



INFRASTRUCTURE DEVELOPMENT IN MAHARASHTRA- AN ANALYTICAL STUDY

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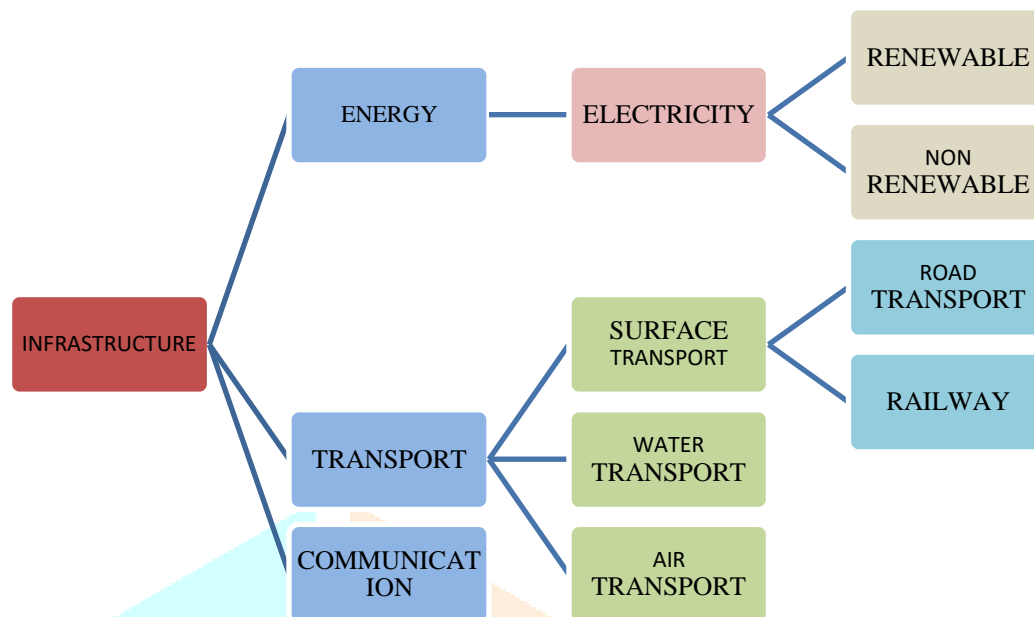
ABSTRACT

This article is an attempt of analysis of the state present condition in infrastructure development and governments endeavour for infrastructure development in the state.

This article focused on various aspects of Energy, Transport and Communication. Infrastructure is an accelerator of the economic growth as it impacts industrialization, connectivity and thereby improves quality of life. Maharashtra is rich in infrastructure development that empowers the state with a large capacity to develop economy of the state.

INTRODUCTION:

The physical infrastructure mainly comprises of energy, transport and telecommunication. Maharashtra is one of the top performer State in terms of access to electricity as and quality of electricity supply. The State is well connected by roadways, railways, waterways, airways and excellent telecommunication network. Infrastructure plays a very important role in the growth process of an economy. Infrastructural development has been on the top of priority list for governments all over the world. Policymakers believe that appropriate infrastructural investment holds the key to social and economic development and growth. One of the views about infrastructural investment is that high rate of infrastructure growth raises the level of productivity in the current period, and also leads to a higher potential level of output for the future. Because of Infrastructural development standard of living, healthcare facilities, sanitation, schooling will become better.

INFRASTRUCTURE:**ENERGY:**

The State being one of the industrialized, urbanized and populated states, the State has succeeded to meet the increasing demand of energy. 'Ensure access to affordable, reliable, sustainable and modern energy for all' is one of the Sustainable Development Goals. The State has been in the forefront in promoting clean energy. To achieve greater efficiency, the State is adopting digital technologies.

Electricity:

Significant growth in installed capacity and generation of electricity is observed over the decades resulting in overall development of the State. Electricity is generated through renewable and non-renewable sources. Coal, Lignite, Crude Oil and Natural Gas are non-renewable sources of electricity generation.

