

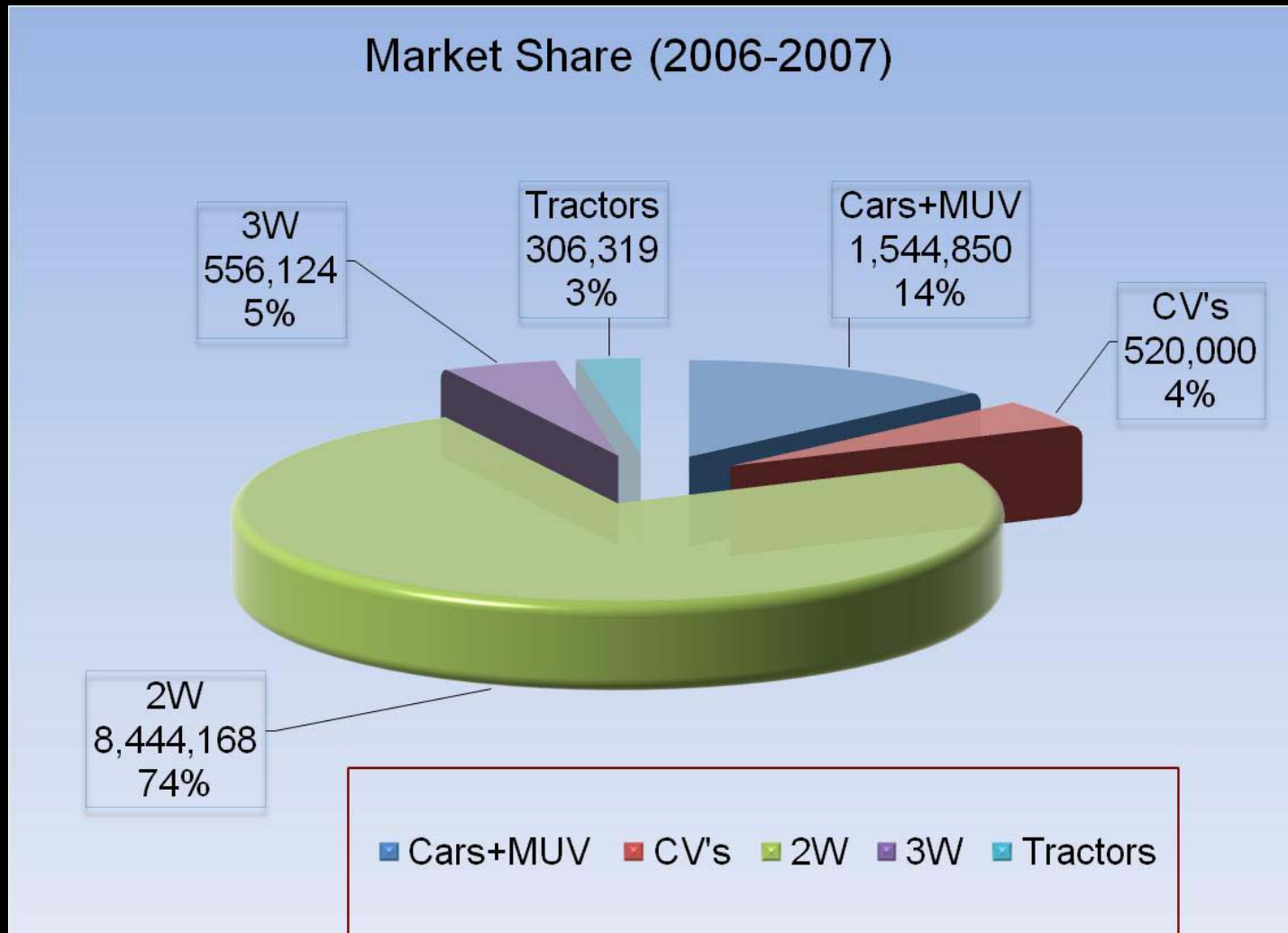
# Fuel Efficiency Policies for HDVs – Indian Perspective

