Demand Forecast



- Energy demand in transport sector will grow 2.35 times in 2032 in comparison to 2017.
- Total energy demand in 2032 will be around 2 times in comparison to 2017.

Source:-iess2047.gov.in

Factors that Drive India's Transport Sector

- Increase in Urban population & mobility
- Industrialization & favorable Government polices to encourage in-house research & development
- Rising working class of people & increase per Capita Income
- Cost efficiencies contributing to lower production cost – skilled manpower with low labor cost
- Fuel Economy, Fuel Cost & Vehicle Price – Key factor

BEE Activities (Transport Sector)

- Fuel Efficiency Standards for passenger cars
- Fuel Efficiency standards for Heavy duty vehicle
- Labeling of cars
- Fuel Economy norms for 2 wheelers
- Fuel Efficiency Standards for Tractors and subsequent labeling
- Electric vehicles (EV) and charging infrastructure for EVs

Target rate reduction in CO2 in India & others countries

Country	Baseline Year	Fleet average CO2 emissions (g/km) (approx)	Target Year	Fleet average CO2 emissions (g/km) target proposed
European Union	2015	130	2020	95
United States	2016	139	2025	91
China	2015	160	2020	117
South Korea	2015	140	2020	97
India	2015	138	2022	113

Source:-theicct.org

Fuel Efficiency Standards for Passenger Cars

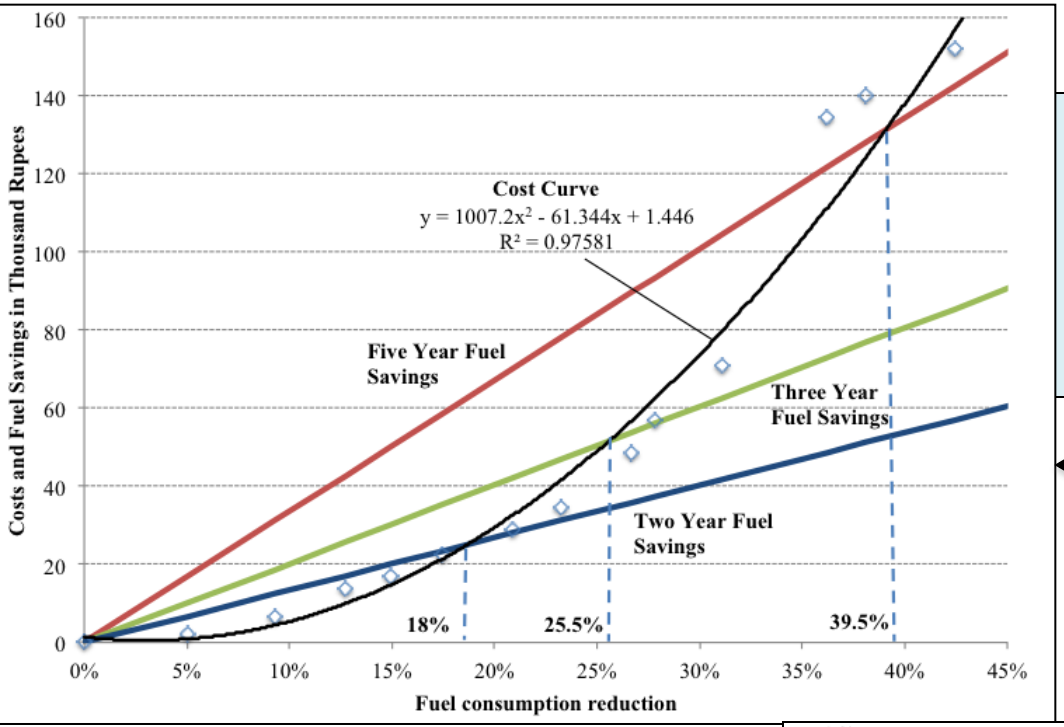
As a result, Ministry of Power (GOI) notified 'Energy Consumption Standards for Motor Vehicles' on 23rd April, 2015 under Energy Conservation Act,2001.

"…specifies energy consumption standards for motor vehicles which are type approved under the Central Motor Vehicle Rules, 1989, with at least four wheels, other than quadri cycles, used for the carriage of passengers and their luggage and comprising not more than nine seats including driver's seat, and of Gross Vehicle Weight not exceeding three thousand and five hundred kilograms (hereinafter referred to as the said motor vehicle) for the purpose of manufacturing or importing for sale.."

