Seminar on

"Technology Trends for Fuel Efficiency & Emission Control in Transport Sector"

Growth of Automobile Sector in India

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Society of Indian Automobile Manufacturers

31st October 2007, New Delhi

SIAM

Contents

- SIAM
- Automobile Industry in India : Growth
- Automobile Production : A Comparison
- Vehicle Parc : Growth trends & Segment
- Vehicle Penetration : Some Facts
- AMP : The Future of Vehicle Industry
- Emission & Fuel Efficiency : Issues

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Society of Indian Automobile Manufacturers

- Non-profit organisation representing 38 vehicle & vehicular engine manufacturers
- Advocacy: Industrial & Economic Policy, Technical roadmaps and Public Policy
- Networking – Stakeholders National / International
- Seminars / Conferences – Technical, Trade & Economic, Road Safety
- Statistical services – production, sales and exports
- Auto Expo

SIAM Members

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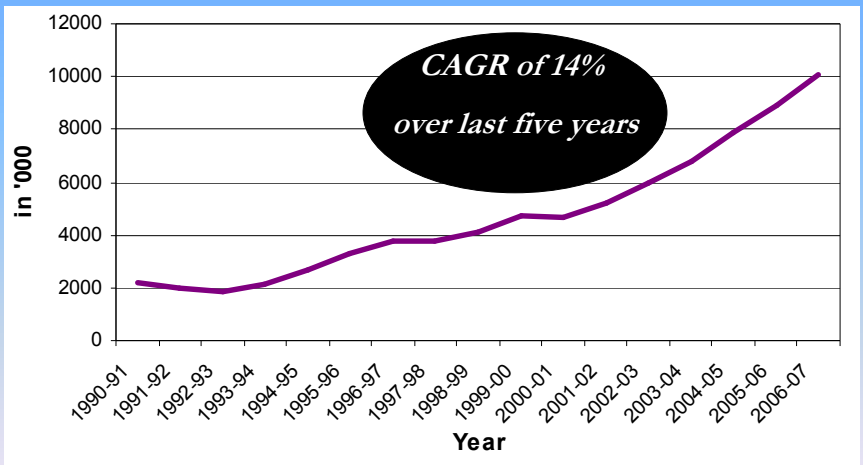
Automobile Domestic Sales - Growth



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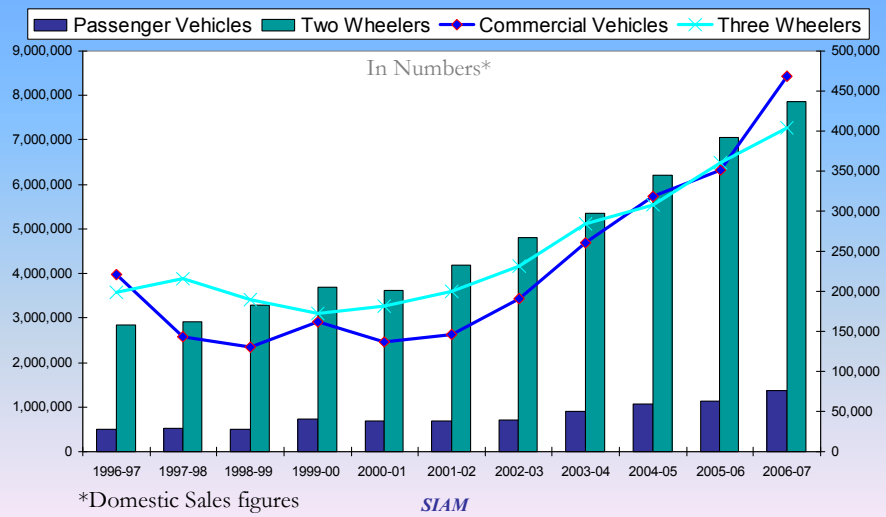
Industry Growth