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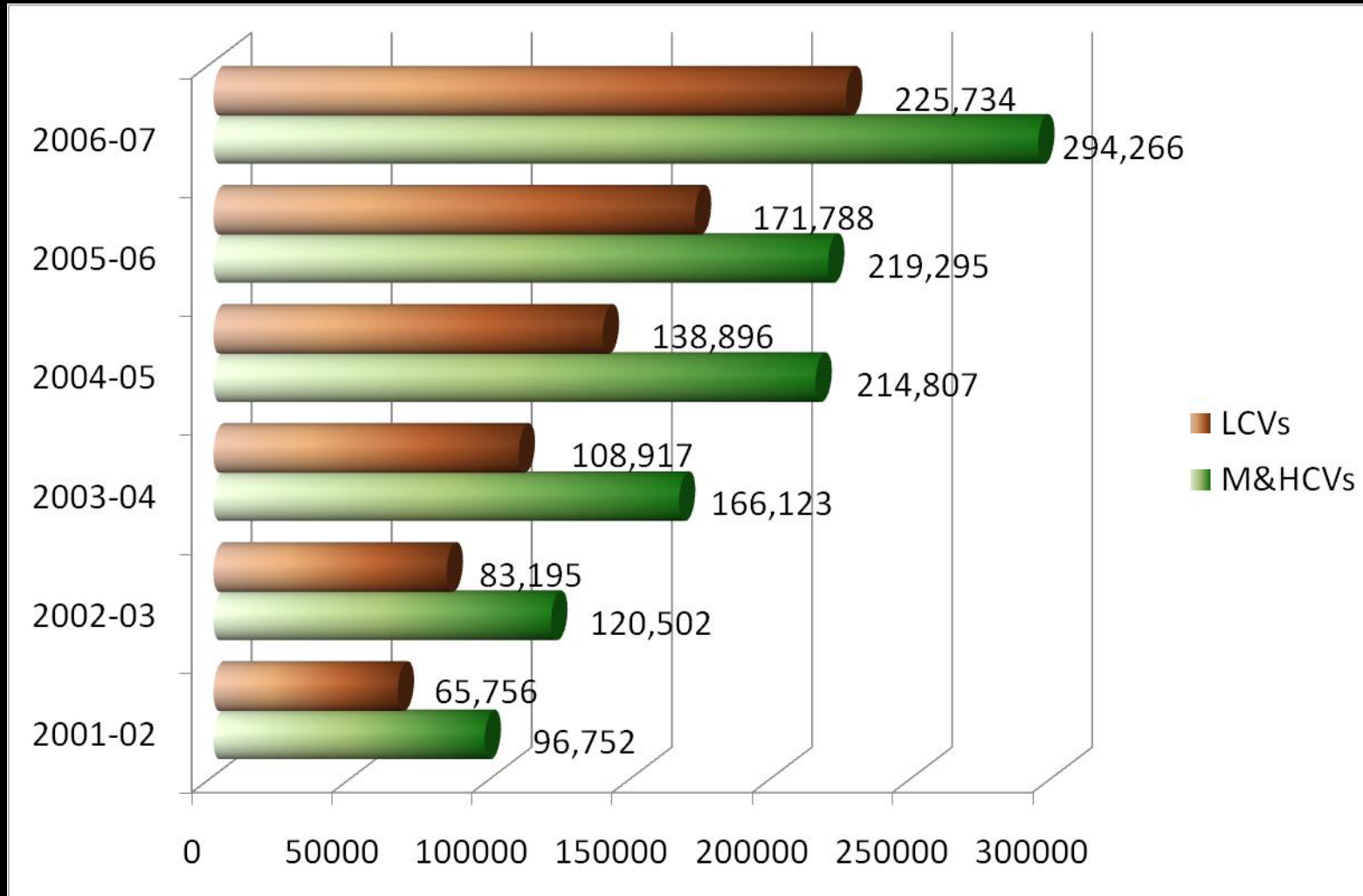
International Energy Agency, PARIS  
Fuel Efficiency for HDVs Standards  
and other Policy Instruments  
21<sup>st</sup> to 22<sup>nd</sup> June, Paris

