

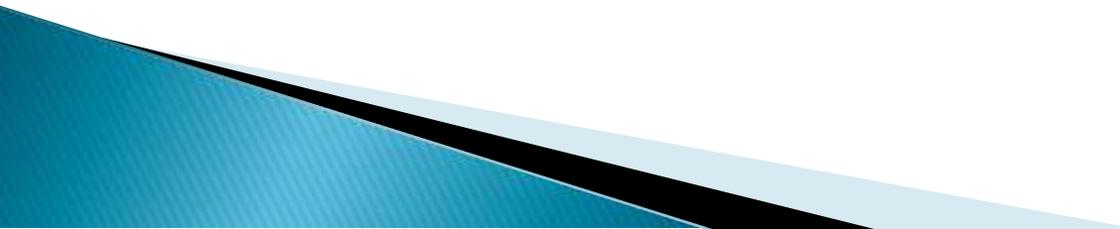
Infrastructural Challenges

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Infrastructure

Plays an important role the economic development of an economy.

Significant infrastructural services :

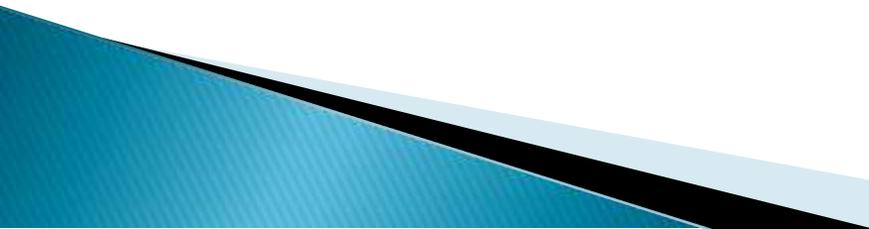
- ▶ *Energy*
 - ▶ *Transport*
 - ▶ *Communication*
 - ▶ *Education*
 - ▶ *Health*
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Energy

- ▶ *Plays a crucial role in economic development & is an input for most of the production processes and consumption activities.*
- ▶ *Economic growth & demand for energy are positively correlated.*
- ▶ *India ranks **THIRD** – world's largest energy producer – 5.64 per cent of world's total p/n.*
- ▶ *India ranks **FOURTH** – world's largest energy consumer – 4.6 per cent of world's total c/n.*

However, India's per capita energy consumption is the lowest.

