Transport Policy and Planning Framework

Modes of Transport and Integrated & Sustainable Development

23 rd Nov 2016

B. N. Puri
Director (Research)
AITD

INFRASTRUCTURE

Infrastructure plays a vital, often decisive role in determining:

- Over-all productivity and
- Development of country's economy
- Quality of life of the citizens

The facilities that provide the society with the services necessary to conduct daily life and to engage in productive activities.

TRANSPORT

Transportation is the act of moving people and goods from one place to another.

An important sub-sector of infrastructure.

Transport plays a vital, often decisive role in determining:

- Over-all productivity and
- Development of country's economy
- Quality of life of the citizens

ACCESSIBILITY AND MOBILITY

Accessibility

✓ Ability to reach opportunities that is beneficial, not movement itself.

✓ In remote rural contexts gaining access to services, goods and contacts will often require a lot of mobility.

✓ In many urban contexts accessibility might involve very short trip

✓ To enhance accessibility might actually require that we reduce traffic or even reduce the need to travel (or reduce mobility).

Cont…

ACCESSIBILITY AND MOBILITY

Mobility

✓ Efficient movement of people and goods

✓ Ability and level of ease of moving goods and services.

✓Some examples of mobility include: Interstate highways providing designated truck lanes to increase the overall amount of goods transported.

✓Bus Rapid Transit (BRT) systems with bus only lanes that increases the efficiency of moving people while removing automobiles from the roads.

OBJECTIVES OF TRANSPORT DEVELOPMENT

The broad objective of transport policy and planning are as follows:-

1. Adequately catering to the growing demand for transport to support the target growth rate of gross domestic product.
2. Evolving of a strategy that encourages optimal inter-modal mix and ensures
    1. Development of all regions and pays special attention to remote and backward areas
    2. Balance between the need to serve economic development and fulfillment of need to conserve energy, protect the environment, promote safety and sustain future quality of life.
    3. Increase in overall economic efficiency through adoption of suitable technologies for development and operation of transport facilities and proper maintenance of existing assets as also their efficient utilization
    4. Improvement in self financing capacity of the sector.

SIGNIFICANCE OF TRANSPORT

✓ Provision of necessary services for movement of goods and people.

✓ Enlarging the market, improving the productivity of other sectors.

✓ Acting as a necessary stimulus for development of backward areas.

✓ Integrating remote and less developed areas with more developed regions.

LINK BETWEEN
TRANSPORT DEVELOPMENT AND ECONOMIC GROWTH

The availability of adequate and efficient transport system has favorable impact on promoting economic development in diverse ways.

The investment tend to move in those locations that have adequate and efficient infrastructure facilities including transport.

Investors favour the availability of quality infrastructure rather than tax incentives.

Cont…

LINK BETWEEN
TRANSPORT DEVELOPMENT AND ECONOMIC GROWTH

Availability of transport infrastructure leads to reduction in cost of production through efficient and reliable delivery of inputs at lower cost.

The efficient transport network increases the size of market and improve the accessibility to skilled labour. This leads to economies of scale and increase in productivity which results in more investment.

The availability of transport improves the accessibility to health and education facilities.

TRANSPORTATION – DIVISION OF RESPONSIBILITY

- List I – Union List
  - Railways
  - National Highways
  - Shipping and navigation on inland waterways, declared by Parliament
  - Maritime shipping
  - Port and Lighthouses
  - Airways, Airports, Aircrafts etc
- List II – State List
  - Communications, that is to say, roads, bridges, ferries, and other means of communication not specified in List I; municipal tramways; ropeways; inland waterways and traffic thereon subject to the provisions of List I and List III with regard to such waterways; vehicles other than mechanically propelled vehicles.
- List III – Concurrent List
  - Ports other than declared under List I.
  - Shipping and Navigation on inland waterways other than included in List I.
  - Mechanically propelled vehicles including the principles on which taxes on such vehicles are to be levied.

OVERALL TRANSPORT SCENARIO

- The Transport System in India comprises distinct modes such as rail, road transport , coastal shipping, civil aviation, inland water transport and pipelines.
- Rail and road transport dominate the transport system in India, carrying 87 per cent of the total traffic in the country in 2007-08.
- At present, road carries 89.5 per cent of the total passenger traffic, while the share of rail and air transport is 10 per cent and 1 percent respectively.
- In case of freight, about 7 per cent is accounted by coastal shipping and rest is shared by road and rail in ratio of 2/3rd and 1/3rd.

