

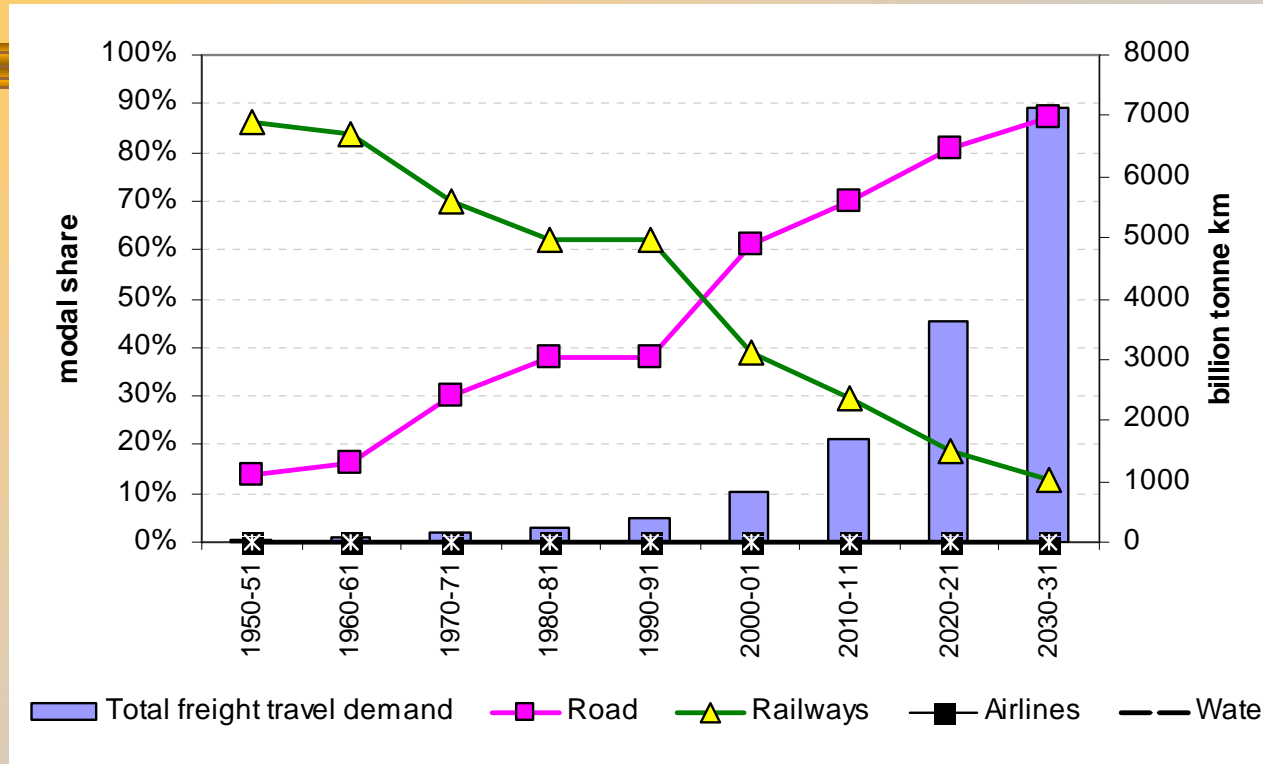


*Case for Automotive Fuel
Efficiency Standards in India*

S Sundar
Distinguished Fellow, TERI

FIA , May 2008, Paris

Freight Traffic: Inter modal share



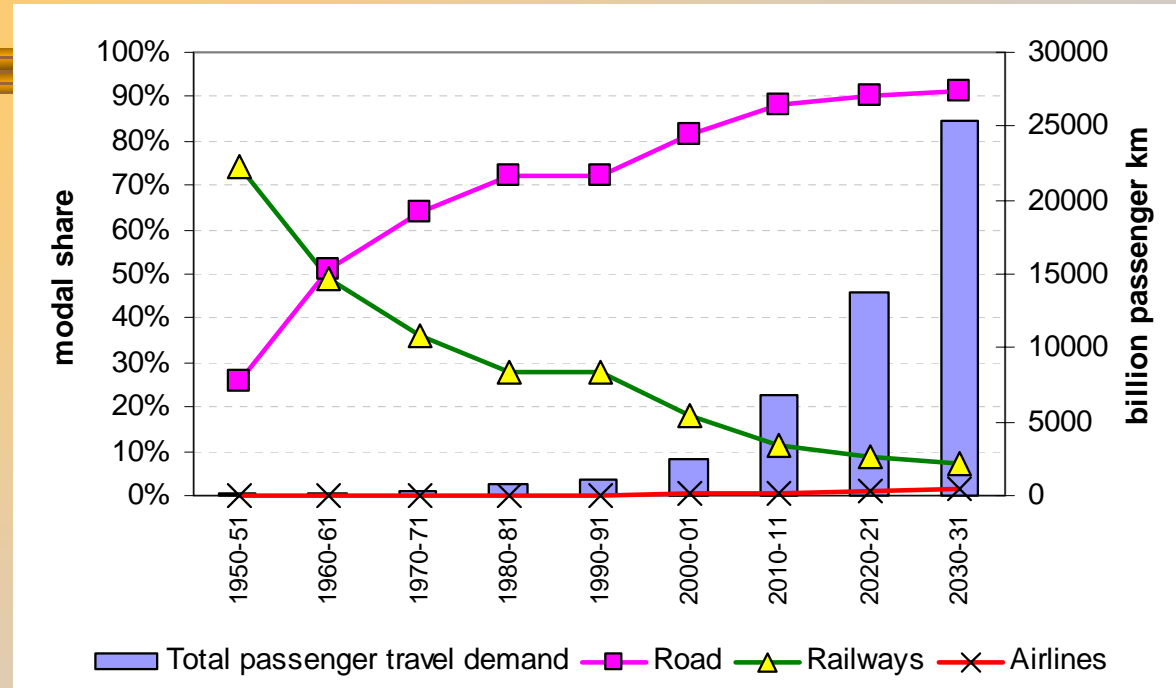
Continuous erosion in the share of Railways in freight movement and increase in share of less efficient road transport

Road transport is the most dominant mode of transport. Over 60% of freight were moved by road in 2004-05

Assumed GDP growth rate = 7.5% pa (2007-12); and 6% pa (2012-2030)