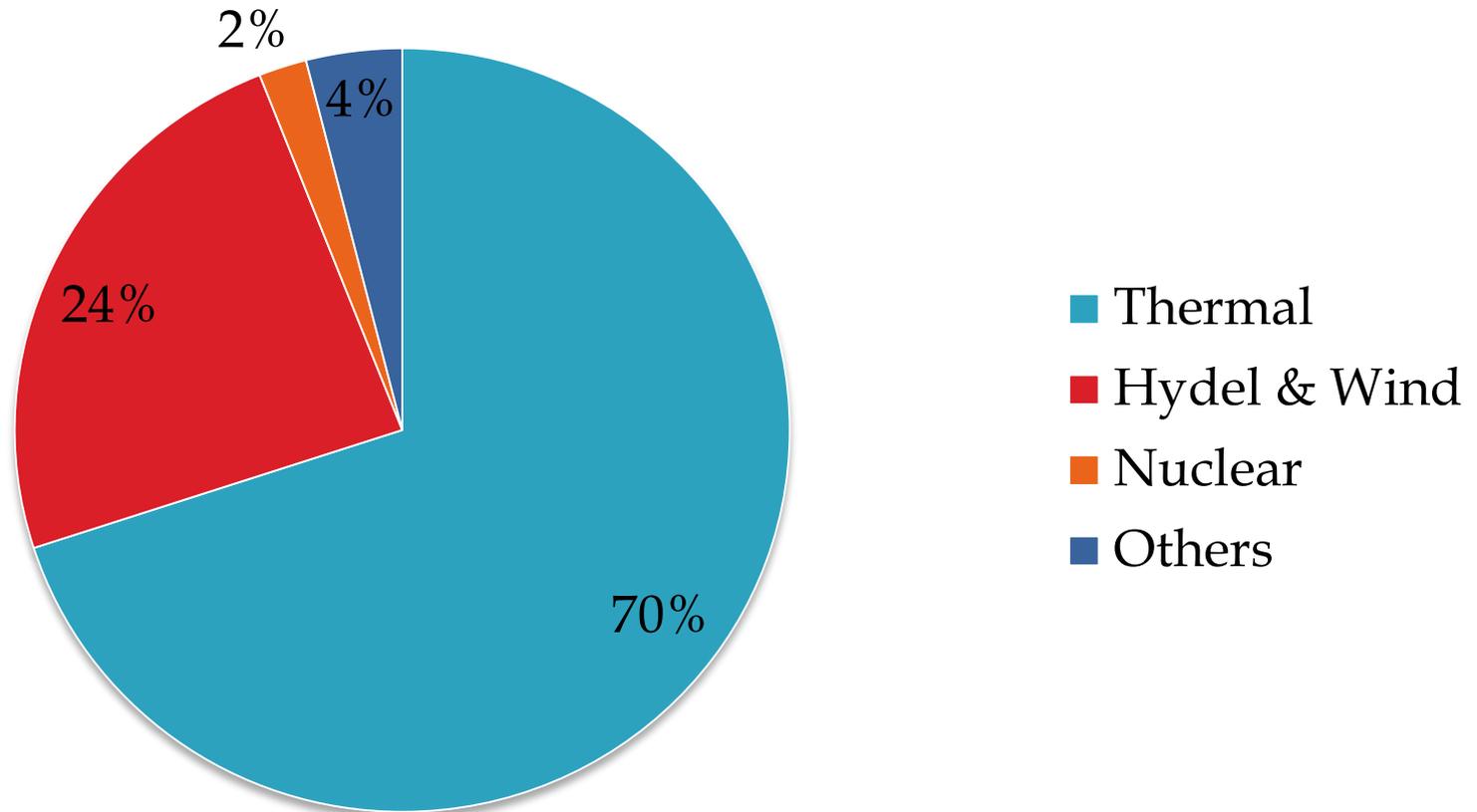
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- ▶ *Traditional sources of energy – firewood, agricultural wastes etc...*
 - ▶ *Rural areas – depend on traditional sources of energy. (21.2% BPL – low purchasing power)*
 - ▶ *Commercial sources of energy – oil & gas, coal, nuclear power, etc...*
 - ▶ *Primary energy resources – coal used for electricity generation.*
 - ▶ *Final energy resources – consumed directly (electricity)*
 - ▶ *Major users of electricity – industry (45%), domestic (22%), agriculture (18%), commercial establishment (9%)*
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Sources of Electricity

- ▶ *Over the years, production & consumption of electricity has increased.*
- ▶ *Total installed capacity – 2300 MW in 1950-51; 74700 MW in 1990-91; 117800 MW in 2000-01; **329300 MW in 2016-17** (31.3% renewable sources)*
- ▶ *Over a period of 67 years, there has been 140 times increase in the installed capacity*
- ▶ *5 major sources – **water** (hydro-electricity), **coal, oil, gas** (thermal electricity) & **radio active elements** (uranium, thorium & plutonium) (atomic energy)*

Power Generation Capacity



Central & State Governments

Central Governments –

- ▶ *National Thermal Power Corporation (NTPC)*
- ▶ *National Hydroelectric Power Corporation (NHPC)*
- ▶ *Nuclear Power Corporation of India Ltd. (NPCIL)*
- ▶ *Central Electricity Authority*
- ▶ *Central Electric Regulatory Commission.*

State Governments –

- ▶ *State Electricity Boards (SEBs)*

Problems relating to Energy

Demand and supply imbalances:

demand for energy has been growing rapidly because of ;

- ▶ *growth of the economy*
- ▶ *change in the demographic structure*
- ▶ *rising urbanisation*
- ▶ *social-economic development*
- ▶ *self reliance in the economy.*

 *supply has not increased concurrently.*

Contd...