Approach for Standards

- Standards notified were based on

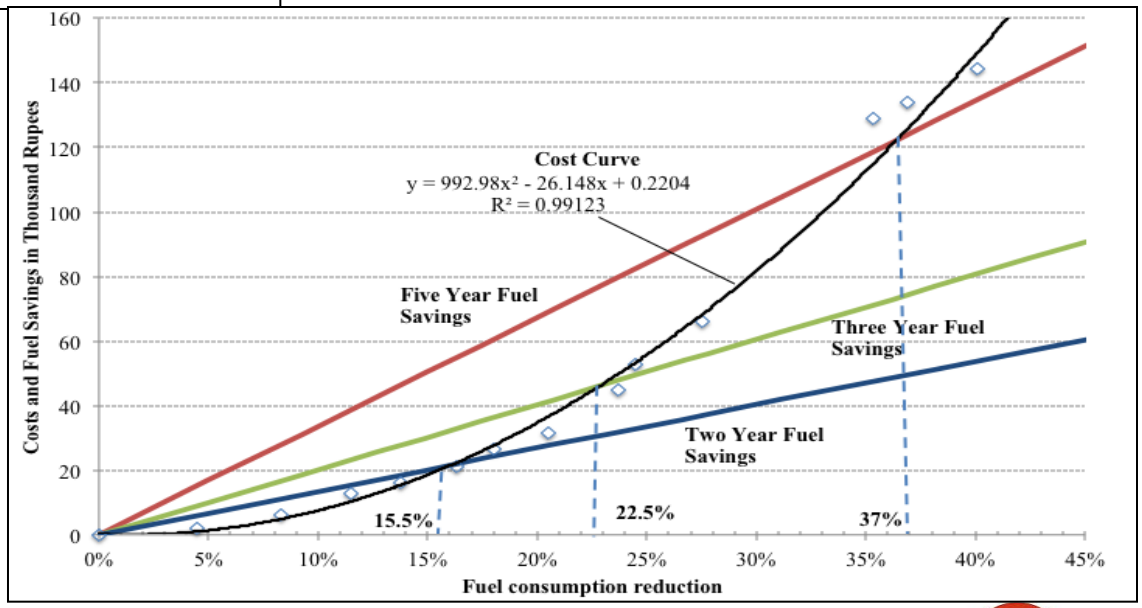
– Cost-benefit analysis for small cars and medium sized cars
– Costs could be recovered within a 3 years period due to fuel savings



Cost and Fuel Savings benefits associated with various technology packages for mid-size cars.