Passenger traffic: Inter modal share



Substantial shift from rail to road

- Rail dominates long-haul
- Road dominates short-haul

Road transport is the most dominant mode of transport. Over 85% of passengers are moved by road in 2004-05

Assumed population growth rates

Population growth rate = 1.11% pa (2001-36); Urban population growth rate = 2.27% pa (2001-36)



Rural Connectivity

Total number of Habitations*	944922
Connected**	588255 (62.3%)
Unconnected	356667 (37.7%)

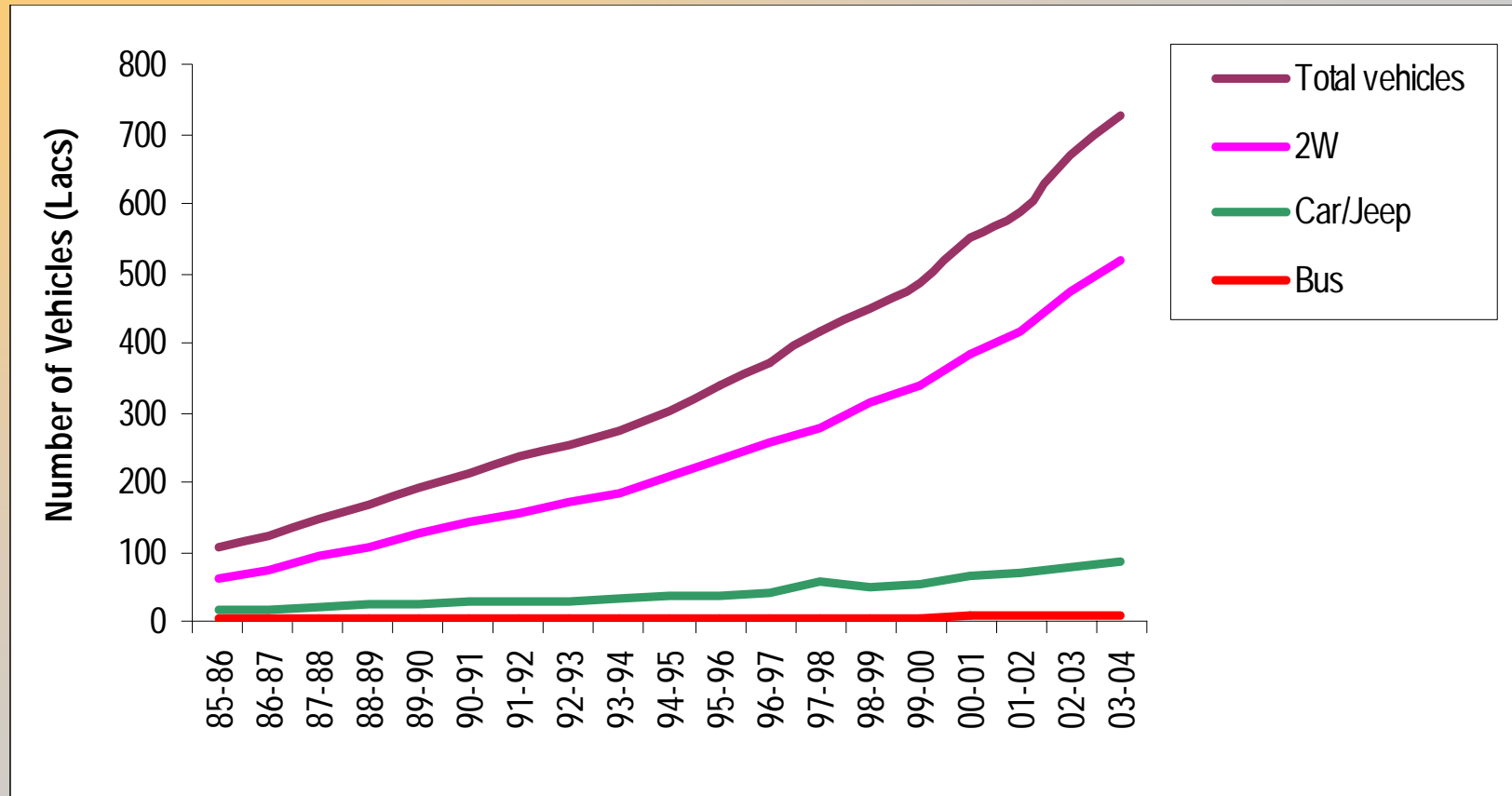
GoI targets to connect all rural habitations by 2010

* A **Habitation** is a cluster of population, living in an area, the location of which does not change over time

**Connectivity, by way of an All-weather Road (with necessary culverts and cross-drainage structures, which is operable throughout the year)