RAILWAYS

- Railways began its operation in 1853
- Before independence there were 42 railway system
- Nationalised in 1951 as one unit
- Route length : 65000 Kms
  Track length : 115000 Kms
  No. of Stations: 7000

CHARACTERISTICS OF RAILWAYS

Railways are composed of a dedicated path on which wheeled vehicles operate.

Heavy industries are traditionally linked with rail transport systems.

Containerization has improved the flexibility of rail transportation by linking it with road and maritime modes.

- ✓ High capacity
- ✓ Heavy and bulky loads over long land hauls
- ✓ Low cost
- ✓ Greater reliability
- ✓ Environment friendly and safer mode of transport

ROADS

- History of Road Development in India goes back to the early ages
- Organised effort at the national level may be traced to the year 1929 (Jaykar Committee)
- Nagpur plan(1943)
  - Classified road network
  - Set targets- Agricultural developed area (accessibility not more than 2 miles from a road and 5 miles from main road)
  - Non-agriculture developed land (accessibility to be within 5 miles from a road and not more than 25 miles from main road)
- Bombay Plan(1961-81)
  - No village should be more than 4 miles from a metalled road
  - Comprehensive road development plan

CHARACTERISTICS OF ROADS AND ROAD TRANSPORT

Mainly linked to light industries where rapid movements of freight in small batches are the norm.

With containerization, road transportation has become a crucial link in freight distribution.

- ✓ Door-to-door transportation.
- ✓ Flexibility
- ✓ Ability to reach remote and difficult places
- ✓ Negative externalities--Pollution, Accidents, Large consumers of space

AIR TRANSPORT

- Compared to other modes of transport civil aviation is a new comer
- In 1911, an aircraft carried mail from Allahabad to Naini across ganga river(10 km)
- In 1924 Britain's Imperial Airways introduced regular air services
- Tata Airways was established in 1932 (First year carried only 155 passengers, 10.71 tones mail.
- World War II saw the construction of no. of airports
- Development of civil aviation followed

CHARACTERISTICS OF AIR TRANSPORT

✓High Speed

✓Predominantly passenger mode

✓Increasing quantities of high value freight and is playing a growing role in global logistics.

✓Heavy on Energy

✓Noise pollution

CHARACTERISTICS OF WATER TRANSPORT

Ports, Shipping and Inland Transport

Ability to transport large amounts of bulk freights, liquids and containerized freights by ships.

Water conferring buoyancy and limited friction, maritime transportation is the most effective mode to move large quantities of cargo over long distances.

More than any other mode, maritime transportation is linked to heavy industries, such as steel and petrochemical facilities adjacent to port sites.

- ✓No obligation or transit-passing transactions between the starting and arrival points
- ✓Damage risk is high
- ✓Long transit time
- ✓High terminal costs, since port infrastructures are among the most expensive to build, maintain and improve.
- ✓High inventory costs

INTEGRATED TRANSPORT

Various modes of transport differ significantly from one another in terms of capital intensity as well as technical and operations capabilities.

Creation of system in which each mode of transport plays its part on the basis of its comparative advantage

Linking modes of transport with commodities, length of haul etc,

Multi-modal transport.

Cont…

INTEGRATED TRANSPORT

Why Integrated Approach

Firstly, the stage of economic development which influences the type of commodities to be moved and services required by the passengers, and

secondly, the costs at which the newly generated demands are met by the diverse modes of transport.

It is, therefore, important to view transport development in an integrated manner disregarding whether provision of transport infrastructure and services are provided and operated by different agencies.

TRAFFIC FLOWS AND COST STUDIES

The choices whether between modes or within a mode would require robust demand estimates as well as detailed cost studies.

It is also important that while making choices a long-term view is taken as it takes time to create transport assets and they exist for longer time.

The important factors such as traffic flows and costs on which choices are made and the time frame that is kept in view are significant as such decisions are difficult to reverse frequently and at short notice.

BREAK EVEN DISTANCES

Break-Even Distances (Rail & Road) in Kilometres					
SN	**Commodity**	**Total Transport System Study-RITES (2007-08)**	**Total Transport System Study-RITES (1986-87)**	**Total Transport System Study-RITES (1976-77) Price**	**Decrease in break-even distance in 2007-08 compared in 1976-77 (in %)**
1.	Foodgrains	222	280	247	10.1
2.	Fruits and Vegetables	313	380	467	49.2
3.	Coal and Other Minerals	188	232	247*	23.9
4.	Fertilizers	167	184	200	16
5.	Cement	160	193	222	27.9
6.	Iron & Steel	173	220	311	55.6

COMPARATIVE STUDY OF RAIL AND ROAD MODES

The use of transportation is not wholly a benign activity.