18-25% reduction is possible due to technology assessment

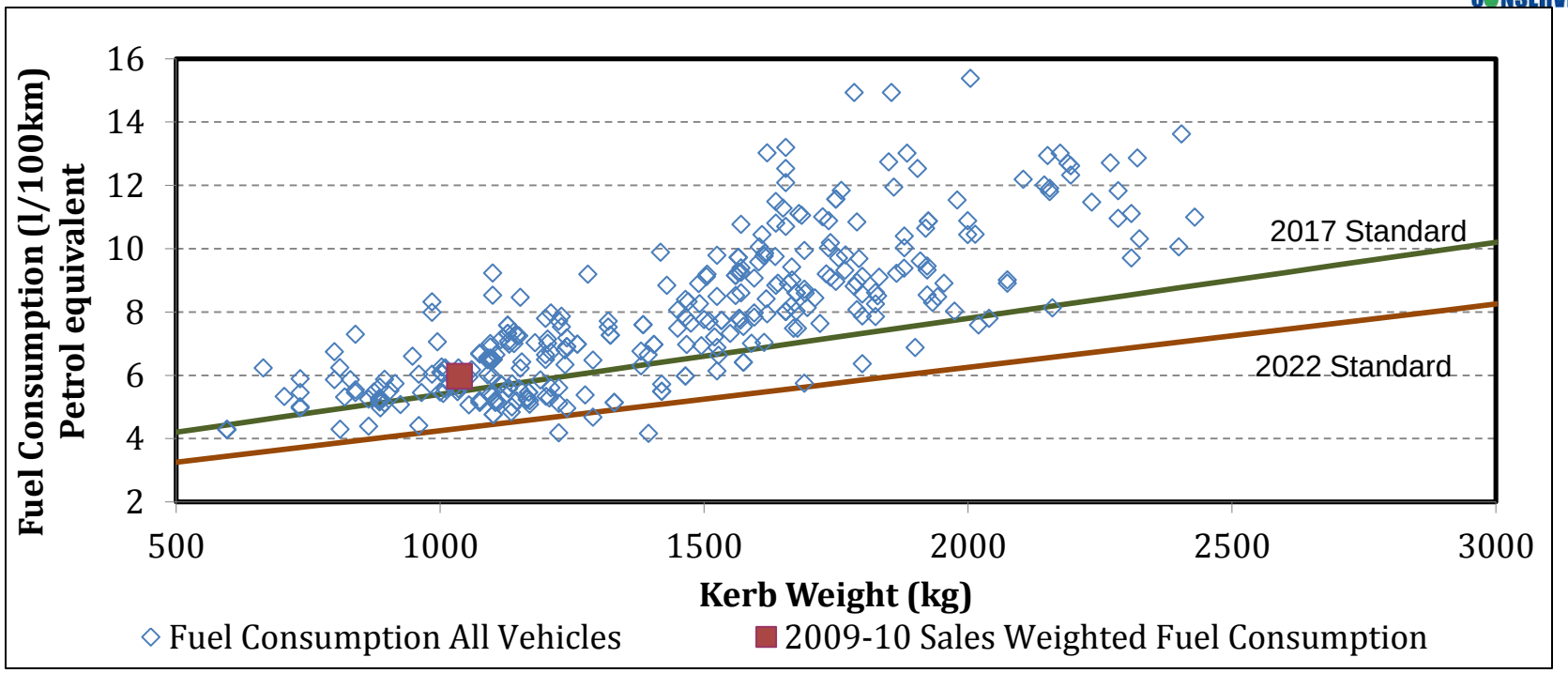
Cost and Fuel Savings benefits associated with various technology packages for small cars.



15-23% reduction is possible due to technology assessment

- 15.5-18% for a 2 year payback
- 22.5-25% for a 3 year payback
- 37-39% for a 5 year payback

Relative Position of Models (2009-10 base)



- Overall average fuel efficiency of Indian passenger vehicles was around 14.5 km/l in the year 2000.
- The industry data of the year 2010 indicates that the average fuel efficiency of passenger vehicles sold in India improved to about 16.5 km/l.

Highlights of Fuel Consumption standards for Passenger cars

- Defines Average Fuel Consumption Standard for manufacturer, in petrol equivalent (liter per 100 kilometer) & the procedure to determine the same
- Specifies the standard, for testing & determination of the Fuel Consumption of a motor vehicle
- Specifies equation to find equivalent CO_2 emission factor for various fuel type
- Specifies Enforcing body to regulate the notified fuel consumption standards

- Phase I – For fiscal year 2017-18 to 2021-22

a	0.0024
b	1037
c	5.4922
Average Fuel Consumption Standard for Manufacturer	= 0.0024 x (W – 1037) + 5.4922

- Phase II – From fiscal year 2022-23 onwards

a	0.002
b	1145
c	4.7694
Average Fuel Consumption Standard for Manufacturer	= 0.002 x (W – 1145) + 4.7694

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Notified Standards

Notification	Compliance Year	Corporate Fuel Consumption Standard	Energy Savings by end of 2025
Fuel Consumption Standard	2017-18	5.5 l/100 km (129.8 gmCO2/km) @1037 kg	22.97 million toe
	2022-23	4.78 l/100 km (113.0 gmCO2/km) @1145 kg	

Highlights of Fuel Consumption standards for HDV *

- Defines constant speed fuel Consumption Standard for Heavy Duty Vehicles (HDVs), in diesel fuel consumption value (liter per 100 kilometer) derived from the equations given in the notification S.O.2670(E) notified on 16th August,2017 and effective from 1st April,2018.
- Specifies the standard, for testing & determination of the Fuel Consumption of a Heavy Duty Vehicles.
- Specifies Enforcing body to regulate the notified fuel consumption standards