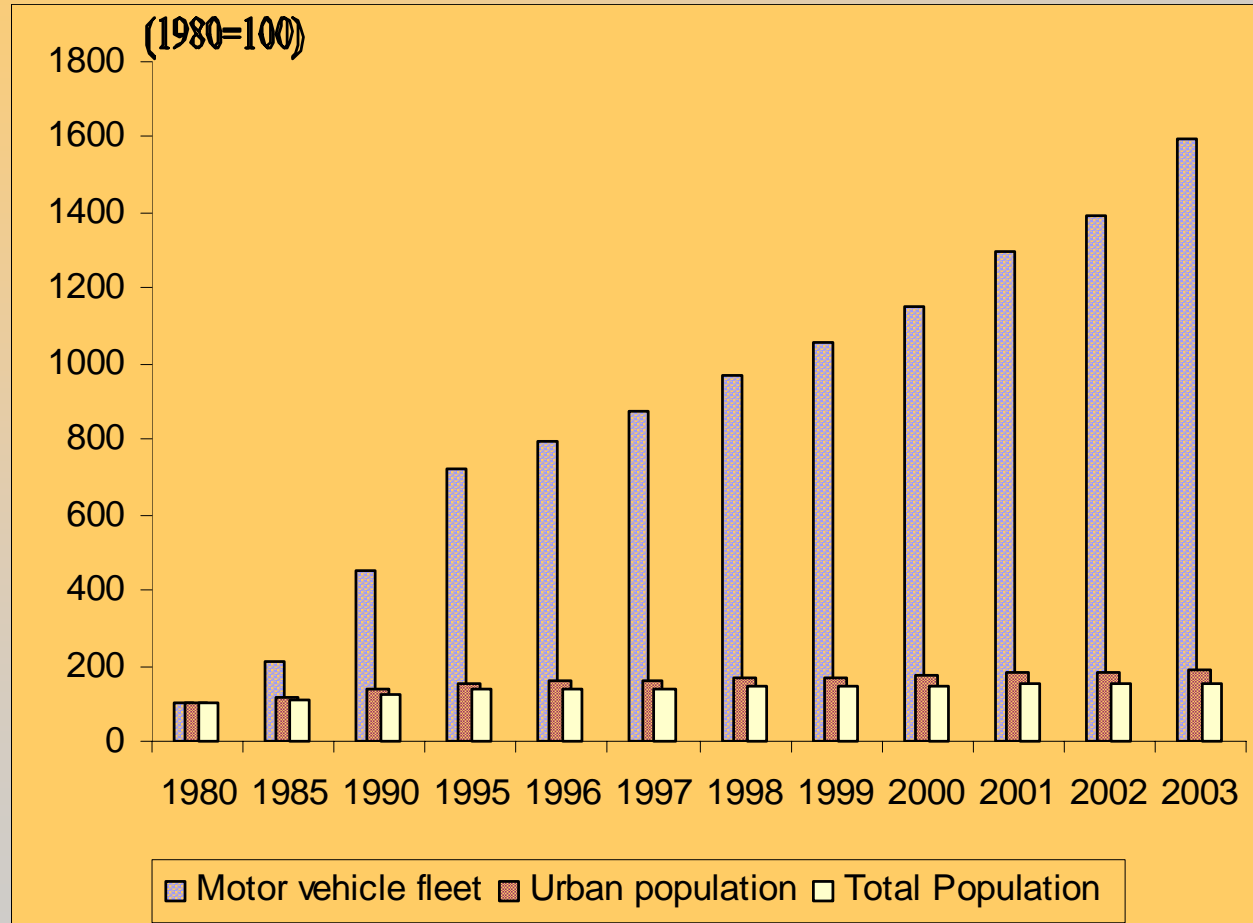
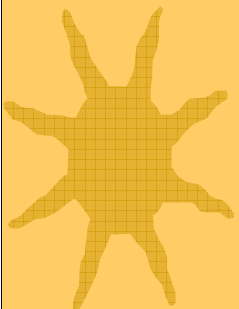
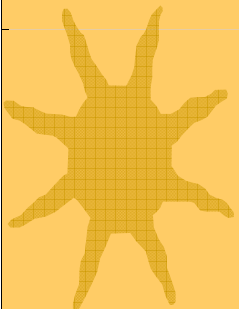
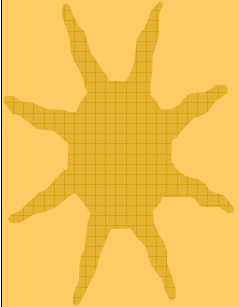


Vehicular growth in India



★ Rapid rise in private vehicle ownership

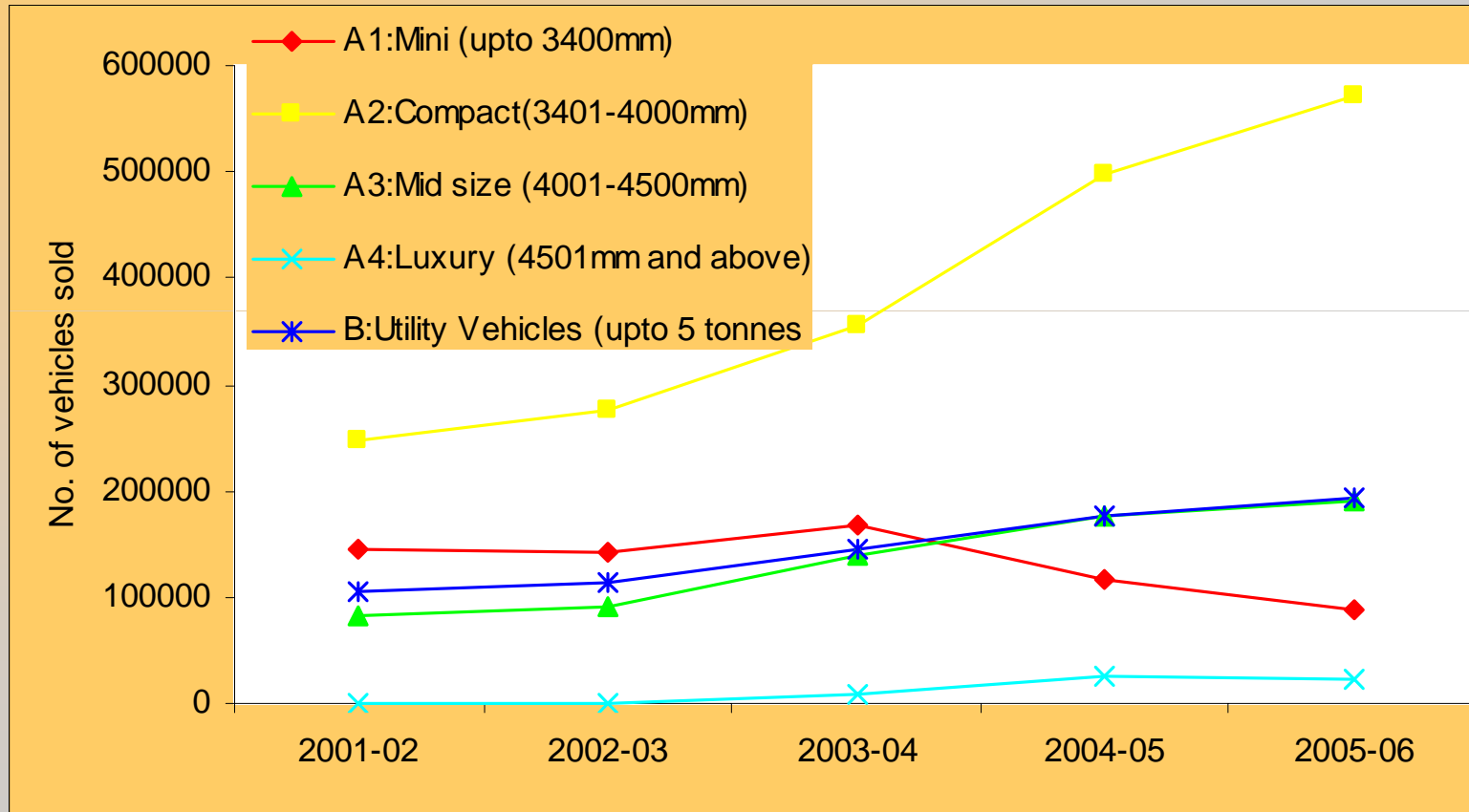
Growth of Population, Urban Population and Motorization