- ▶ ***Oil prices and Inflationary pressure*** : rising oil prices in international market – OECD – contributed to inflationary pressure in India – mineral oil, major source of energy is imported in higher proportion.
- ▶ ***Growing Oil Imports Bill*** : responsible for large balance of trade gap. In 1990 India imported 37% of oil it consumed while in 2015 it imported a staggering 82% of consumed oil, pushing the import bill to \$120 billion and making it the energy source with the highest import dependency. (crude oil – \$72 bn).

Contd...

- ▶ *Transmission and Distribution losses: one of the major problems faced by power companies and are high in SEB systems.*

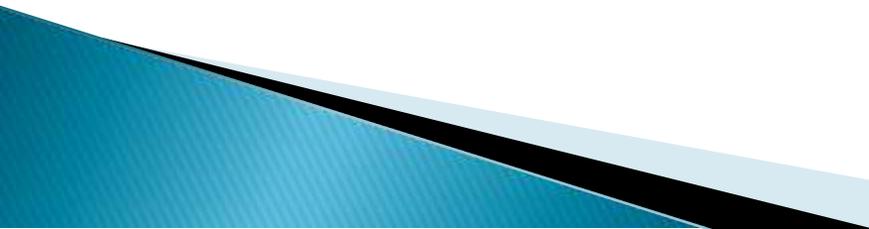
T & D losses	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
	23.97	23.65	23.04	21.46	23.02	23.86

- ▶ *Sick SEBs : financially sick – due to free supply of power to agriculture – operational inefficiencies (PLF), high cost structure, lower power tariffs & large overdues.*
- ▶ *Inadequate Electrification: 240 million people are living without electricity – 19 percent of villages not electrified.*

Remedial Measures

- ▶ *Electricity Act 2003 & Electricity Amendments Bill 2005 – focus on improved investment, fixing of power tariffs.*
 - ▶ *‘Partnership in Excellence’ – to improve generation of power.*
 - ▶ *Improve & add electricity generating capacity of plants.*
 - ▶ *Encourage use of hydel & wind energy sources.*
 - ▶ *Rationalisation of tariff, monitoring cost structure, optimum utilisation of existing capacity.*
 - ▶ *Encourage private sector investment in power, permitting FDI.*
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Contd...

- ▶ *Accelerated Power Development & Reforms Programme (APDRP) 2002-03, Distribution reforms.*
 - ▶ *National Grid to even out supply-demand mismatches.*
 - ▶ *Ultra – Mega Power Plants – development of new sites.*
 - ▶ *‘Rajiv Gandhi Grameen Vidhyutikaran’ 2005 – Electricity to all – free electricity connections to BPL households – Rural Electrification Corporation.*
 - ▶ *Bureau of Energy Efficiency – promote energy efficient equipments.*
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Transportation

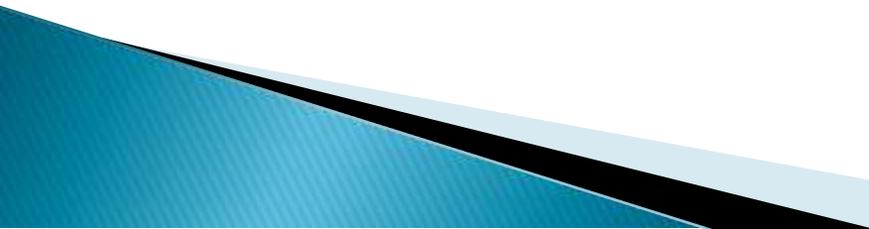
- ▶ *Provides a useful link between production centers, distribution areas and ultimate consumers.*