Phase-I effective from 1st April,2018

N3 Rigid Vehicles at 40 km/h		
Gross vehicle weight range	Axle configuration	Equation for deriving target fuel consumption (l/100km)
12.0-16.2	4x2	Y=0.362X+10.327
16.2-25.0	6x2	Y=0.603X+6.415
16.2-25.0	6x4	Y=0.723X+4.482
25.0-31.0	8x2	Y=0.527X+8.333
25.0-31.0	8x4	Y=0.928X-0.658
31.0-37.0	10x2	Y=0.960X-5.100

Phase-II effective from 1st April,2021

N3 Rigid Vehicles at 40 km/h		
Gross vehicle weight range	Axle configuration	Equation for deriving target fuel consumption (l/100km)
12.0-16.2	4x2	Y=0.329X+9.607
16.2-25.0	6x2	Y=0.523X+6.462
16.2-25.0	6x4	Y=0.673X+4.032
25.0-31.0	8x2	Y=0.430X+8.780
25.0-31.0	8x4	Y=0.732X+2.558
31.0-37.0	10x2	Y=0.963X-7.753

*** N3 and M3 category Vehicles**

Where Y=Gross Vehicle weight in tonnes
X=Fuel consumption in liters/100km

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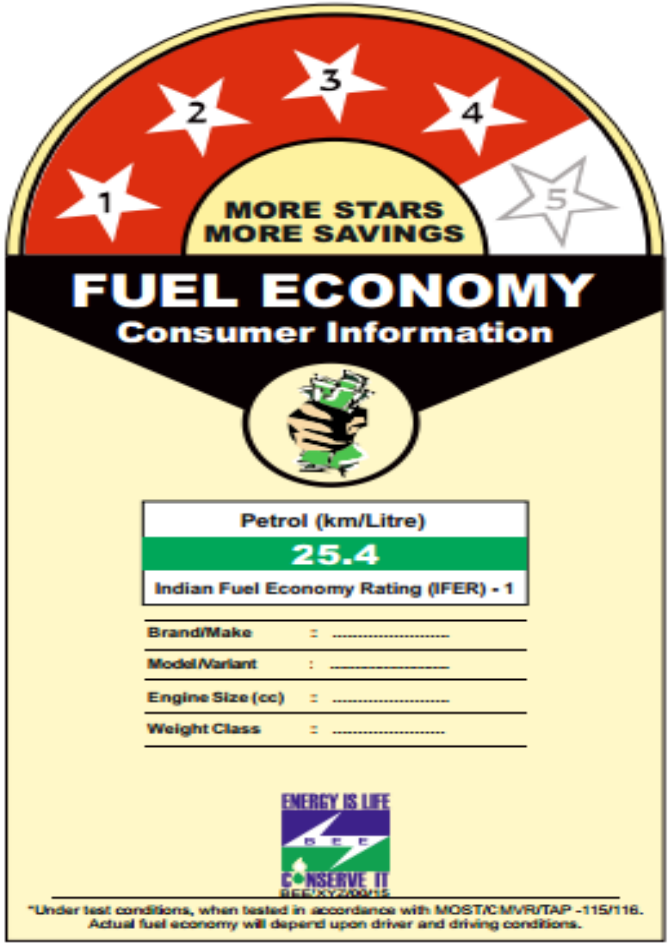
Standards and Labeling for Cars

Star Labelling Program for Passenger Cars

- To Enhance vehicle market towards improvement in fuel efficiency & inline with the Energy Consumption standards
- To provide the consumer an informed choice about the fuel saving and thereby the cost saving potential of Vehicle.



Highlights of the Labelling Program

- Specifies the fuel efficiency labeling requirements for passenger cars under M1 category of motor vehicles covered under Central Motor Vehicle Rules (CMVR) 1989 being manufactured, sold and purchased in India.
- The test procedure, parameters and test conditions for the Type Approval and Conformity of Production testing of motor vehicles shall be as per the procedures given under MoRTH/CMVR/TAP-115/116.
- Star Rating performance indicator in terms of **India Fuel Economy Rating (IFER – I).**
- Indicate the fuel consumption, measured in terms of the fuel on which the vehicle will run

Thank You