- Population size almost doubled
- Vehicles increased 15-times

Source: TERI, 2006

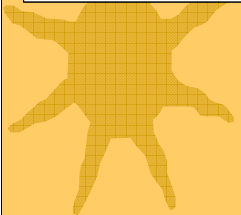
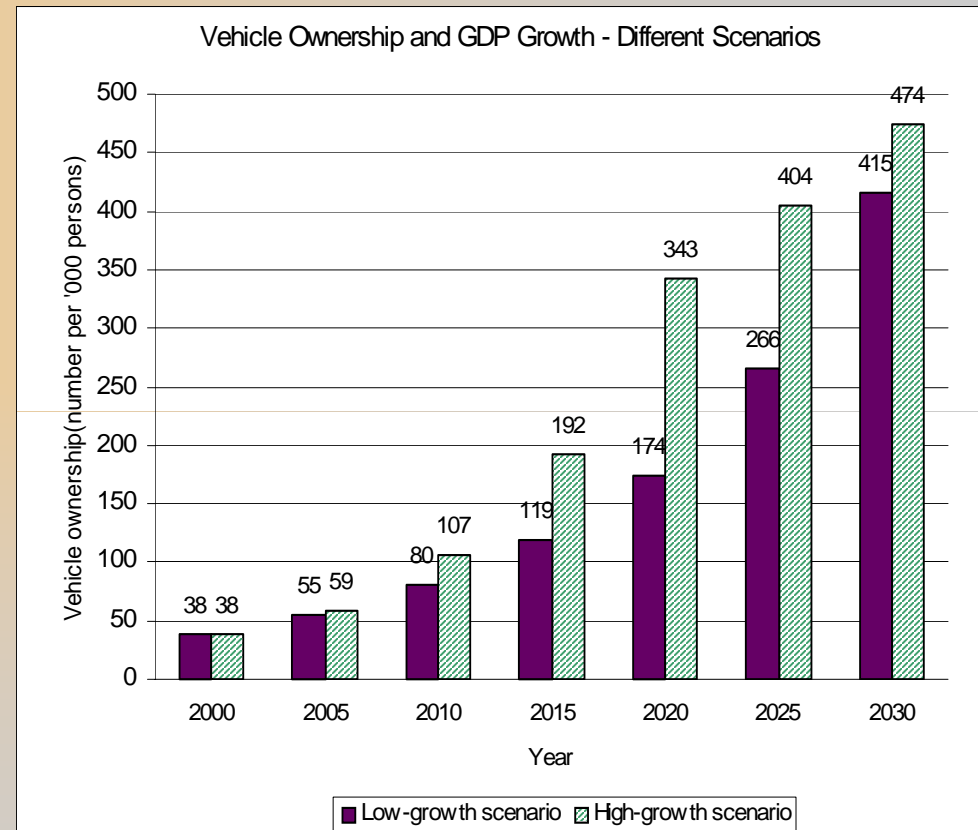
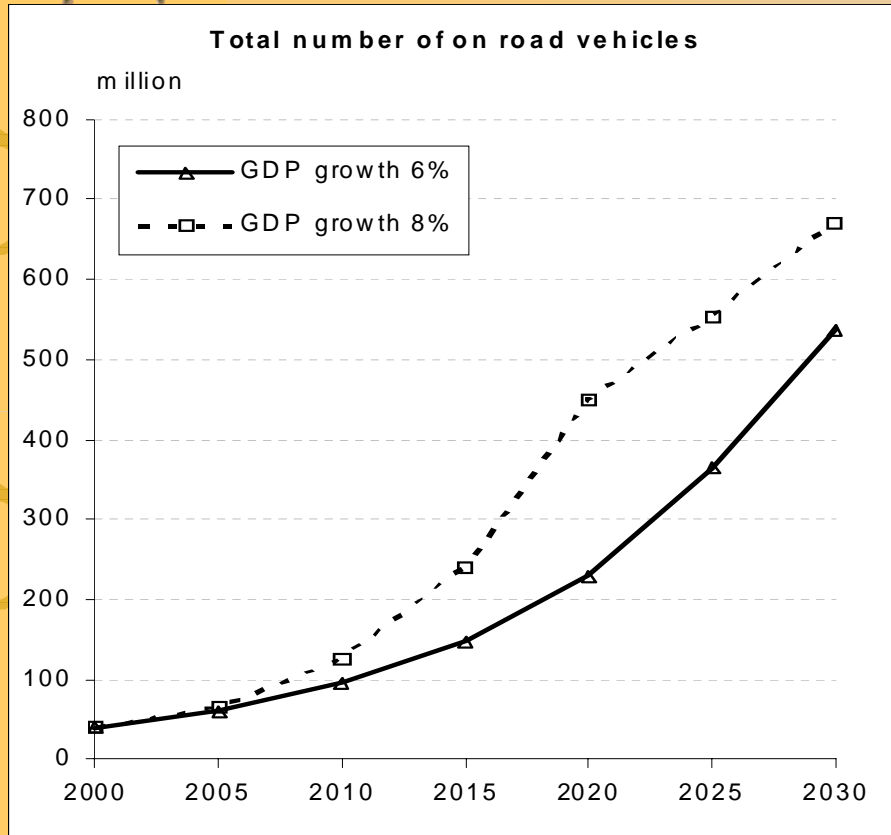
Sales Trend of Cars