Indian Railways

- ▶ *World's **FOURTH** largest railway network*
- ▶ *Total length – **68,525 kms***
- ▶ *Electrified length – **23,883 kms***
- ▶ *Two main segments – freight & passenger.*
- ▶ *Revenue – **Rs.1.65,068 crore in 2016-17***
- ▶ ***65%** of revenue comes from Freight segment.*

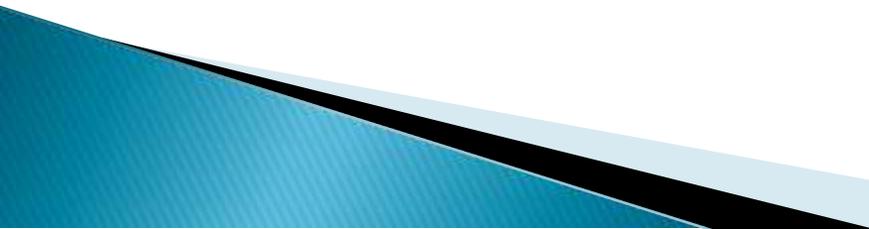
Problems:

- ▶ *Obsolete technology*
 - ▶ *Smaller & inadequate network vis-à-vis requirements.*
 - ▶ *Financial crunch – suffer heavy losses.*
 - ▶ *Over crowding & poor passenger services.*
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Road Transport

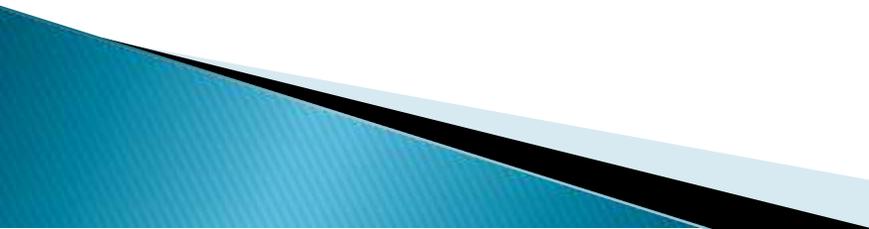
- ▶ ***SECOND*** largest in the World – 5,472,144kms
- ▶ National Highways – 1.7 per cent of total length.
- ▶ Rural roads – 61 per cent of total length.

Problems:

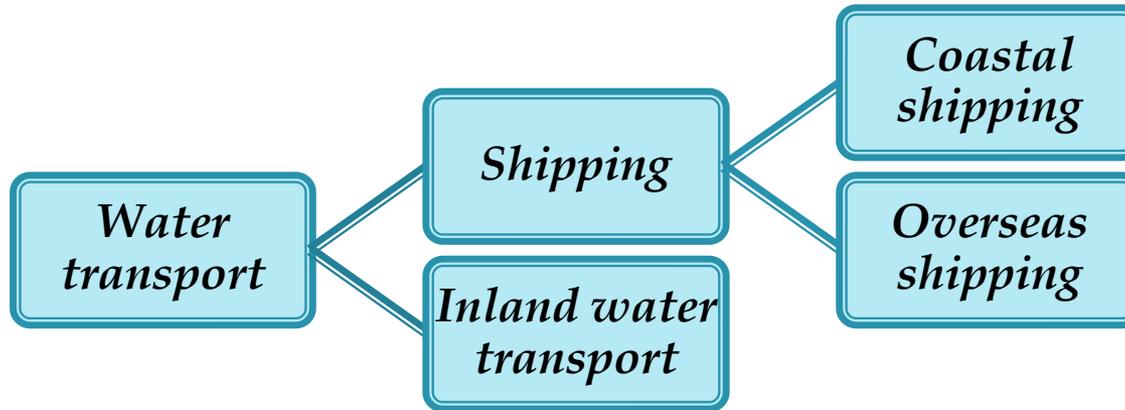
- ▶ *Inadequate road length.*
 - ▶ *Interior areas & hilly tracts not linked.*
 - ▶ *Large tracts of rural roads are mud roads.*
 - ▶ *Poorly maintained – financial resources, organisational inadequacies, procedural delays, shortage of materials.*
 - ▶ *SRTC – heavy losses, rising cost & inefficient operation, corruption.*
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Measures through NHDP:

- ▶ *developing Golden Quadrilateral (Mumbai, Delhi, Chennai, Kolkata)*
 - ▶ *North – South & East – West corridors*
 - ▶ *Port connectivity*
 - ▶ *PPP in roads developments*
 - ▶ *Rationalisation of taxes*
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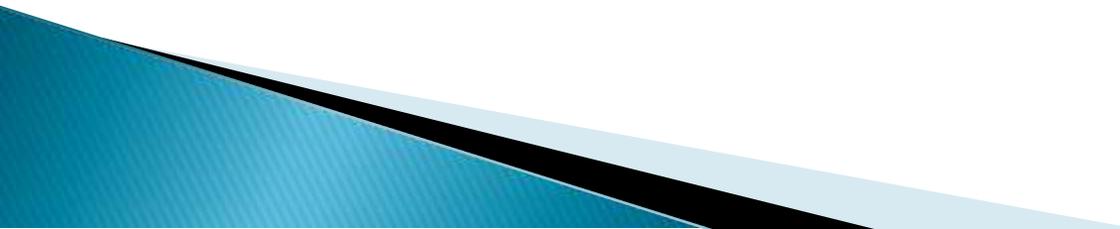
Water Transport



- ▶ *India' navigable waterways – 14500 kms*
- ▶ *Cargo transport – 365.37 lakh tonnes in 2015.*
- ▶ *Inland Water Transport Policy – to encourage private sector participation.*
- ▶ *Coastline – 7517 kms, 12 major ports & 200 minor ports.*
- ▶ *Coastal shipping – energy efficient & cheap*

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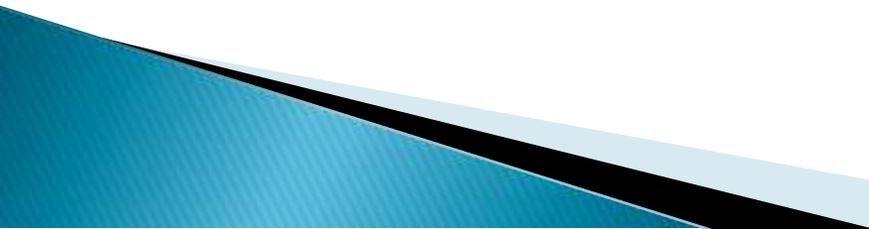
Factors for Poor Growth:

- ▶ *High transport costs.*
 - ▶ *Port delays.*
 - ▶ *Over aged vessels.*
 - ▶ *Lack of mechanical handling facilities.*
 - ▶ *Imbalance in coastal traffic movements.*
 - ▶ *Slow handling of cargo at ports.*
 - ▶ *Heavy losses on shipping companies.*
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Contd...

- ▶ *Fleet of ships – 1246 as on 2016.*
- ▶ *Shipping tonnage – 20 million GT in 2016.*
- ▶ *Total traffic – 647 million tonnes in 2016.*
- ▶ *Kandla (Kutch district of Gujrat) – top traffic handler.*

Problems:

- ▶ *Low productivity*
 - ▶ *Operational constraints – obsolete equipments*
 - ▶ *Inadequate dredging & container handling facilities*
 - ▶ *Lack of proper coordination*
 - ▶ *Indian containers are costlier than other ports.*
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Air Transport

Parts of Civil Aviation Sector :

- ▶ *Operational - 25 passenger airlines & 2 cargo*
- ▶ *Infrastructural*
- ▶ *Developmental*