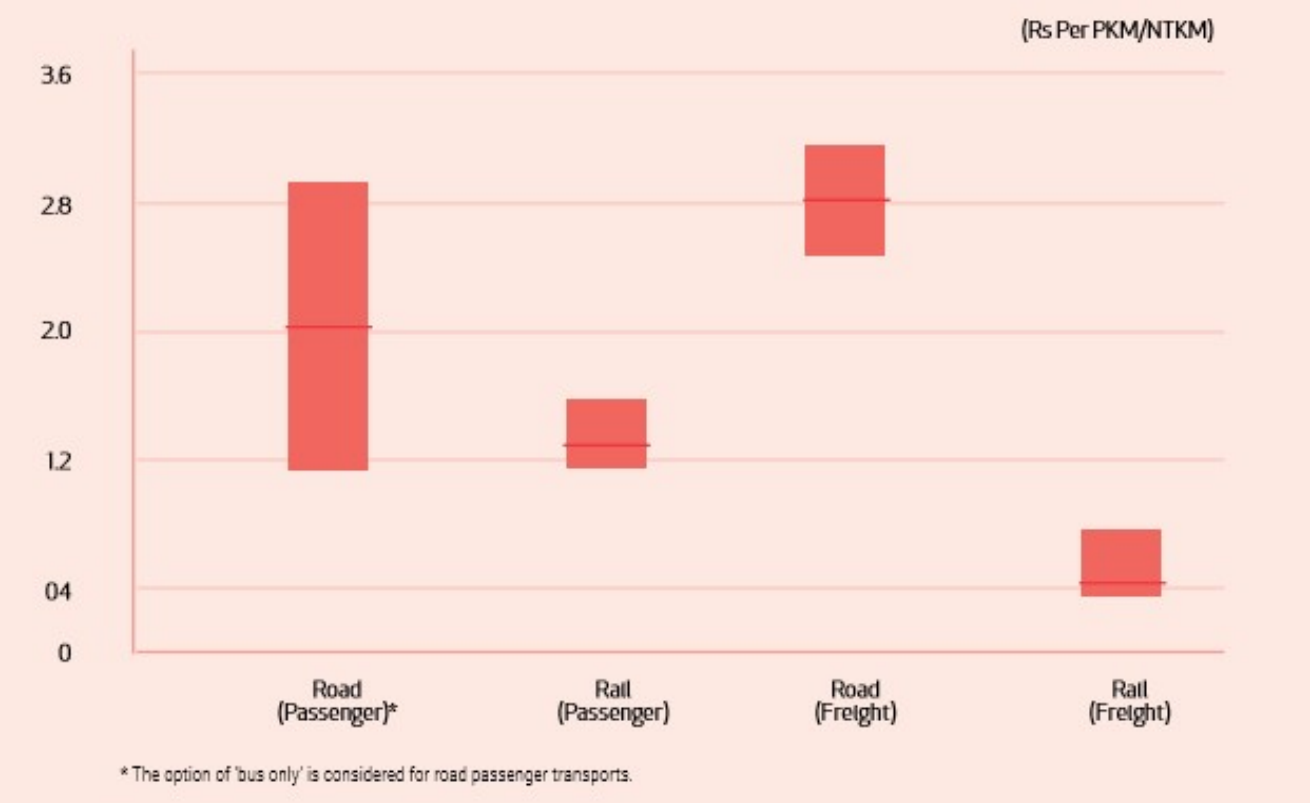
It causes strain on nature by consuming scarce resources, emitting harmful pollutants and generating undesirable wastes.

Different modes of transport cause varying levels of stress and consequent damage. Hence, there is growing recognition that the transport systems and modal choices should factor in the cost of environmental degradation and social damage.

The Asian Institute of Transport Development (AITD) undertook an empirical comparative study of rail and road modes with a focus on social sustainability The results of the study are graphically depicted below:
SOCIAL COSTS OF ROAD AND RAIL

Cont...