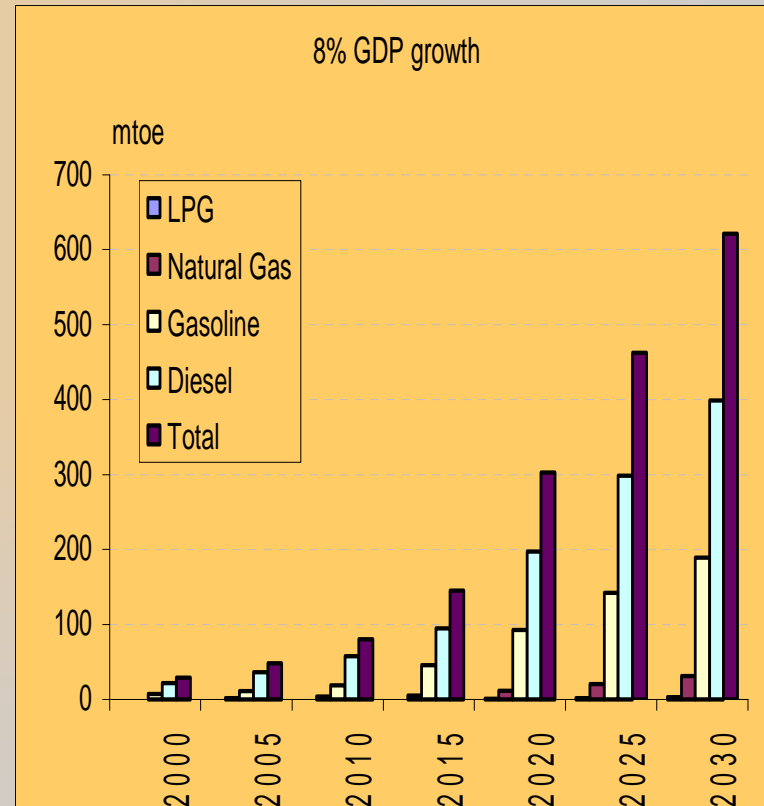
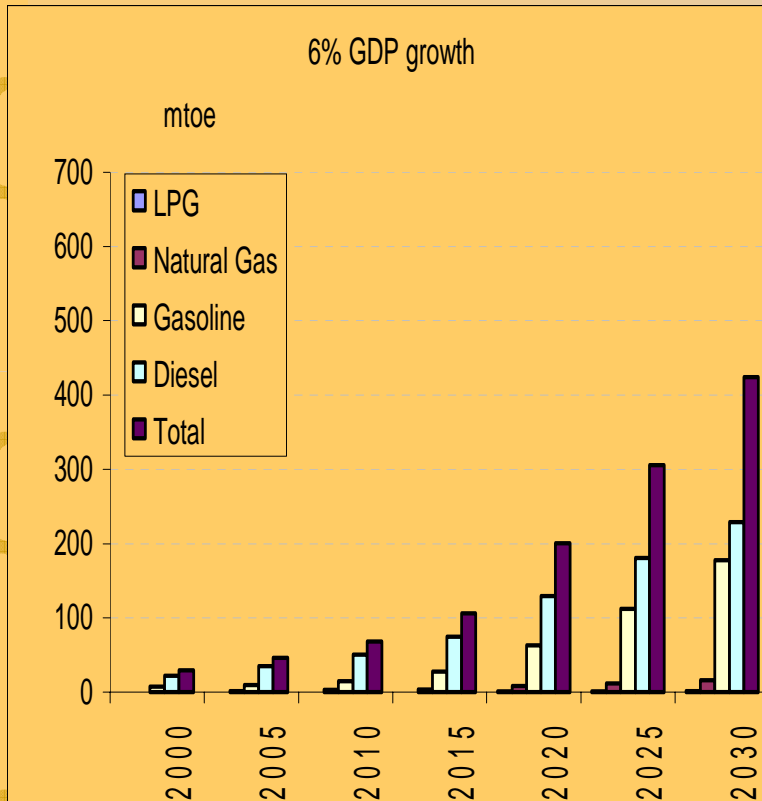
Note: A4 – Executive, premier and luxury car segments combined



The Future: Growth in GDP and Vehicles



Growth in Fuel Demand

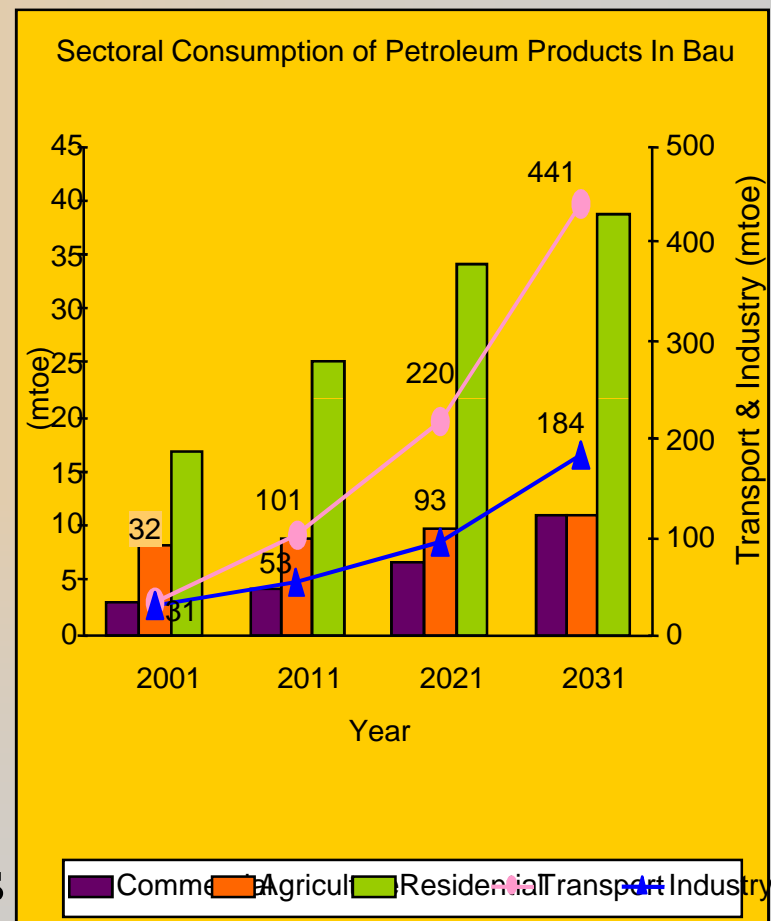


Source: TERI study "Energy Efficiency and Climate Change considerations for on-road transport in Asia" published by ADB (2006)