*Domestic Sales figures

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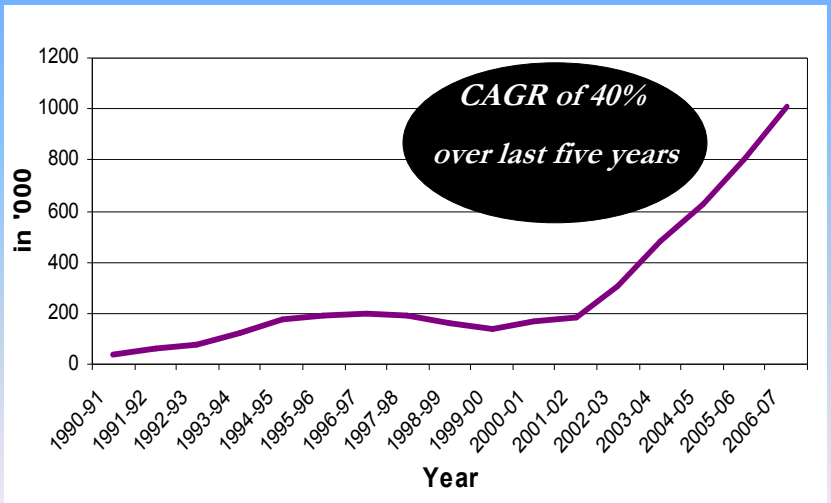
Automobile Export – Growth



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Currently around 10% of production is exported

Key Drivers

- Growth of Economy – GDP
- Availability and cost of finance
- Low Level of penetration of vehicles
- Choice of Contemporary vehicles at competitive prices
- Development of Infrastructure
- Changing demographic characteristics
- Increased need for mobility
  - Vehicles seen as a means to promote

  Entrepreneurship, Employment, Efficiency & Economic growth

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Automobile Industry Today

- Automobile industry turnover in 2006-07 was ~ Rs 143.43 thousand crores (or USD 33.4 billion).
- Contribution to Economy – 5.5% of GDP.
- Domestic sales growing at a CAGR of ~ 14% over last five years.
- Exports growing at a CAGR of ~ 40% over last five years.
- **10.5 million employment (direct & indirect).**
- New investments announced around – Rs 67 thousand crores (or 15 billion USD).

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The Automotive Sector : Some Facts

1. Performance of the automobile industry and industrial output are strongly correlated.
2. Automobile & Allied Industries are a significant contributor to the economy
   - Rs 17,000 Crores + : Excise duty.
   - Rs 70,000 Crores : Fuel Taxes
   - Rs 20,000 Crores :collected by States (2003-04)
3. Incidence of tax is currently very high in India
4. Compared to like economies, penetration of vehicles is very low in India
5. Well defined & Long Term Road Map on Auto Emission & Fuel Quality already evolved by Expert Committee on Auto Fuel Policy.

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Vehicle Production in India is Low

In '000

	Cars			Commercial Vehicles		
	2001	2006	CAGR %	2001	2006	CAGR %
US	4,879.12	4,366.22	-2.2	6,545.57	6,897.77	1.1
Europe	17,423.25	18,073.78	0.7	2,678.09	3,225.12	3.8
Germany	5,301.19	5,398.51	0.4	390.49	421.11	1.5
Japan	8,117.56	9,756.51	3.7	1,659.63	1,727.72	0.8
South Korea	2,471.44	3,489.14	7.1	474.88	350.97	-5.9
China	**703.52**	**5,233.13**		**1,630.92**	**1,955.56**	
India	**548.41**	**1,473.00**		**160.05**	**546.81**	

Source: OICA

From almost similar level, China now produce 3.5 times more cars. It produces 3.5 time more commercial vehicles also.

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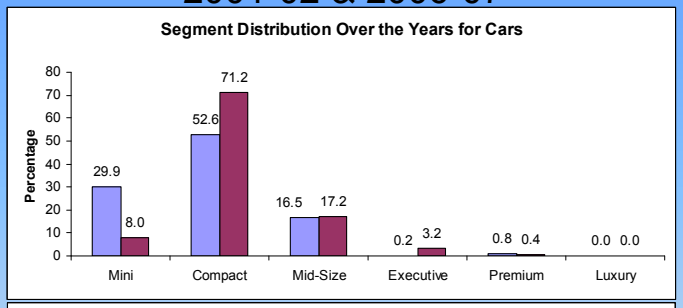
World Trend In 2 Wheeler Production

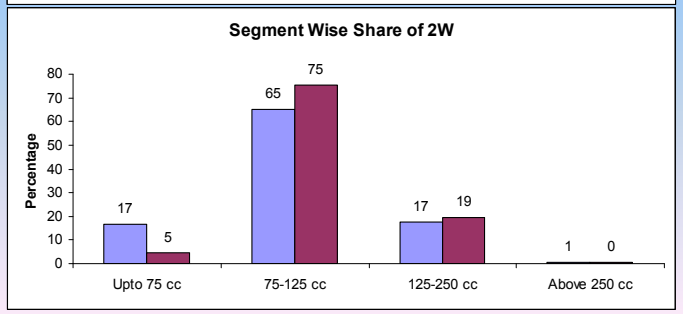
	2001	2006	CAGR %
China	11,912,719	20,544,842	11.5
India	4,323,644	8,384,707	14.2
Indonesia	1,645,133	4,458,886	22.1
Taiwan	994,794	1,412,953	7.3

While China manufactures 2.5 times India's production, Indonesia is catching up.

