Bhopal	15.00	23.31	55%
Kanha	1.77	2.53	43%
Bhedaghat	4.94	6.57	33%
Bandhavgarh	1.45	1.92	32%
Panna	4.20	5.28	26%
Dhamnar	0.23	0.28	23%
Madhai	3.40	4.11	21%
Mandu	7.94	8.64	9%
Adamgarh	0.18	0.19	8%
Jabalpur	10.19	10.48	3%
Burhanpur	0.40	0.41	2%
Orchcha	1.35	1.33	-2%
Chanderi	0.50	0.44	-12%
Total	94.70	149.73	58%

Source: (Department of Tourism, Government of Madhya Pradesh, 2023)

Table 5.6 : Tourist footfall in religious locations

(Figures in lakh)

Location	Arrival 2021	Arrival 2022	Growth 2022 over 2021
Ujjain	9.6	181.6	1796%
Maihar	57.4	110.1	92%
Omkareshwar	9.0	15.4	72%
Amarkantak	14.2	24.3	71%
Salkanpur	13.9	17.3	25%
Datia	0.3	0.4	24%
Bhojpur	6.2	7.2	15%
Maheshwar	9.7	6.3	-35%
Chitrakoot	59.2	35.7	-40%
Total	179.6	398.4	122%

Source: (Department of Tourism, Government of Madhya Pradesh, 2023)

5.5 Infrastructure

Macro perspective

Economic development parameters are deeply associated to the infrastructure development and its financing. A number of initiatives are been taken to improve connectivity and availability of housing, water, energy. Most significantly among them is the approach of considering the private

sector as partner to the process instead of just being a service provider. The capital expenditure in the form of various infrastructure projects yields a higher return in due course of time. The state government has made tremendous efforts for strengthening state's infrastructure. Such initiatives are discussed in this section.

5.5.1 Policy initiatives

Renewable energy policy 2022: State launched a policy on renewable energy with aim to harness State's renewable energy potential, to attract investment, to increase power export outside the state, develop heritage cities as Green Cities and generate employment opportunities. Key features of the policy are as follows-

- attract investment Rs. 50,000 crore in the Renewable Energy generation sector and Rs. 10,000 crore in Renewable Energy Equipment Manufacturing sector by 2027.
- thirty percent (30%) Renewable Energy in State's energy mix by 2027.
- development of Ten thousand (10,000) MW Renewable Energy Technology based Park under Government of India and Government of Madhya Pradesh Scheme by 2027.
- ten thousand (10,000) MW Renewable Energy Projects for exporting power outside the state by 2027.
- Generate more than 50,000 new jobs by 2030.
- Deploying renewable energy technologies on a net zero carbon basis to develop model renewable energy cities and green zones by the 2030.
- Develop all the heritage cities as 100% green cities by 2030.
- Promote the use of renewable energy in the field of e-mobility in the state. For this, proper coordination will be established between e-vehicles and other resources of transport and renewable energy.

5.5.2 Financial allocation

The budget allocation for various infrastructure sectors is reflected in revenue and capital expenditure categorization in the statement of accounts of the Madhya Pradesh budgets. Table No 5.7 indicates cumulation of both these heads for different sectors over last few years:

Table 5.7 : Budget allocations for different Infrastructure sectors

(Amount in Rs. crore)

Total Expenditure (Revenue expenditure + Capital expenditure)	**2018-19**	**2019-20**	**2020-21 (RE)**	**2021-22 (BE)**
(A) Water, Sanitation & Housing				
Water and supply and sanitation	3471	3557	4897	8412
Housing	6187	5543	4410	3181
Urban development	6551	5540	5760	6212
(B) Irrigation and flood control				

Major irrigation	6620	7740	7927	7230
Medium irrigation	1604	1664	1725	1964
Minor irrigation	1103	645	572	628
Command area development	111	70	33	37
(C) Energy				
Power (Conventional + Renewable)	12343	14639	12287	16745
(D) Transport				
Roads and bridges	7915	7304	6187	6957
Total (Infrastructure)	**45907**	**46702**	**43797**	**51367**

Source: (Annual Financial Statement, Finance Department of Madhya Pradesh, 2021-22)

The increasing trends emphasise the focus towards infrastructure development in the state. Water and sanitation has witnessed highest budgetary expansion of over 142 percentage between the period 2018-19 to 2021-22. Energy sector has also witnessed a rise of over 35 percentage during this period.

Madhya Pradesh has maintained a high capital expenditure to GSDP ratio over last few years. It has made an average capital expenditure of 4.8% of GSDP over last 5 years (from 2017-18 to 2021-22). Under infrastructure expenditures, the state has made prominent capital expenditure contribution in sectors of Irrigation (15.08%), water & sanitation (13.68%), roads (9.6%), rural development (8.07%) and education (5.78%).