Impact of Transport on India's Energy Security

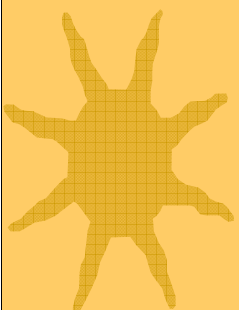
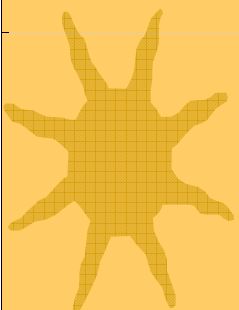
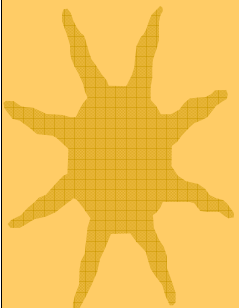
- Sectoral share of transport in petroleum consumption to increase from 36% in 2001 to 64% in 2030
 - An increase in petroleum consumption in transport sector by 13.6 times
- Oil import dependency for India to increase to 93% by 2031.
- Limited fuel switching options for transport sector





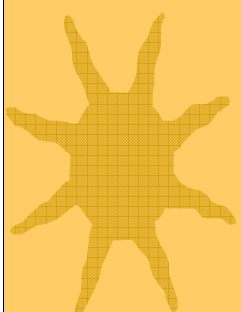
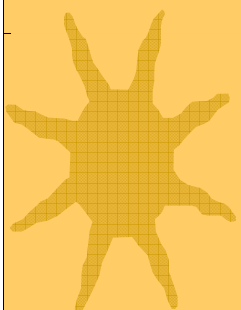
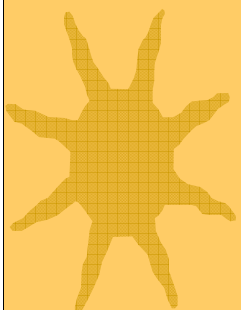
Measures to Contain Energy Consumption

- ★ Technology improvements –Fuel efficiency standards
- ★ Transport demand management
- ★ Increase in penetration of public transport
- ★ More NMT
- ★ Coordinated government strategies and activities (transport and land use, infrastructure investments, transport planning etc)





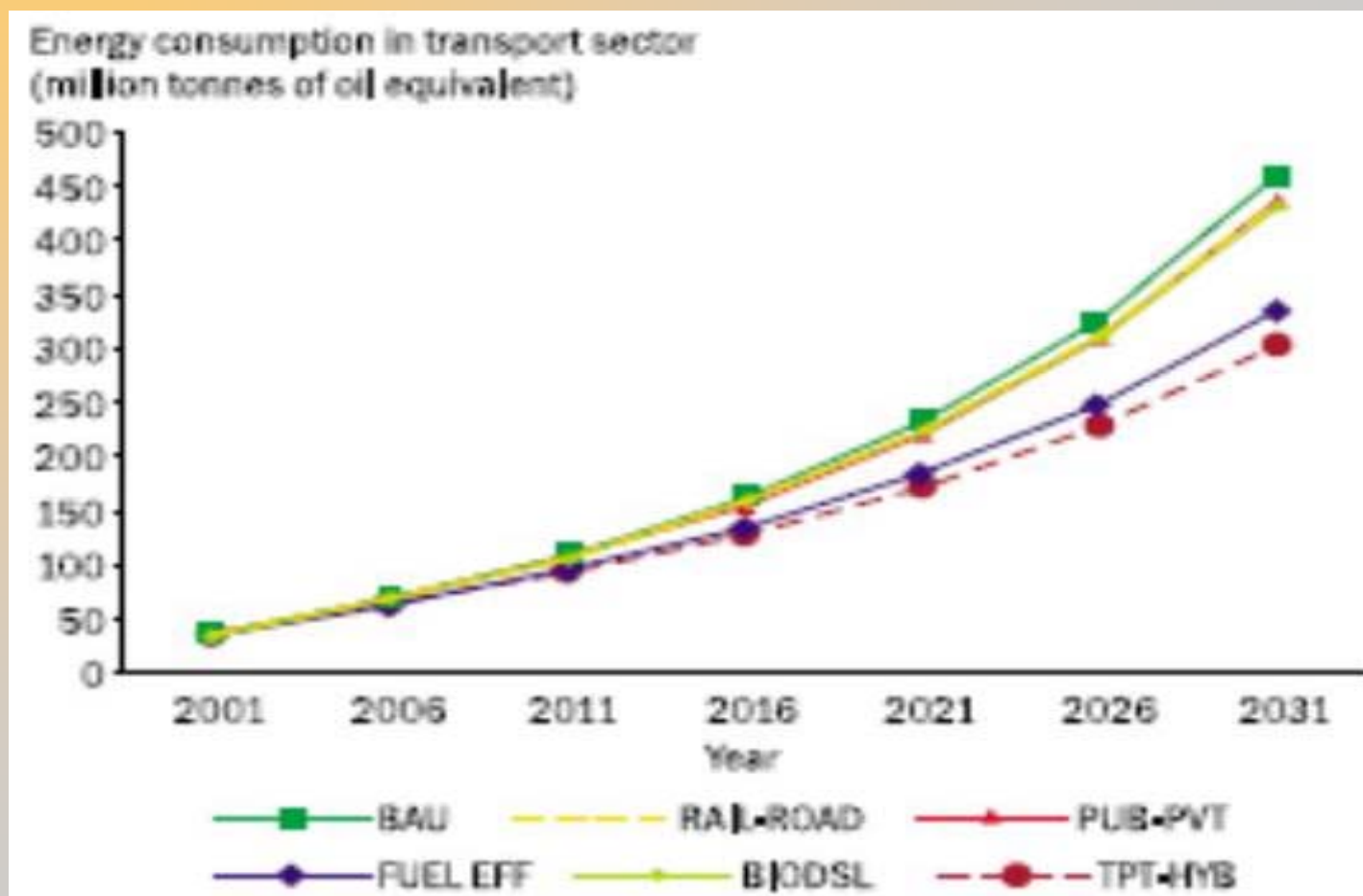
Potential for energy efficiency in the transport sector



Scenario	Description
Enhanced share of public transport	Share of public transport modes to increase to 60% in 2036.
Increased share of rail in passenger and freight movement vis-à-vis road	Railway freight share to increase from 37% in 2001 to 50% in 2036. Railway passenger share to increase from 23% in 2001 to 35% in 2036. Share of electric traction to increase for rail passenger and freight to 80%.
Fuel efficiency improvements	Fuel efficiency of all existing motorized transport modes to increase by 50% from 2001 to 2036.
Use of bio-diesel in transport	Enhanced penetration of bio-diesel by 65 Mtoe by 2036.
Transport sector hybrid	Incorporates all the above-mentioned scenarios, in addition to those in the BAU.
Mtoe - million tonnes of oil equivalent	