Installed capacity:

The total installed capacity of generating electricity as on 31st March, 2021 in the State was 36,902 Megawatt (MW) out of that 21176 MW from thermal sources, 9846 MW from Renewable sources, 3061 from Hydro sources & 2819 MW from Natural Gases. Table 1.1 and column chart 1.1 clear the picture of sources of installed capacity of energy in Maharashtra.

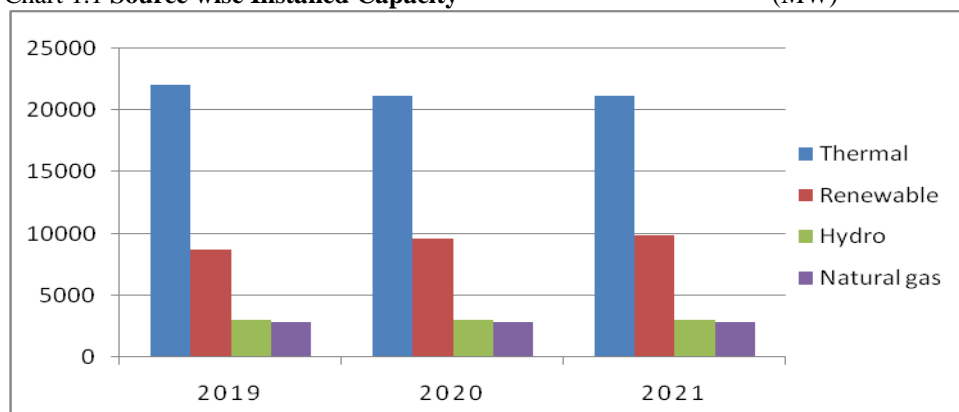
In 2021 57.38% electricity generated from thermal source, 26.68% electricity generated from renewable sources, 8.29% electricity generated from hydro sources and 7.64% electricity generated from Natural gases.

Table 1.1 Source wise Installed Capacity (MW)

source	As on 31 st March		
	2019	2020	2021
Thermal	22096	21176	21176
Renewable	8753	9588	9846
Hydro	3061	3061	3061
Natural gas	2819	2819	2819
In the state	36729	36644	36902

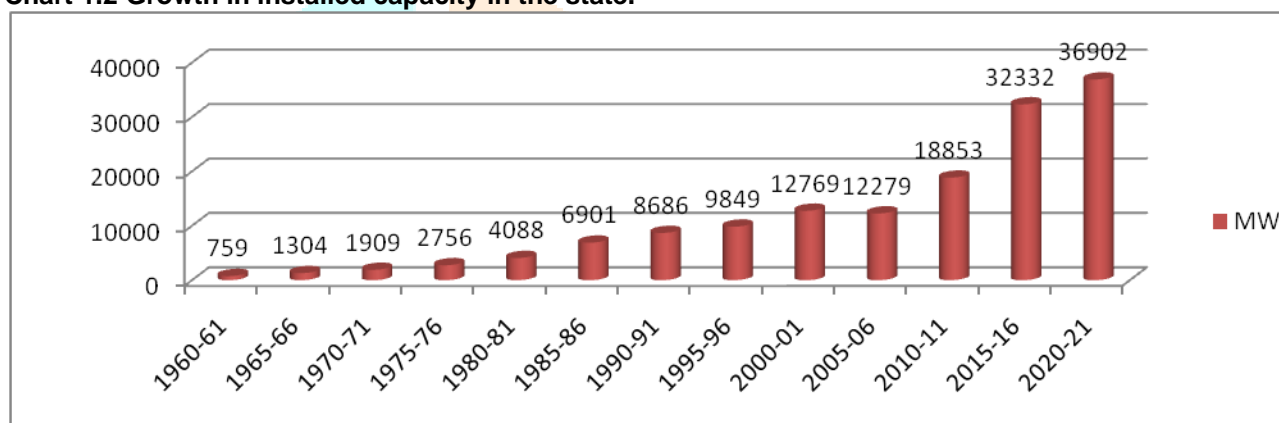
Chart 1.1 Source wise Installed Capacity

(MW)



The total installed capacity in the State increased from 759 MW in 1960-61 to 36,902 MW in 2020-21 with compounded annual growth rate of 6.7 per cent. Installed capacity through thermal sources is highest with average share of 61.2 per cent over the decades. Installed capacity of renewable energy has increased significantly during last decade (3,408 MW in 2010-11 to 9,846 MW in 2020-21) with compounded annual growth rate of 11.2 per cent. Chart 1.2 shows the growth in installed capacity in the state.