Market share of major airlines:

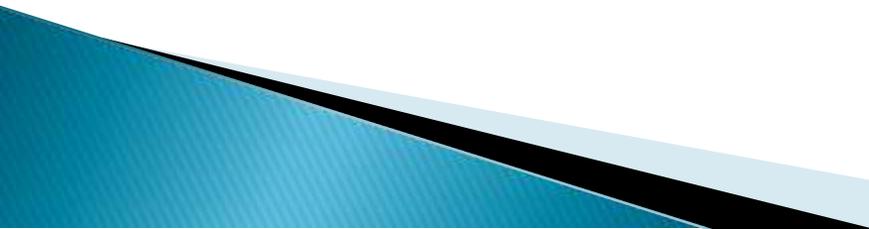
Operators	Market share (in %)
Indigo	39.6
Jet Airways	18.1
Air India	13.8
Spice Jet	12.9
GoAir	8.4
Vistara	3.1

Contd...

- ▶ *125 Airports in India*
- ▶ *28 International Airports*
- ▶ *15 Greenfield airports*

Department of Civil Aviation regulates air transport and international services are governed by Bilateral agreements

Recent Developments

- ▶ *Modernisation of airports*
 - ▶ *Development of greenfield airports – Bangalore & Hyderabad*
 - ▶ *World class standards*
 - ▶ *FDI upto 100 %*
 - ▶ *Civil Aviation Economic Advisory Council.*
 - ▶ *Liberalisation of bilateral air services.*
 - ▶ *Trade facilitation measures in custom procedures*
 - ▶ *GPS aided GEO Augmented Navigation (GAGAN)*
 - ▶ *Open Sky Policy – to meet increasing demand*
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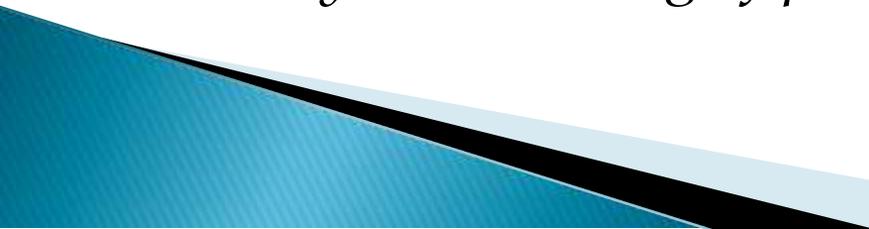
COMMUNICATION



Postal Services

- ▶ *India's postal service dates back to 1837.*
- ▶ *Largest network in the world.*
- ▶ *1.55 lakh Post Offices - 1.39 lakh POs – Rural areas (89.67%); 15,736 POs – Urban areas*
- ▶ *On an average, one PO serves 8054 persons and 21.22 sq. km area.*
- ▶ *27,736 POs are computerised (plan to computerise all POs by the end of 2017).*

Limitations:

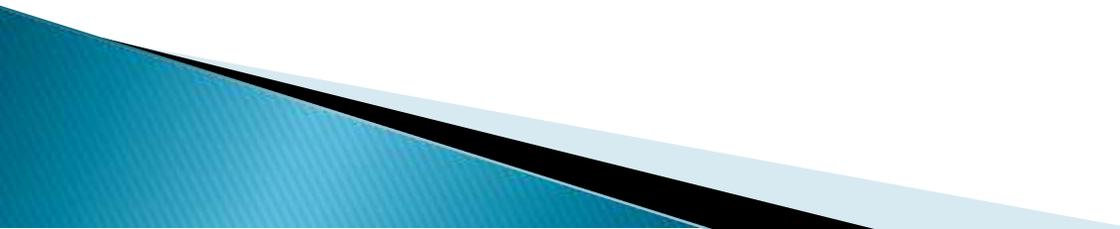
- ▶ *Inadequate number of POs.*
 - ▶ *Outdated techniques.*
 - ▶ *Delays in reaching of postal material.*
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Initiatives