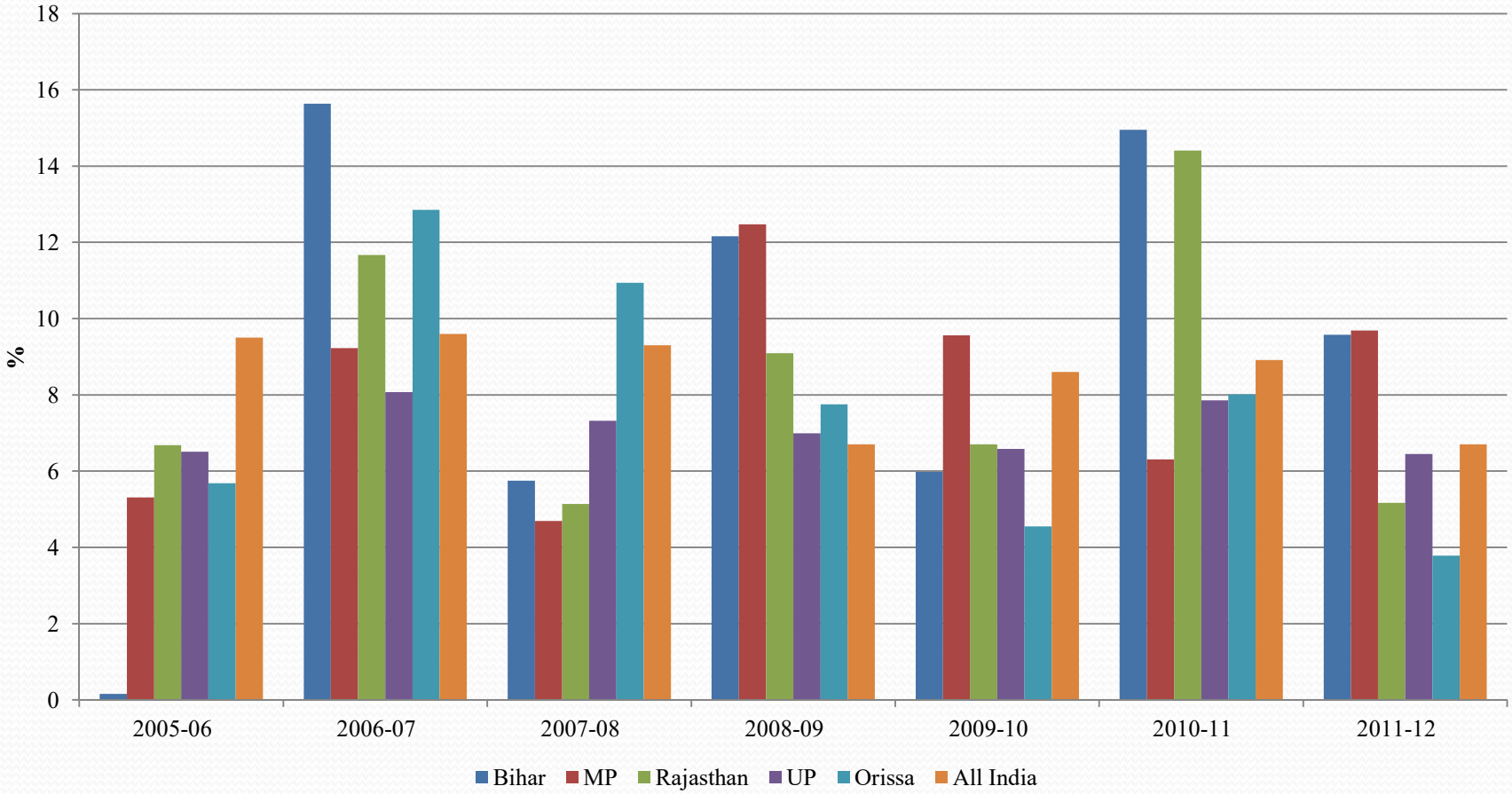
COMPARATIVE STUDY OF RAIL AND ROAD MODES



Source: Asian Institute of Transport Development Transport (2002)

*In terms of social costs, railways have a huge cost advantage over road transport. The advantage is greater in freight traffic than in passenger traffic. * Policy changes can induce shift of modal choice in favour of rail and in favour of public road transport over personalised transport.