Chart 1.2 Growth in installed capacity in the state.



Source : MAHAGENCO, MEDA, Central Electricity Authority, Tata Power Co. Ltd., Adani Electricity Mumbai Ltd.

Renewable energy:

Renewable energies are sources of clean and inexhaustible energy. Wind, solar, biomass, biogas, sea waves, geo-thermal, etc. are the renewable and clean energy sources. Maharashtra Energy Development Energy (MEDA) is the designated agency to co-ordinate, regulate and enforce the provisions of the Energy Conservation Act, 2001. MEDA is actively engaged in propagation & promotion of renewable energy and implementation of energy conservation programmes. Government is formulating various policies & implementing various schemes for promotion & use of renewable energy

Maharashtra Electricity Regulatory Commission (MERC) has set a target of achieving 25 per cent electricity generation from renewable energy by 2025 and policies have been announced by Government of Maharashtra for electricity generation through renewable energy sources. The State (9,846 MW) ranks fifth in India after Karnataka (15,463 MW), Tamil Nadu (15,225 MW), Gujarat (13,153 MW) and Rajasthan (10,205 MW) in terms of installed capacity of renewable energy. Potential and installed capacity of renewable energy and their percentage in the State is given in Table 1.2.

Table 1.2 Potential and installed capacity of renewable energy in the State

Source	Potential Capacity (MW)	Potential Capacity (%)	upto March 31st 2021		
			Installed Capacity (MW)	Potential capacity Utilized (%)	Share in Installed Capacity (%)
Wind	9,400	44.24	4,998	53.17	50.76
Bagasse co-generation	2,200	10.35	2,301	104.59	23.37
Solar	7,500	35.29	1,917	25.56	19.47
Small Hydro Projects (SHP)#	732	3.44	370	50.55	3.76
Biomass	781	3.68	215	27.53	2.18
Industrial waste	350	1.65	42	12.00	0.43
Urban solid waste	287	1.35	3	1.05	0.03
Total	21,250	100	9,846	46.33	100

Source : MEDA

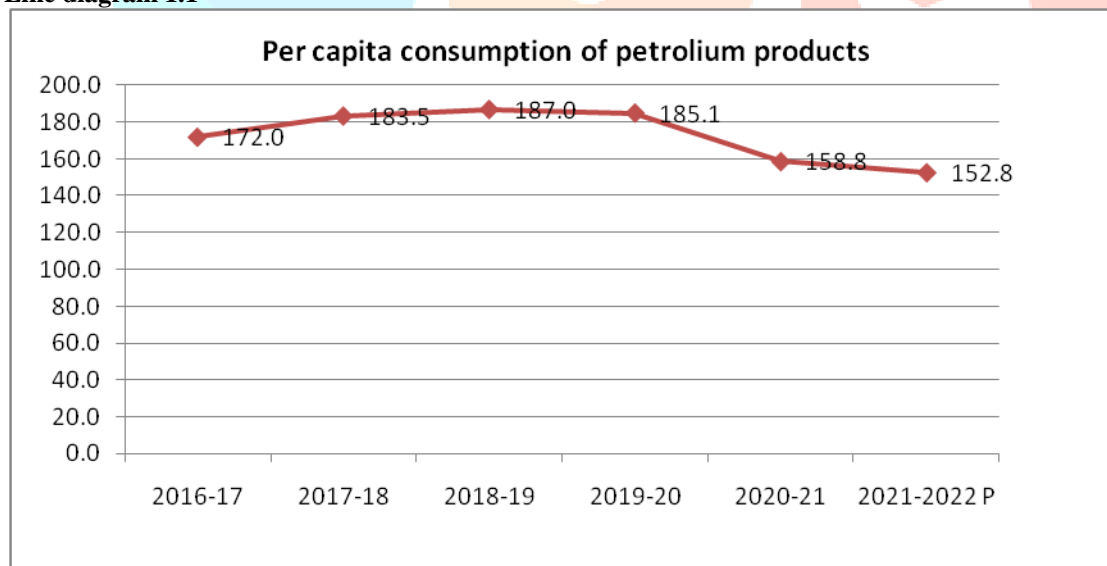
SHP (less than 25 MW capacity) installed by Irrigation Department