Source: Honda Motorcycle Facts & Figures *SIAM*

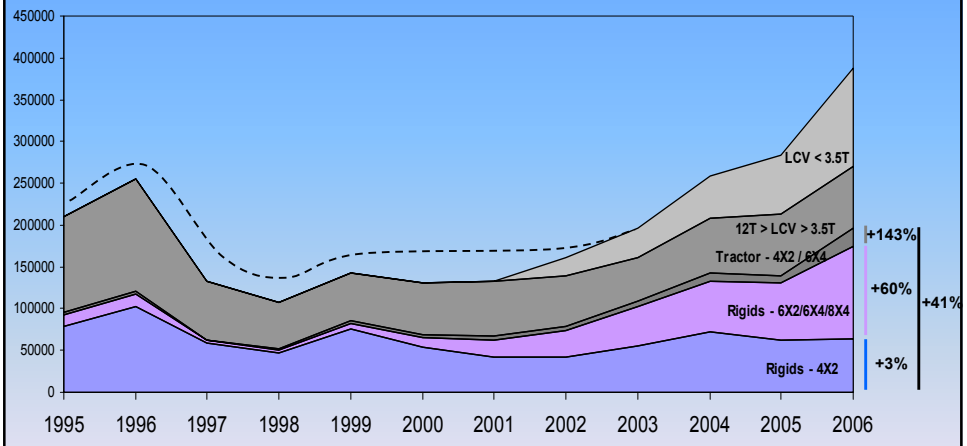
Cars & Two-Wheelers : Segment wise production 2001-02 & 2006-07





Commercial Vehicles - Trucks

Growth Driven by Multi Axles and LCVs < 3.5T



- *LCV Data before 2003 is based on Financial Year*
- *Breakup of LCV (N1 and N2) Category is not available before 2003. Trend line shown is estimated.*

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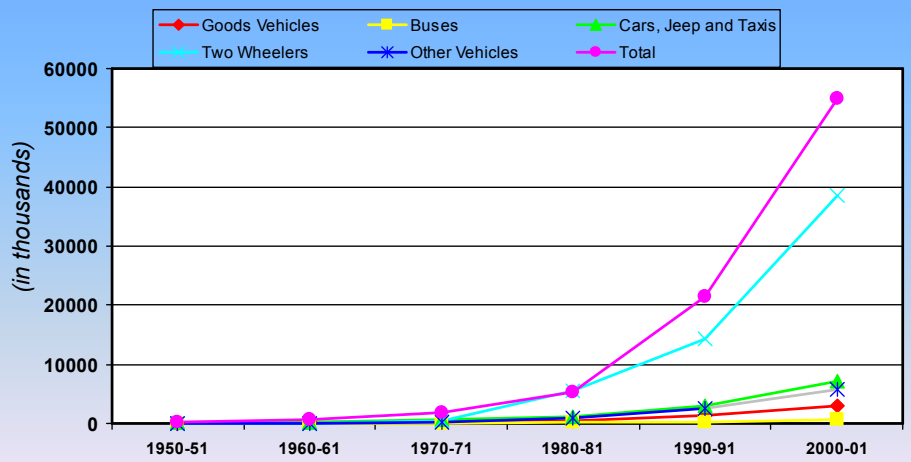
Number of Registered Motor Vehicles



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Low Passenger Vehicles Penetration

City	Cars / 1000 people
Germany	550
France	495
Malaysia	253
South Korea	219
Mexico	135
Brazil	96
Thailand	51
Indonesia	16
Philippines	9
India	**7**
China	6

Source: WARD's

Passenger Vehicle penetration in cities is also low

City	Cars / 1000 people
Delhi	85
Chennai	51
Bangalore	41
Jaipur	40
Vadodara	36
Hyderabad	32
Mumbai	23
Kolkata	23

Source MoRTH 2004, Census & Analysis

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Low Two Wheelers Penetration

Countries	2W / 1000 people
Thailand	286
Malaysia	258
Italy	166
Japan	100
Spain	90
Indonesia	90
Switzerland	77
Germany	69
China	59
India	**43**
US	18