# Composition of Indian Automotive Industry(2006-07)



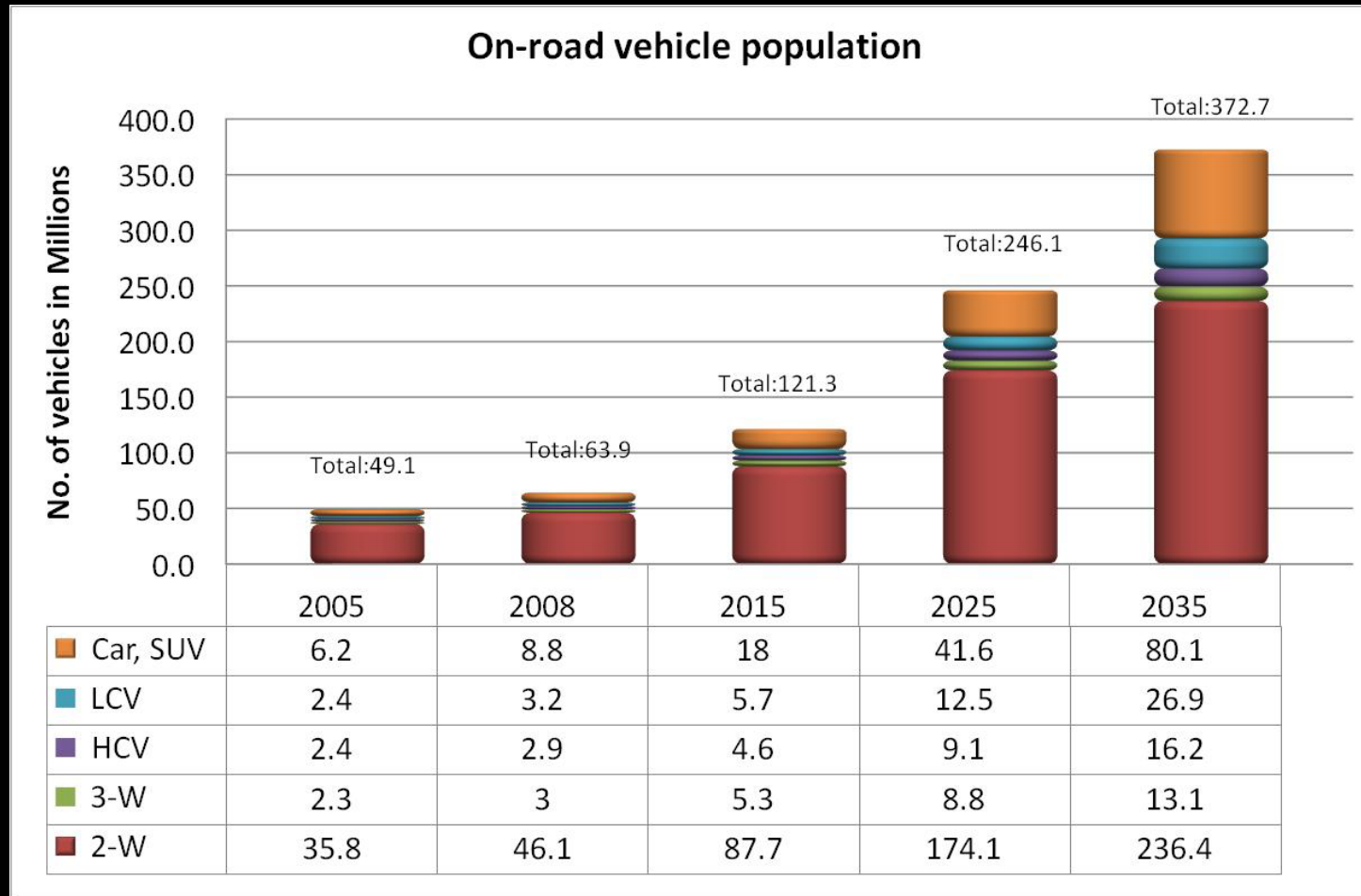
Based on SIAM data on Production Figures, Includes Tractor Production up to 2005-06

# LCV and HCV Segment Growth



Based on SIAM data on Production Figures, Includes Tractor Population up to 2005-06

# On-road Vehicle Population Projection for India



2-W = motorcycle; 3-W = 3-wheeler; HCV = heavy-duty commercial vehicle;  
 LCV = light-duty commercial vehicle; SUV = sport utility vehicle.

Note: Total may not add due to rounding. Source: Segment Y Ltd.