From the table 1.2 we can see that the State have 79.53% potential capacity of wind and solar energy out of total renewable energy potential capacity but the state utilized only 40.92% of combined of wind & solar potential capacity. Out of total potential capacity of renewable energy only 46.33% potential capacity utilized upto March 31st 2021.

Non-Renewable Energy:

Consumption of major petroleum products in comparison with previous year fall of 14.20% for Maharashtra during 2020-21 and 152.8 TMT (Thousand Metric Tonnes) in 2021-22 (Provisional). Line diagram 1.1 show details of trend of Per Capita Consumption of Petroleum Products.

Line diagram 1.1



Source: Ministry of Petroleum and Natural Gas, GoI

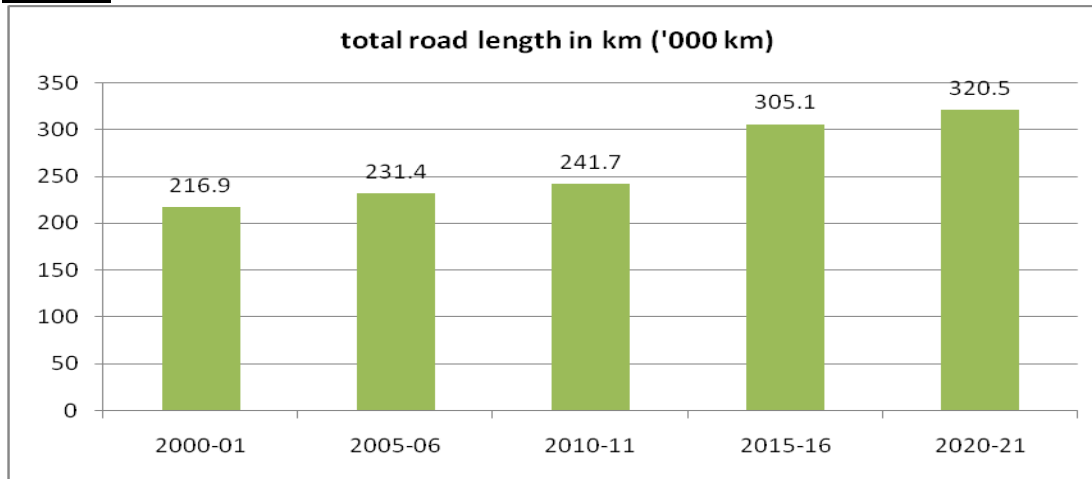
Maharashtra PDS kerosene sale decreased from 52938 kilolitres (2019-20) to 15552 kilolitre (2021-22). Superior Kerosene Oil (SKO) and Light Diesel Oil (LDO) dealership decreased from 767 (2017) to 752 (2022).

TRANSPORT AND COMMUNICATION:

A well-developed transport and communication system ensures sustainable development of the economy. It helps in reducing the distance between regions, connecting people, creating employment opportunities, increasing productivity and facilitating the exchange of information & knowledge. The transport system comprises of roadways, railways, waterways and air transport. The various components of communication system are internet services, cell phones, postal services, telephones, etc.

Surface transport:**Road Transport:**

The road network consists of highways, district roads, village roads and internal city roads. Road development plan 2001-2021 is being implemented in the State with a target to develop 3.37 lakh km roads. The total road length maintained by State at the end of March, 2021 was 320535 km. The total road length maintained State is given in Chart 1.3.