Source: JAMA & SIAM

Two wheeler penetration in cities is also low

City	2W / 1000 people
Vadodara	275
Jaipur	219
Bangalore	216
Chennai	196
Delhi	173
Hyderabad	165
Mumbai	35
Kolkata	27

Source MoRTH 2004, Census & Analysis

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Bus Penetration

Countries	Buses / 1000 people
South Korea	26.0
China	6.7
Indonesia	3.5
Japan	1.8
Taiwan	1.1
Germany	1.0
India	**0.7**
UK	0.2

VDA International statistics 2004

Bus penetration in cities is also low

City	Buses / 1000 people
Delhi	2.33
Chennai	3.98
Bangalore	1.97
Jaipur	5.60
Vadodara	2.01
Hyderabad	0.44
Mumbai	0.69
Kolkata	0.96

Source MoRTH 2004, Census & Analysis

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Vehicle Density

Motor Vehicles per km

Germany	209.6
Taiwan	159.2
UK	87.2
Japan	61.8
France	40.0
USA	35.4
Indonesia	16.8
China	12.6
India	**3.2**

Delhi – 47.2

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Two wheelers : Delhi 98.7

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Automotive Mission Plan 2006-2016
Vision

"To emerge as the destination of choice in the world for the design and manufacture of automobiles and automotive components. The output of India's automotive sector will be USD 145 billion, contributing to more than 10% of India's Gross Domestic Product and providing employment to 25 million persons additionally by 2016".

AMP Recommended Interventions

1. Investment support
2. **Infrastructure development**
3. Incentives to expand Domestic Demand
4. International markets development support : Exports
5. **Innovation : R & D incentives**
6. **Implementation of Emission road map**
7. **Internationalisation of safety norms**
8. **Incentivising modernisation of fleet**
9. **Inspection & Certification system**
10. **Information Technology application: computerisation of RTOs**
11. Improving Productivity & Human resources

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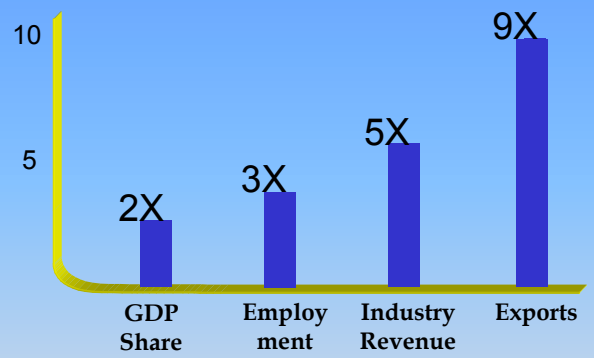
Automotive Mission Plan Targets



- India would emerge as the world's
  - 7th largest car producer
  - 4th largest position in world truck manufacturer
  - Remain 2nd largest two wheeler manufacturer

Regulations should help in meeting the overall projections of Automotive Mission Plan

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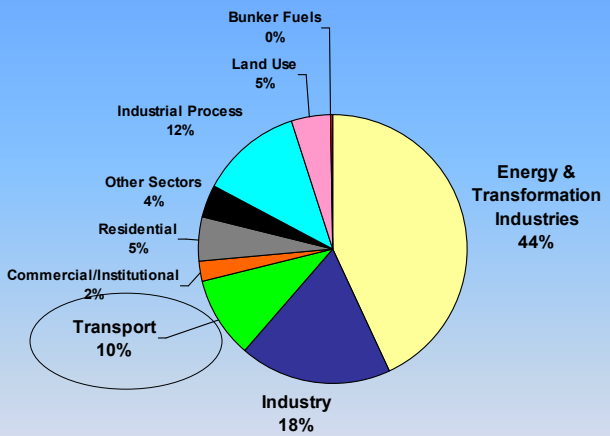
CO2 Emissions from Various Sectors in India



Source: Initial National Communication to UNFCC; MoEF-1994, Government of India

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How Much CO2 Does Transport Contribute

S. No	Country / Region	CO_2 (Mt)			Contribution of Transport (%)
		Total	Power Generation	Transport	
1	World	26,079	10,587	5,112	19.60
2	USA	5,769	2,403	1,759	30.49
3	Japan	1,211	454	252	20.81
4	OECD Europe	4,078	1,409	976	23.93
5	India	1,103	629	98	8.88

Source: World Energy Outlook for the year 2004
International Energy Agency

Total Contribution from Transport in India in Overall CO2 Emission Worldwide - **0.37%**

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Study by MoEF

- Under UNFCC, India would be updating the estimation of CO2 emission contribution from all Sectors
- Study being commissioned by MoEF
- Duration of the study being 15 months