To improve speed & volume of transactions, a range of e-enabled services are introduced:

- ▶ *Speed post, express parcel post, etc...*
 - ▶ *Electronic Money Order (eMO)*
 - ▶ *e-payment & Instant Money Order (IMO)*
 - ▶ *Mechanisation & computerisation of postal operations.*
 - ▶ *Automatic Mail Processing Centers (AMPC) – faster processing of mails – Delhi, Mumbai, Chennai, Kolkata. Bangalore & Hyderabad.*
 - ▶ *Pick up of mails from residence.*
 - ▶ *Direct post – promotional items – direct advertising*
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Contd...

- ▶ *Logistics post & Retail post services*
 - ▶ *Financial products –savings bank & saving certificate, postal life insurance, non-life insurance products, mutual funds, etc...*
 - ▶ *Pilot project – “**Project Arrow**” – providing fast & reliable postal services.*
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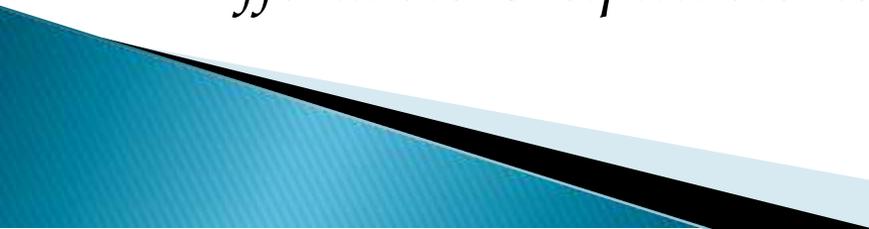
Telecommunications

- ▶ *India's telephone network World's **SECOND** largest*
 - a) Telephone service & b) Telex service*
- ▶ *1950s – 321 exchanges & 8200 connections.*
- ▶ *May 2017 – **1074.24 million** connections.*
- ▶ *As on 2016 - Tele density – **84.09** ; rural areas – **51.24**; urban areas – **156.24**.*
- ▶ *1049.74 million – cellular telephone subscribers.*
- ▶ *Market share – 60% ; 460 million internet subscribers.*
- ▶ *TRAI & NIXI*
- ▶ *3G, MNP, state of art technology, FDI – 100%*

Health scenario in India

- ▶ *Inadequate nutritional diet, medical care & unhygienic living conditions – low health standard (21.2% BPL)*

Health development Initiatives :

- ▶ *Increasing health services in rural areas.*
 - ▶ *Control of communicable diseases.*
 - ▶ *Improvement in education & training of healthcare personnels.*
 - ▶ *Provision of better health & medical care services.*
 - ▶ *Community based programmes*
 - ▶ *Provision of hygienic living conditions.*
 - ▶ *Opening of new health centers.*
 - ▶ *Affordable & equitable health care.*
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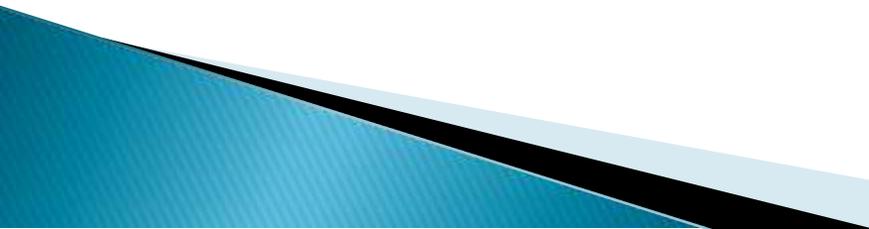
<i>Statistics</i>	<i>As on 2017</i>
<i>Primary Health Centers (PHCs)</i>	28,863
<i>Health Sub Centers</i>	1,56,926
<i>Doctors</i>	7,91,000
<i>Hospitals</i>	1,96,312
<i>AYUSH Hospitals</i>	3601
<i>Nursing Personnel</i>	16,73,338 (regd.) 7,56,937 (auxiliary)
<i>Health expenditure</i>	USD 160 billion
<i>Doctor to Patient ratio</i>	1:1674

Contd...