Source: National Energy Map for India: Technology Vision 2030

Energy Consumption in Transport Sector Across Scenarios



Source: National Energy Map for India: Technology Vision 2030

Energy Consumption in Transport Sector (in Mtoe) Across Scenarios

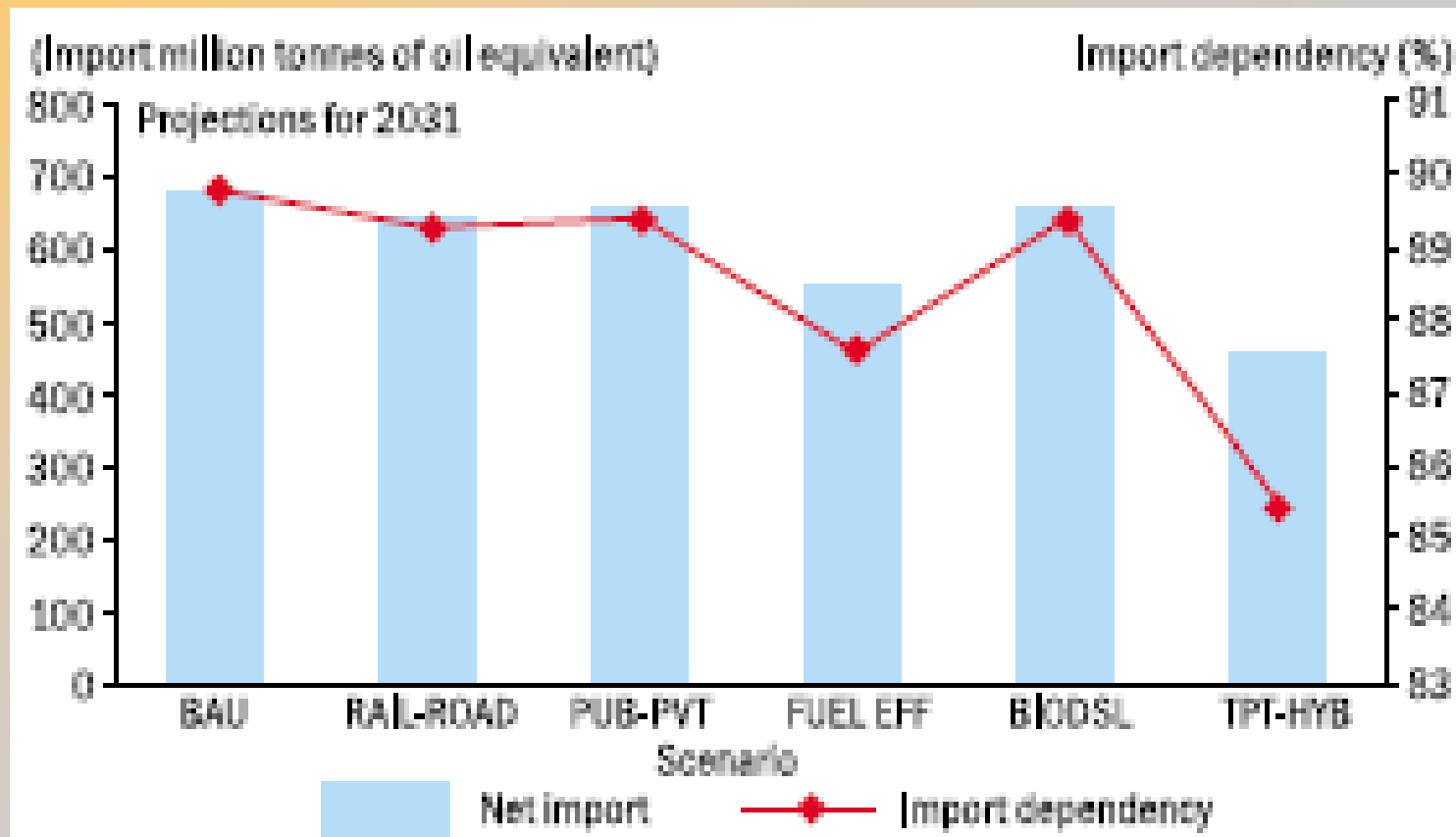
Scenario	2001	2006	2011	2016	2021	2026	2031
BAU	34	67	106	161	231	328	461
RAIL-ROAD	34	67	105	158	223	312	430
PUB-PVT	34	66	107	154	219	310	436
FUEL EFF	34	63	94	135	184	249	336
BIODSL	34	67	104	157	222	310	433
TPT-HYB	34	64	94	126	171	228	302

BAU - business-as-usual; Mtoe - million tonnes of oil equivalent

Source: National Energy Map for India: Technology Vision 2030



Possible Reduction in Net Import and Import Dependency

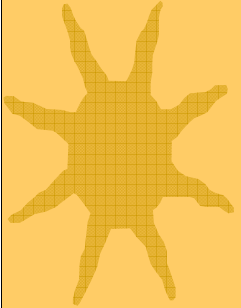


2031

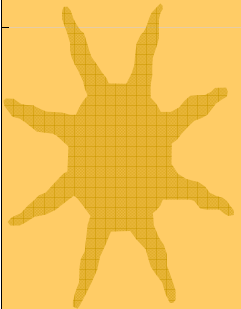
Source: National Energy Map for India: Technology Vision 2030



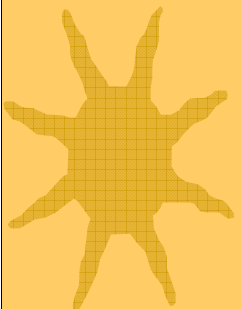
Fuel efficiency-evolution of policy in India



★ Fiscal incentives for fuel-efficient small cars when Maruti was introduced in the mid-eighties. Incentives withdrawn when contested by competitors.