<http://www.adb.org/Documents/Reports/Energy-Efficiency-Transport/chap01.pdf>

# India's Infrastructure & Transport System

# Road Infrastructure

	Length in km
National Highways	65,569
State Highways	131,899
Major District Roads	467,763
Rural Roads	2,650,000
<b>Total</b>	<b>3.3 million (approx.)</b>

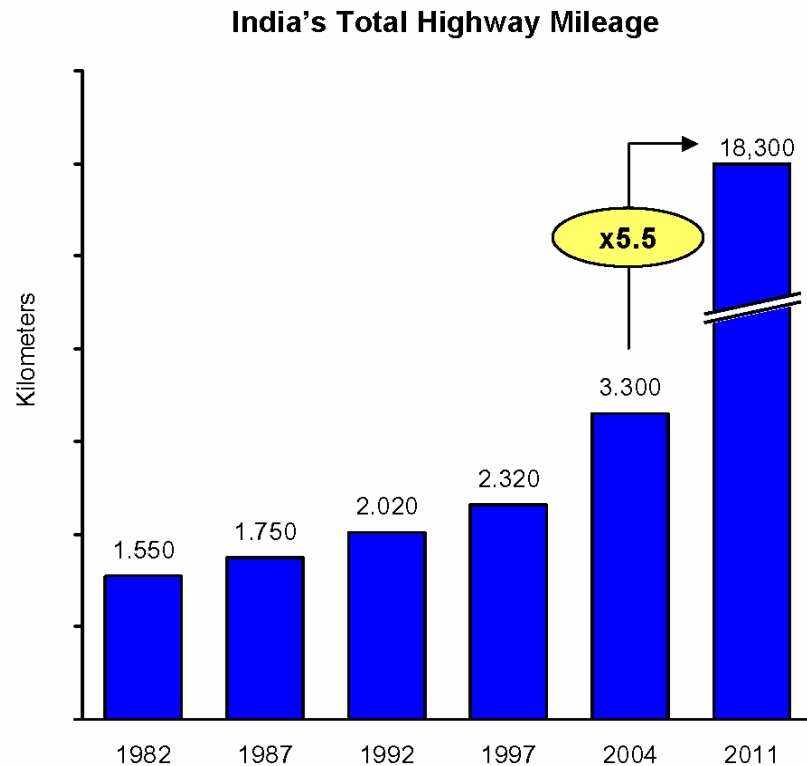
Source : Economic Survey 2003-04

# Glimpses of NHDP



# Large Highway Expansion

India is expanding its highway infrastructure by the factor 5.5 within the next 10 years



## Observation

- ▶ The state and central governments are planning \$50 B on highway improvements in the period to 2011
- ▶ Continued expansion of express highways “Golden Triangle” road network to connect all four corners of India
- ▶ Continued spend on existing roads to upgrade infrastructure in order to accommodate increased population of vehicles

Source: EIU report, World Bank Data, Booz Allen analysis

# Shift in Mode of transport

❑ Mode shift from railways to road transport in India in the last five decades.