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Factors that Impact Fuel Consumption

Fuel Efficiency only one of the many factors

- Safety Regulations
  - New Safety regulations increases weight of vehicle
  - Mandating Air conditioning would increase consumption
- Roads : Availability & Condition
  - Frequent braking while driving due to badly maintained road
  - Increase rolling resistance
  - Problems is much worse outside major cities
  - Lack of infrastructure increases congestion & reduces speeds
- Inspection & Maintenance programme
  - Old vehicles on road : Lessons from China, Europe, Japan
  - To check vehicle condition
- Driving Habit
  - 5-30% of saving could be observed
- Fuel Adulteration & Pricing
  - Vehicle performance deteriorates
- Emission Standards : Future Trade offs

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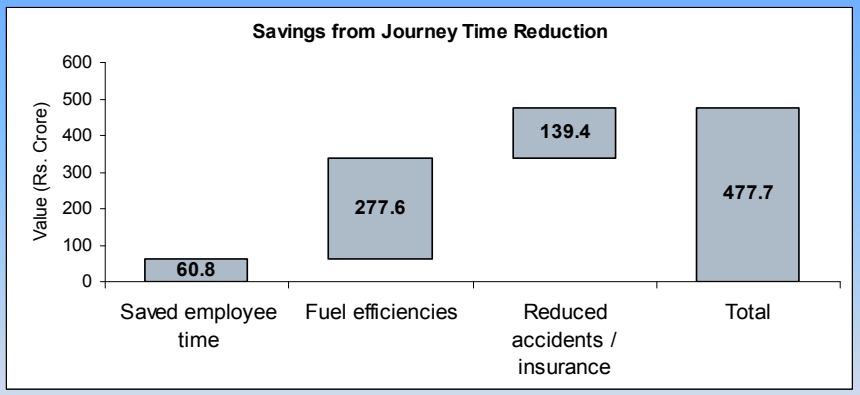
Savings from reduced journey times across India estimated at INR 480 Crores



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Development of Regulation for Fuel Efficiency in India

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Fuel Efficiency Norms

- Energy security and Global Warming are the two main reasons.
- In India, Emission Regulations are becoming tighter and so will the Safety Regulations in near future. **This will have some implications on the energy efficiency of the vehicles.**
- Suitable learning needs to be drawn from the drawback of the similar regulations adopted in Europe, USA and Japan..

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FE of Indian Vehicles

- Per capita consumption of energy is very low with respect to automobile segment.
- Fuel efficiency has been the major driving force in the automobile market in India.
- Indian Vehicles have as good fuel efficiency as any in the rest of the world. For two wheelers, it is one of the highest.

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Fuel Efficiency –Basic Philosophy

–Look at the current level of efficiencies

–Need a long Term well defined plan

–Should aim at defining

- Standard criteria
- Classifications
- Test cycles
- Methodology of measurement

- Japanese Example:
  - Target FE regulations set for **2015 in 2004**
  - Consideration on the Technology development for meeting emission regulations of 2009.

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Fuel Efficiency Norms - Approach

Energy security Aspect: Answers will guide the way…

- What is the consumption of Fuel by auto industry.
- What is the vehicle parc and vintage
- What could be the fuel efficiency of old vehicles
- How much reduction is achievable as a long term goal by reducing Fuel consumption of New vehicles
- What if old vehicles are phased out
- What types of fuels are used
- What if auto industry switch to alternate fuel vehicles. How much will the dependence reduce on Crude oil.
- How are road maps developed in other countries and what is time frame.
- Price sensitive market to new and costly technologies
- Penetration of new technologies in developed markets
- Alternate to modes of transportation or cargo movement

Should market forces be allowed to operate or regulation would lead to better results

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Do we have the answers today …

… perhaps not

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Auto Fuel Policy

- Standing Committee on Implementation of Emission Legislation (SCOE) finalised the details of Emission Regulations as per Auto Fuel Policy
- SCOE has set up a committee to develop FE regulations for India
- SIAM is a member of this committee
- SIAM had initiated work on the same

BEE Initiative & Others

- SIAM & its members participated in the first meeting
- SIAM included in the Steering Committee and Technical Committee
- SIAM is participating in all Government/ other meetings on FE

SIAM Submission

- SIAM is open to working with one single agency
- Scientifically address the subject
- FE Standards an important component of strategy but in isolation would not yield desired results
- Study all International FE & FC Programmes
- Recommend a suitable approach

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