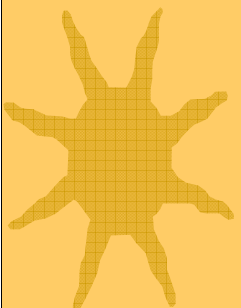
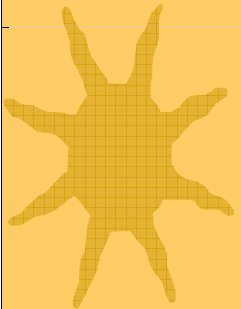
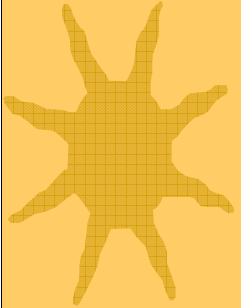
★ Committee on Auto Fuel Policy (2002) noted that fuel economy continues to be the driving force in the market and that the latest brand of vehicles achieve the optimum fuel efficiency in their class





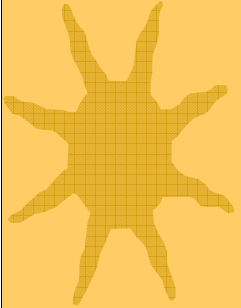
Committee's Recommendations

- ★ Voluntarily declaration of fuel economy for each model by the manufacturers should be mandatory
- ★ Manufacturers should publish fuel economy in the instruction book supplied with each vehicle
- ★ No recommendations regarding FE standards or improvements over a period of time

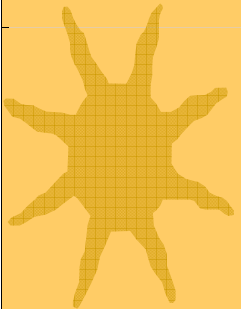




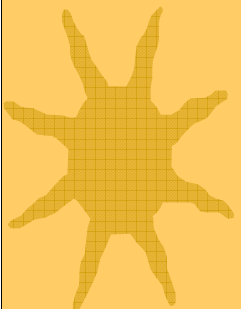
Evolution of policy



Integrated Energy Policy 2006 recommended 50% improvement in vehicle fuel economy by 2030; estimated oil saving of 86 million tonnes



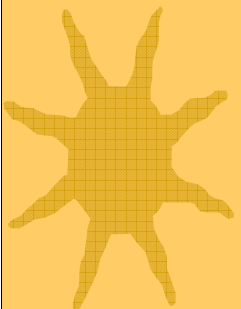
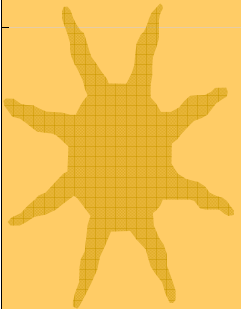
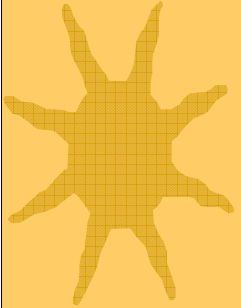
Working Group on Petroleum and Natural Gas for the 11th Five-year Plan proposed 8% improvement until 2012 and 5% thereafter





Industry Position

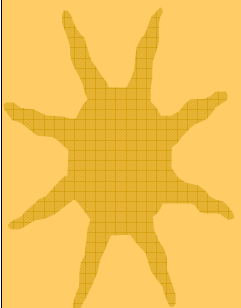
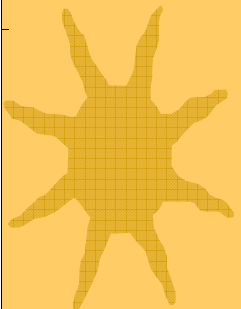
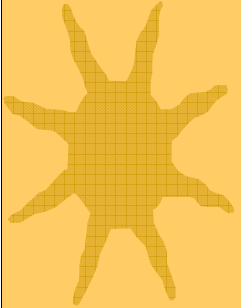
- ★ Need for FE standards in India not as evident as in the West
- ★ Cost of new technology a major consideration
- ★ Mostly small and fuel-efficient cars
- ★ Strong consumer preference for fuel efficiency
- ★ Incentives will be more effective than standards
- ★ Publication of test data conducted using a driving cycle on chassis dynamo meter will mislead customers





Current Position

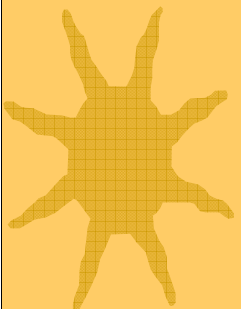
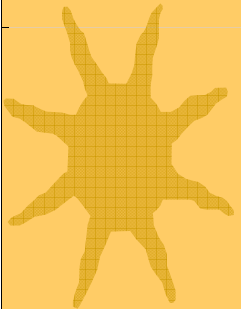
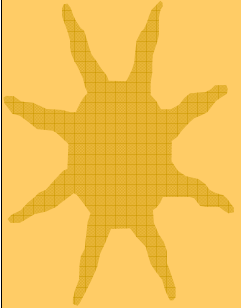
- ★ Industry is proposing standards for CO2 reduction
- ★ Bureau of Energy Efficiency is considering setting standards under Section 13(2)(a) of the Energy Conservation Act for vehicles.
- ★ Standards yet to be established

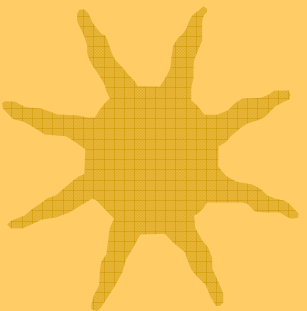
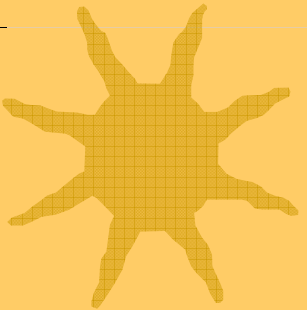
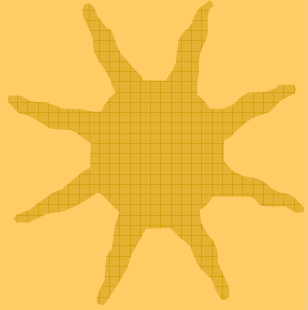




Way forward

- ★ Set mandatory fuel efficiency standards
- ★ Cover all vehicles types including light duty and heavy duty fleets
- ★ Set standards for each model taking into account the reference weight
- ★ Set tighter standards for heavier vehicles
- ★ Provide fiscal incentives for small and fuel efficient vehicles
- ★ Promote hybrids
- ★ Introduce energy labelling





Thank you