Government Schemes

- ▶ *National Rural Health Mission 2005 – to provide accessible, affordable & quality health care services.*
- ▶ *Accredited Social Health Activists (ASHAs)*
- ▶ *Janani Suraksha Yojana – to bring down MMR.*
- ▶ *Pradhan Mantri Swasthya Yojana – to address regional imbalances in the availability of HCs.*

Limitations:

- ▶ *Unequal distribution of existing HCs.*
 - ▶ *Mismatch between personnel & infrastructure*
 - ▶ *Lack of appropriate referral system.*
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Education

National Policy on Education (NPE) 1992

- ▶ *Universal access & enrolment.*
- ▶ *Universal retention of children upto 14 years*
- ▶ *Improvement in quality of education.*

	<i>As on 2017</i>
<i>Expenditure</i>	<i>79,686 crore</i>
<i>As per cent of GDP</i>	<i>3.71 %</i>
<i>Literacy rate</i>	<i>74.04 %</i>
<i>Drop out rate</i>	<i>4.7 %</i>
<i>GER</i>	<i>80 %</i>
<i>No. of Sec. & Hr. Sec Schools</i>	<i>2,44,653</i>

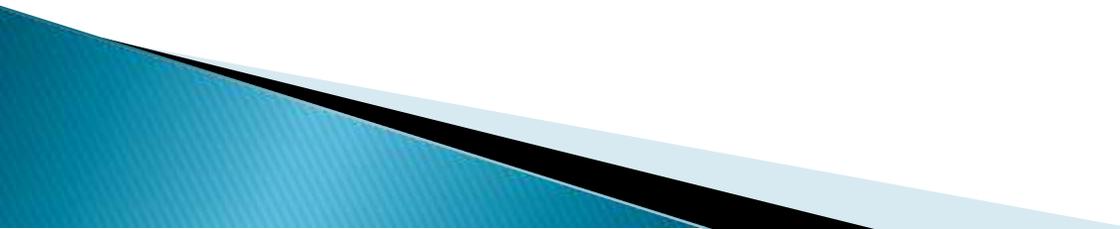
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Government Schemes:

- ▶ *Sarva Shiksha Abhiyan (SSA)*
 - ▶ *National Programme for Education of Girls at Elementary Level (NPEGEL)*
 - ▶ *Education Guarantee Scheme & Alternative & Innovative Education (EGS + AIE)*
 - ▶ *Mid-day meal scheme*
 - ▶ *Kasturba Gandhi Balika Vidyalaya (KGBV)*
 - ▶ *Parambhik Shiksha Kosh (PSK)*
 - ▶ *National Literacy Mission – Adult education – imparting functional literacy. (TLM)*
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Contd...

Problems:

- ▶ *Unplanned expansion of higher education.*
 - ▶ *Inadequate number of institutions (correspondence).*
 - ▶ *Low standard of education.*
 - ▶ *Large number of unemployed educated youth.*
 - ▶ *Large scale migration of educated people to developed countries.*
 - ▶ *Lack of infrastructure in many rural schools.*
 - ▶ *Neglect of primary education.*
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Suggestions:

- ▶ *Restrictions on higher education.*
 - ▶ *Job oriented education.*
 - ▶ *Planned expansion of education.*
 - ▶ *Emphasis on agriculture & vocational education.*
 - ▶ *Technical education to be planned properly.*
 - ▶ *Efforts to restrain brain drain.*
 - ▶ *Standard of education to be raised.*
 - ▶ *Bring down high rate of dropout in girls.*
- 