## ❑ Freight transport

Railway share decreased to 40 % from 88 %

Road transport share increased to 60 % from 12%

## ❑ Passenger transport

Railway share decreased to 20 % from 68 %

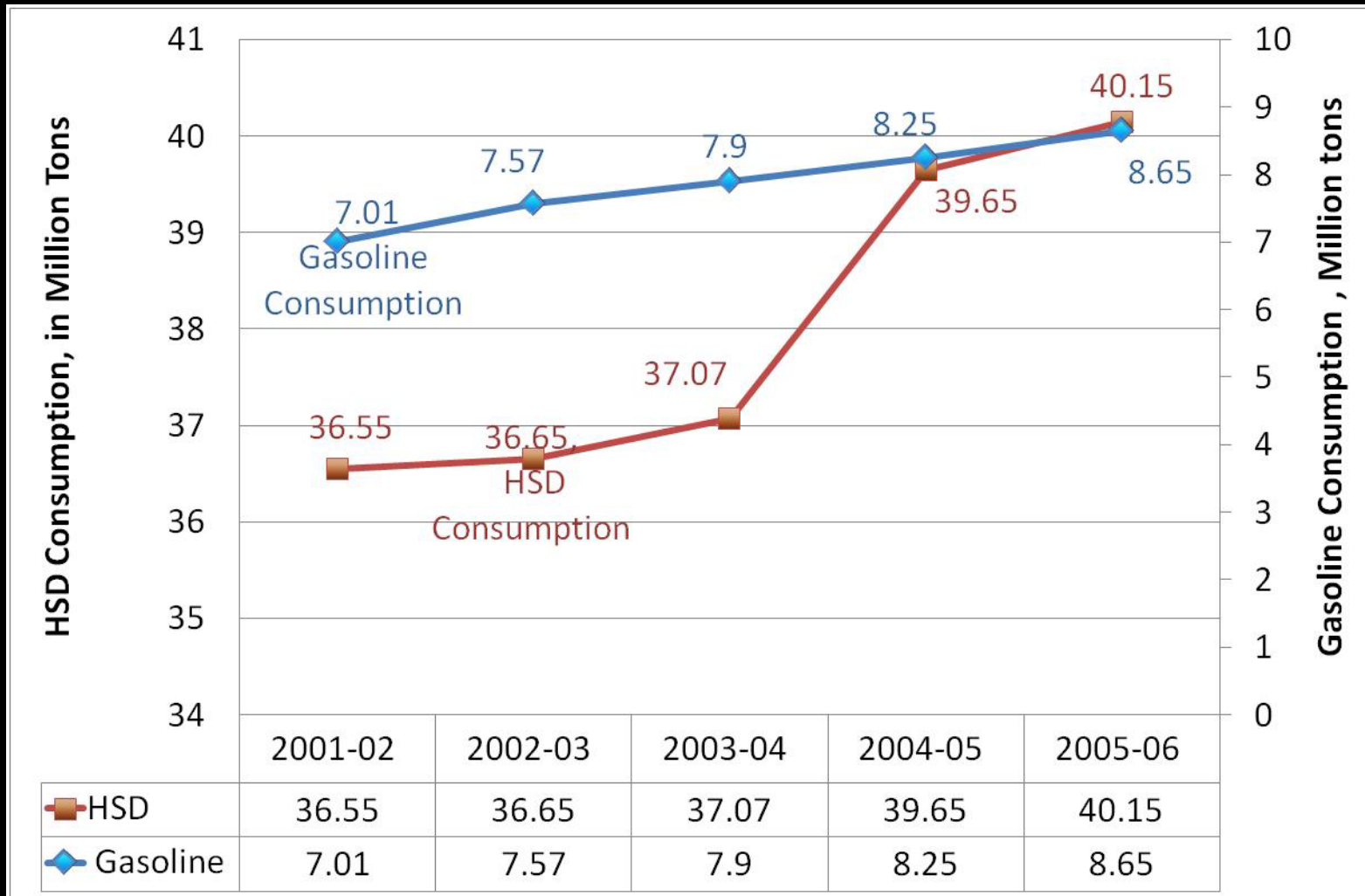
Road transport share increased to 80 % from 32%