Chart 1.3

Out of 320535 km road National Highway length is 18089 km., Major State Highways length is 2900 km., State Highways length is 29076 km., Major district roads length is 66200 km., Other district roads length is 46407 km., Village roads length is 157863 km.

Motor vehicles:

The total number of motor vehicles on road in the State as on 1st January, 2022 is 4.09 crore showing an increase of about 5.9 per cent over the previous year. Out of the total registered vehicles in the State, about 10.3 per cent vehicles were in Brihanmumbai. The number of vehicles per km road length (roads maintained by PWD and ZP) in the State was 128.

Railway:

Railway is the major public transport system. Passenger transport and freight transport are the two major segments of the railways. The railway route length including Konkan railway in the State as on 31st March, 2021 was 6,203.93 km, which is 9.1 per cent of the total railway route length (68,102.79 km) of India.

Metro Rail Projects:

Metro rail projects are undertaken in Mumbai, Navi Mumbai, Pune & Nagpur cities to have a safe, reliable, efficient, affordable, commuter friendly and environmentally sustainable rapid public transport system.

Mumbai metro rail project :

Mumbai metro rail, a rapid transit system project, is being implemented on Public Private Partnership (PPP) basis.

Water transport:

Water transport is cheaper and environment friendly as compared to other transport facilities. Maharashtra Maritime Development Policy-2016 is being implemented in the State to boost the maritime by developing infrastructural facilities and thereby achieving industrial development. The policy covers areas viz. Greenfield ports & connectivity, jetties, coastal shipping & inland waterways, shipyards, coastal economic zones & facilitation of maritime projects, etc. Concessions are also given on electricity duty, non-agriculture cess, stamp duty, port charges and discount on royalty for port projects.

Major ports:

Two major ports viz. Mumbai Port and Jawaharlal Nehru Port are located in the State. During 2020-21, Mumbai Port handled cargo traffic 533.24 (359.38 lakh MT import & 173.86 lakh MT export) lakh MT and Jawaharlal Nehru Port handled 648.09 (352.49 lakh MT import & 295.60 lakh MT export) lakh MT cargo traffic. Mumbai Port handled 5140 vessels (no.) and Jawaharlal Nehru Port handled 2490 vessels (no.) in the same period. There was no passenger traffic handled by both ports due to Covid-19 lockdown in the same period.

Non-major ports:

There are number of captive and multi-purpose jetties set-up within the limits of 48 non-major ports in the State which also undertake cargo handling. 225.26 (lakh MT) Cargo traffic handled by non major ports out of that 191.79 (lakh MT) was import & 33.47 (lakh

MT) was export. 32.58 (lakh) Passenger traffic handled by the non-major ports in the same period out of that By mechanised vessels handled 32.26 (lakh) and by By non-mechanised vessels 0.32 (lakh) handled.

Air transport:

There are 13 airports functioning in the State. Transport statistics for selected airports is given in Table 1.3

Airport	Passenger traffic (lakh)		Cargo traffic (MT)	
	2020	2021	2020	2021
Domestic	458.49	133.96	330170	186537
International	125.21	12.23	582534	440596
Total	583.70	146.19	912704	627133

Source : Airports Authority of India

HAL Hindustan Aeronautics Limited

To reduce air-traffic congestion at *Chhatrapati Shivaji Maharaj* International Airport, an additional international airport has been proposed at Navi Mumbai through Public Private Partnership in four phases with estimated basic cost of 14,179 crore for Phase I. It is one of the largest Greenfield airports planned to handle minimum six crore passengers and 15 lakh MT cargo per annum.

Communication:

Posts, telephones, voice-video and data telecommunication are major components of the communication system. The total working post offices in State in 2020-21 was 12744. The internet subscriber base in the State at the end of September, 2021 was 10.22 crore. The total number of landline connections at the end of December, 2021 in the State was 44.71 lakh. The landline and cell phone connections per lakh population were 3,576 and 1,01,266 respectively.

CONCLUSION:

This article better focused on the present infrastructure condition within the state. The infrastructure condition explained with the help of charts and tables in the article. I tried my best to focus on the present condition of infrastructure development of the State.

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