Real Growth in GSDP and GDP (at 2004-05 prices) - Bihar



Source: CSO

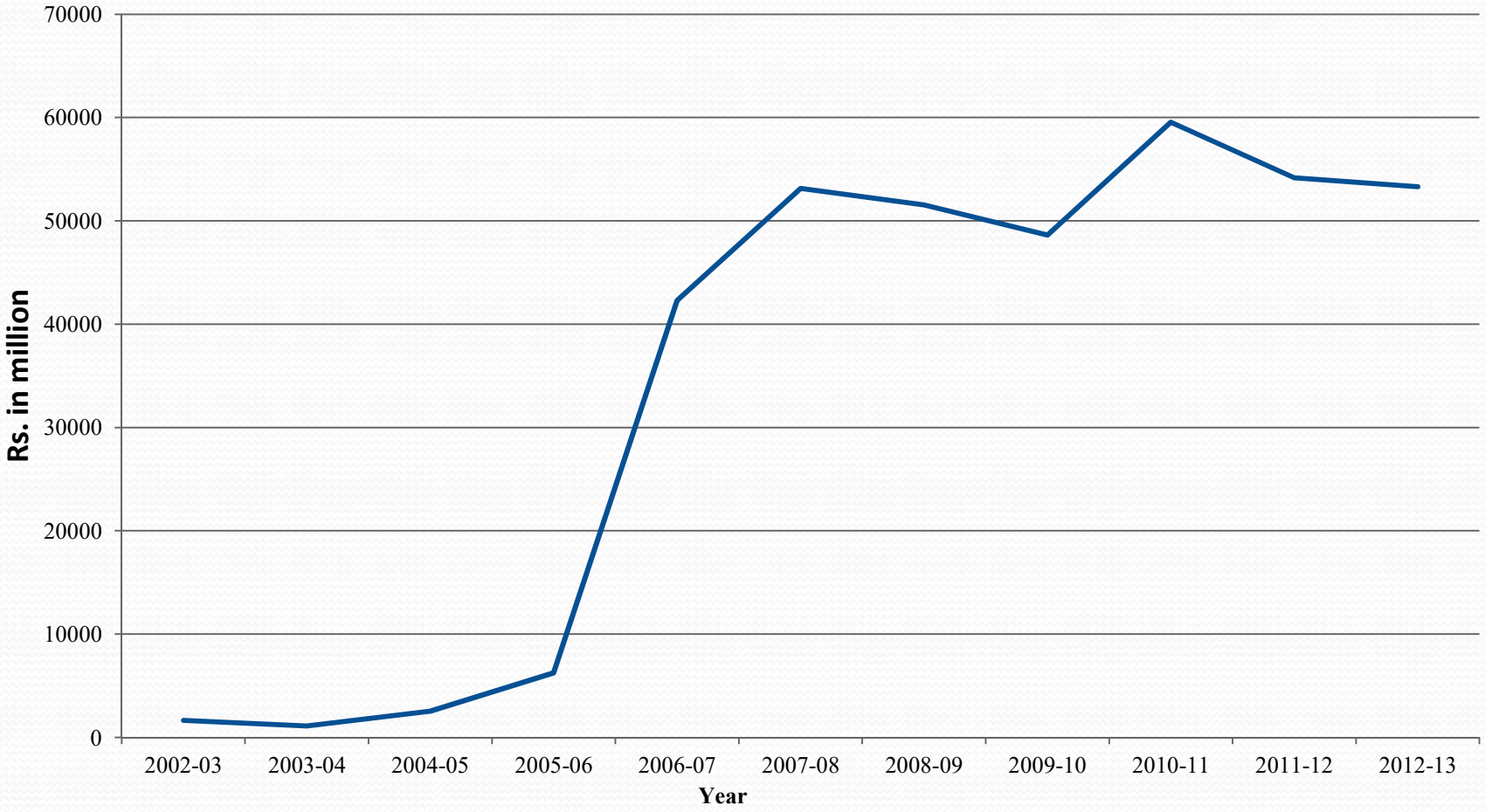
Comparative Growth Rates in GSDP for Selected Low-Income States

States	Eight Plan (1992–97)	Ninth Plan (1997–2002)	Tenth Plan (2002–07)	Eleventh Plan (2007–12)
Bihar	3.9	3.7	6.9	9.9
Orissa	2.3	2.5	5.8	7.1
UP	5.0	5.1	5.0	9.2
MP	6.6	4.4	5.0	9.3
Rajasthan	8.0	5.3	9.2	8.5
Average	5.16	4.22	6.38	8.80

Source: Planning Commission.

Note: Average GDP growth rates of five States with lowest PCI, amongst General Category States.