# Estimated growth – Road transport

## Planning commission estimate

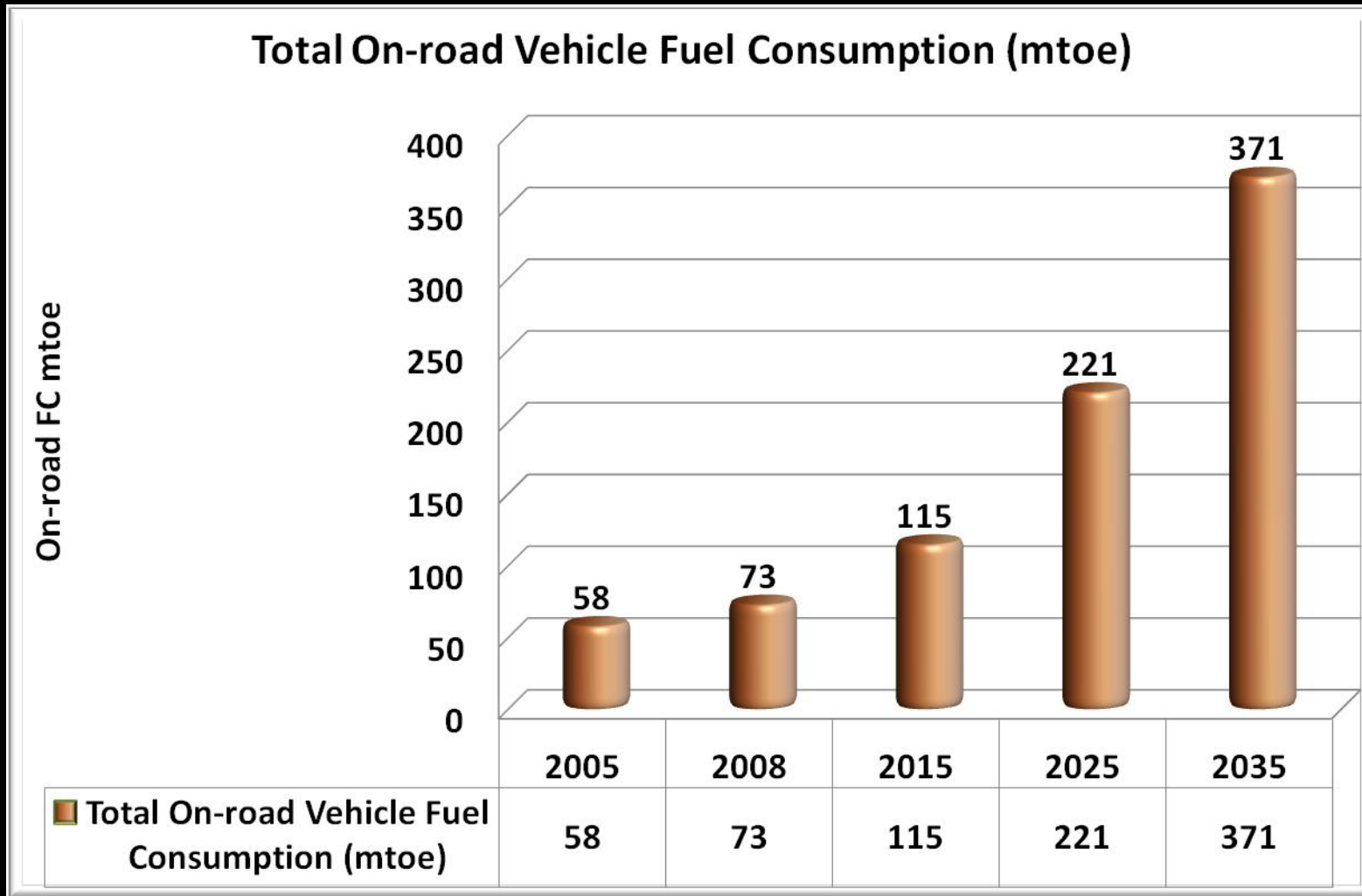
- Rise of 5 times for freight and 4 times for passenger road transport from 2000 to 2020.

# Steady Increase in Gasoline & Diesel Consumption in Indian Transport Sector



Source: Ministry of Petroleum and natural gas

# Total On-road Fuel Consumption Projection for India



Mtoe = million tons of oil equivalent; <http://www.adb.org/Documents/Reports/Energy-Efficiency-Transport/chap01.pdf>