Expenditure on Roads and Bridges (at 2012-13 price)



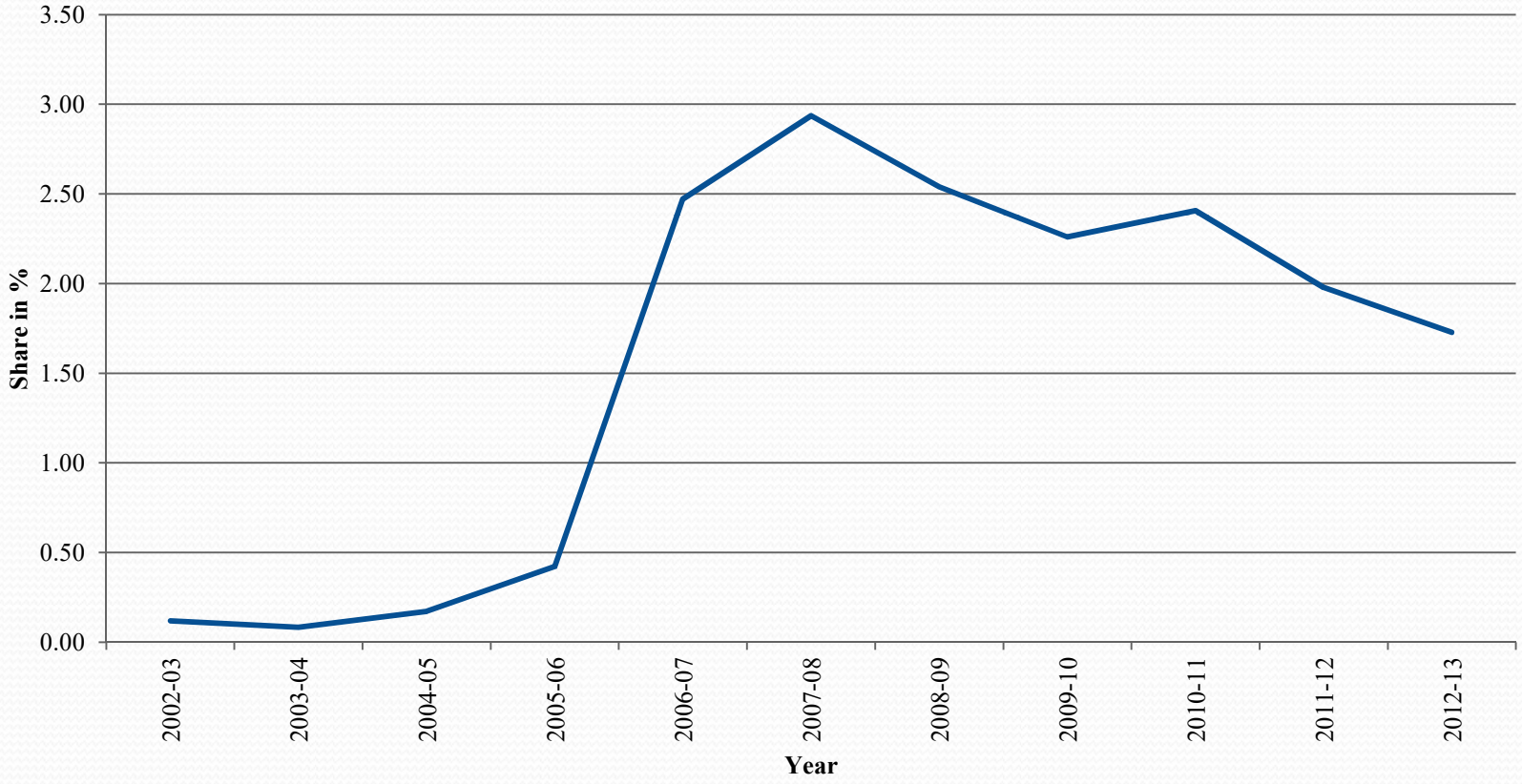
Source: Planning Commission

GSDP and Expenditure on Roads and Bridges, Rs. in million (at 2012-13 prices)

Year	GSDP	Expenditure	Share in GSDP (%)
2002-03	1378564	1645	0.12
2003-04	1316092	1095	0.08
2004-05	1477839	2544	0.17
2005-06	1480252	6238	0.42
2006-07	1711824	42290	2.47
2007-08	1810225	53148	2.94
2008-09	2030283	51555	2.54
2009-10	2151693	48629	2.26
2010-11	2475168	59553	2.41
2011-12	2738831	54171	1.98
2012-13	3086400	53298	1.73

Source: Government of Bihar

Share of Expenditure on Roads and Bridges as percent of GSDP (at 2012-13 price)



THANK YOU