# Vehicle Classification and Fuel Consumption Standard

# Classification of vehicles as per Central Motor Vehicle Rules

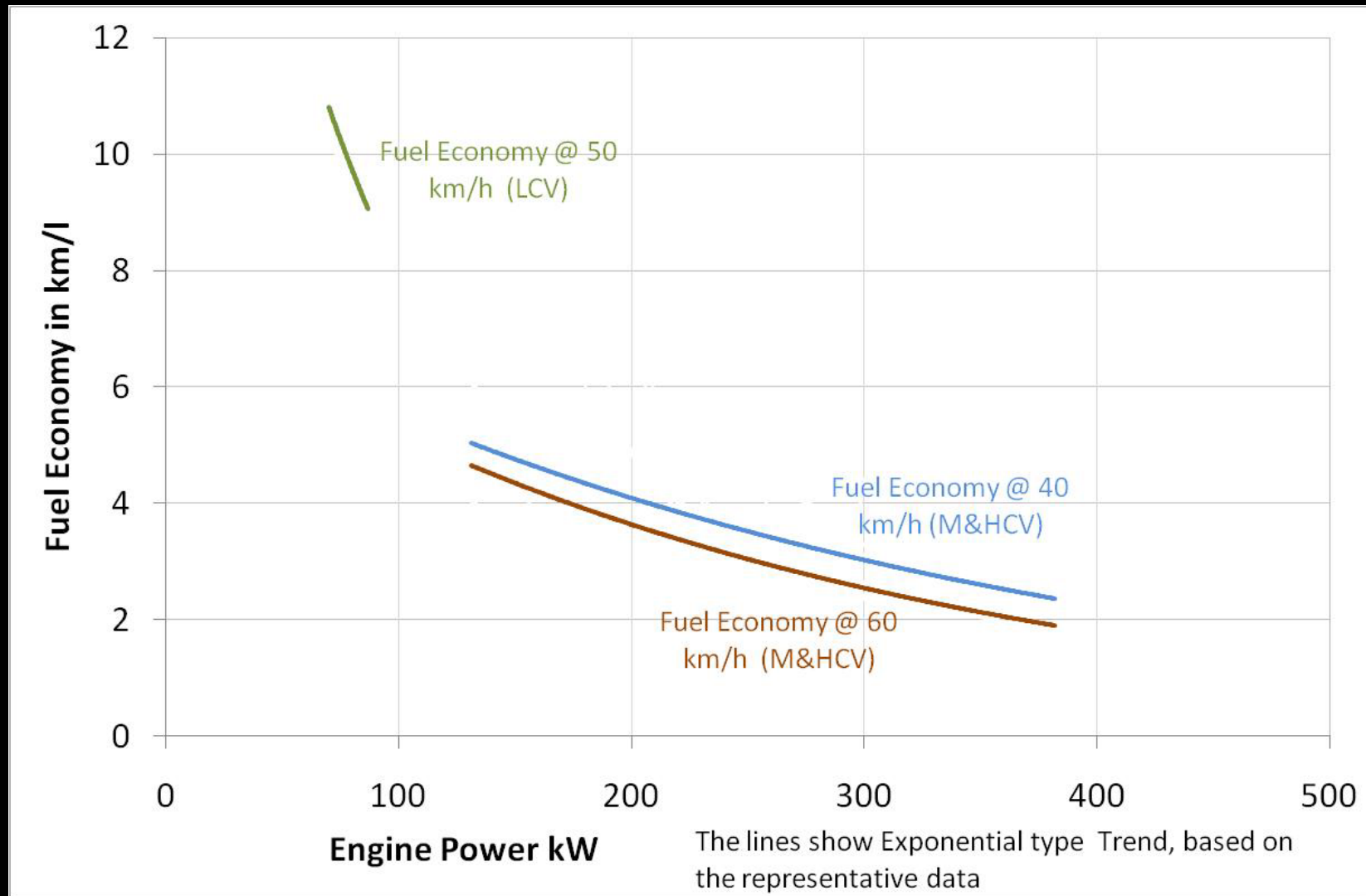
- Light Motor Vehicles-  $\leq 7.5$  tonnes
- Medium Motor Vehicle  $> 7.5$  to  $\leq 12$  tonnes
- Heavy Motor vehicle  $> 12$  tonnes

# Fuel Efficiency Measurement Procedure

(S.O.1365 [E] dt. 13<sup>th</sup> Dec 2004 )

- Applicable vehicles manufactured from 1<sup>st</sup> April 2005
- Two and three wheelers and four-wheeled vehicles with GVW up to 3.5 tonnes
  - Measurement on the basis of driving cycle used for emission testing as per the carbon balance method during emission testing
- Light motor vehicles and medium and heavy motor vehicles
  - Constant speed fuel consumption test as per IS:11921:1993
  - Light motor vehicles @50 kph
  - Medium and Heavy Motor Vehicles -@ 40 and 60 kph
- Fuel consumption measurement at above Test speeds but no Norms (for Data Collection )

# Fuel Economy Data for Indian LCV, M&HCV Vehicles

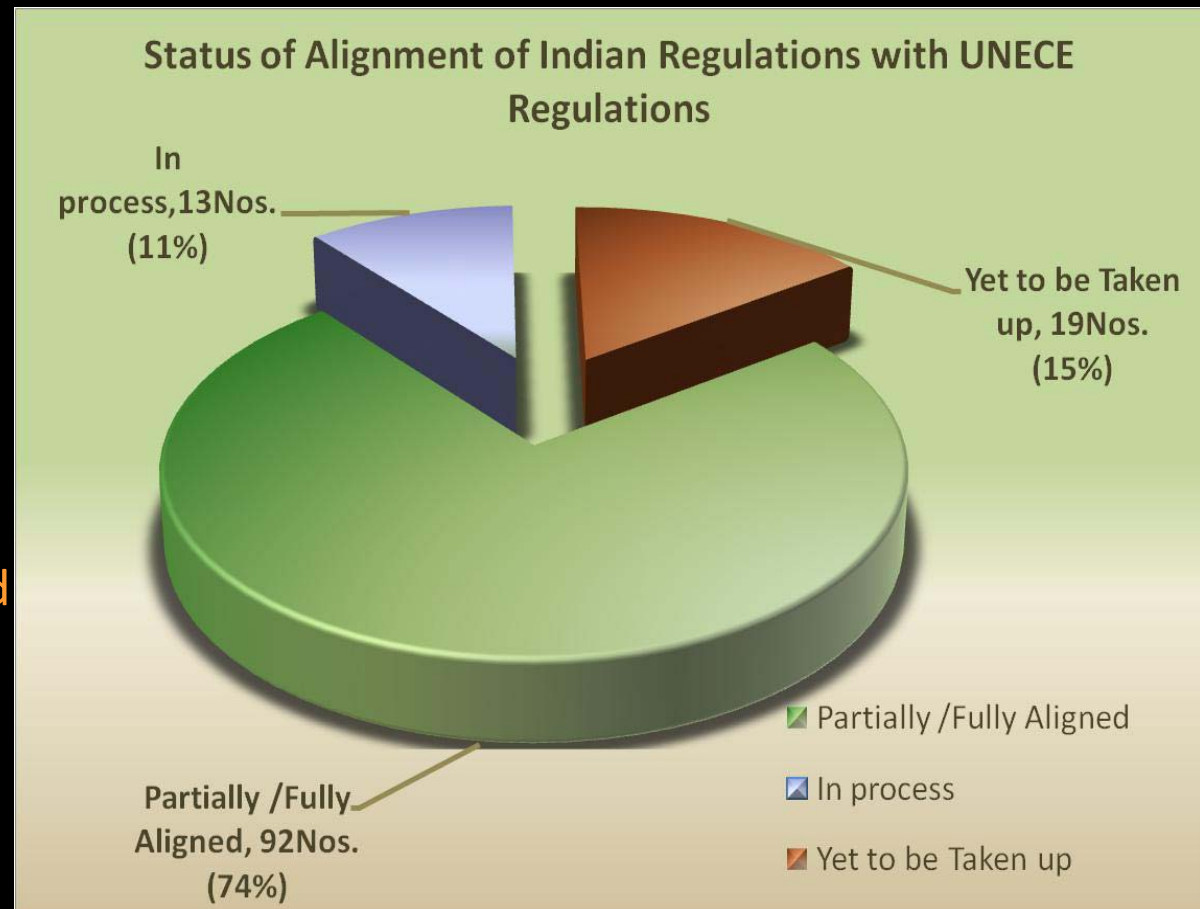


# CITY SPECIFIC DRIVING CYCLE FOR BUSES

- Formulated City specific Driving cycle for buses in four cities viz. Delhi, Mumbai, Chennai and Kolkata.
- Cycle is being used for measurement of fuel consumption and emission of 'in-use' vehicles using Heavy duty Chassis Dynamometer of 2.5 m roller dia and 150 kW capacity.
- For LCV/MCV/HCV's which operate in some parts of cities, sub-urban areas and on state / inter-state highways, specific driving cycles are required to be formulated for fuel consumption / emission measurement

# Focus of Indian Automotive Regulations

- Present focus
  - Emissions and Safety
- Future focus
  - In addition to above, focus would be on Climate change /Global warming/Fuel consumption



Total 124 UNECE Regulations

# Issues under discussion

- The approach
  - CO<sub>2</sub> based?
  - Fuel Economy based?
- Categorization of vehicles
  - Weight based?
  - Engine Capacity based?
  - Power based?
- Measurement methodology
  - Engine Dyno based /Chassis Dyno based/ Field measurement?
  - Correlation of engine dyno measurement with Fuel Economy data on road?
- Framing of policies/standards and enforcement
- Implementation and timeframe

# CONCLUSIONS

- The current size of medium and heavy motor vehicles market is 600,000 per annum and is poised to grow at 16% CAGR in future
- Large road infrastructure growth by a factor of 5.5 in 2011 compared to 2004
- Fuel consumption measurement standard (S.O.1365[E] dt. 13th Dec 2004) is in place for 2-W to Heavy Motor Vehicles from 1st April 2005
- Proposed next steps:
  - Study of International standards
  - Cost Benefit analysis for implementation of standards
  - Phase wise implementation of standards

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