The consumption led economic growth and unification of market with roll-out of GST regime has offered Madhya Pradesh an opportunity to be the trans-shipment location and logistics hub of the country, particularly for movement of capital commodities like coal, steel, fertilizer and food grain. This stream of infrastructure development is dependent on multiple stakeholders with the state and nationally. The national plan of addressing this inter-agency coordination is planned through the Gati-Shakti digital tools. The state of Madhya Pradesh has taken number of steps to leverage this platform in its infrastructure planning and implementation.

5.5.3 Snapshot of Infrastructure

Energy sector

The state has made considerable progress in energy sector. Most importantly it has turned itself in power surplus category from power deficit few years ago. This change has happened with a constant focus on expanding the installed power generation capacity in the state. The steps taken to improve the supply infrastructure has resulted in a sufficient per capita power availability in the state.

Sources of Energy

The energy production in the state is a balanced mix of production from different sources. The abundance of coal in the state and the prevailing technology paradigm promoted Coal domination in power production; it contributes 63.3 percentage of the total installed power generation capacity in the state. Gas based production is primarily central government initiative

with small contribution of private sector. The thermal energy production is equitably owned by central undertakings, state PSUs and private sector investments. Renewal energy capacity is 34.1 percentage of the total installed capacity. Hydro-based power generation is funded by both the state and central governments, while solar power generation is largely dominated by the private sector. The combined energy capacity of the state has crossed 28 thousand MW.

Renewable energy potential

Madhya Pradesh ranks 8th in terms of overall potential for renewal power supply in the country. Madhya Pradesh is ranked 4th on this count after Rajasthan, J&K and Maharashtra. At 61,660 MW potential, it offers 8.2% of the total solar potential of the country.

Table 5.8 : Source wise ranking of estimated potential of renewal power

(in MW)

	Wind power	Small Hydro	Biomass Power	Solar Energy
Total energy potential in India (in MW)	6,95,509	21,134	17,538	7,48,990
Rank of Madhya Pradesh	8	4	2	4
Madhya Pradesh Capacity (in MW)	15404	820	1364	61660

Source: (MOSPI, Governement of India)

The state is currently using about 2.3% of the available solar capacity. The new Renewable Energy Policy of 2022 includes ventures to increase utilisation of state's solar potential.

Installed capacity

The total installed capacity of the state stands 8th in the country. The trends in Figure No 5.3 suggest almost doubling of the installed power generation capacity between 2005 and 2013 from 5770 MW to 10631 MW. The capacity further doubled in the FY 2018 from the 2013 base to 21,728 MW. The capacity further expanded by 16 percentage by the FY 2022 from its base in year 2018.

(In Mega Watt hour)

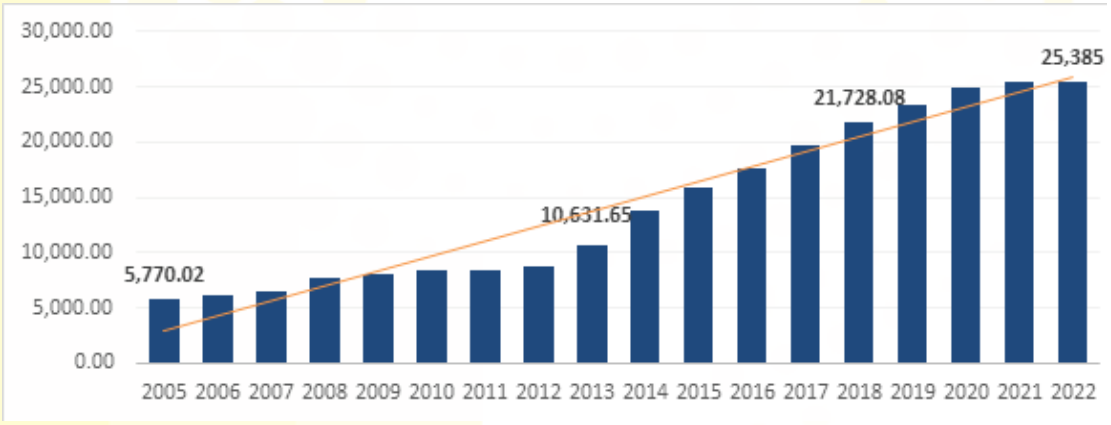

Figure 5.3 : Installed power generation capacity in Madhya Pradesh

Source: (RBI, 2022)

Energy availability

The installed capacity however can better be gauged in terms of the per capita power availability in the state. The state doubled its per capita power availability in last 10 years from 570.2 KW to 1184.9 KW. This expansion in power availability is important benchmark as a requirement for further undertaking higher intensity mechanised industrial setup.

(In KiloWatt hour)

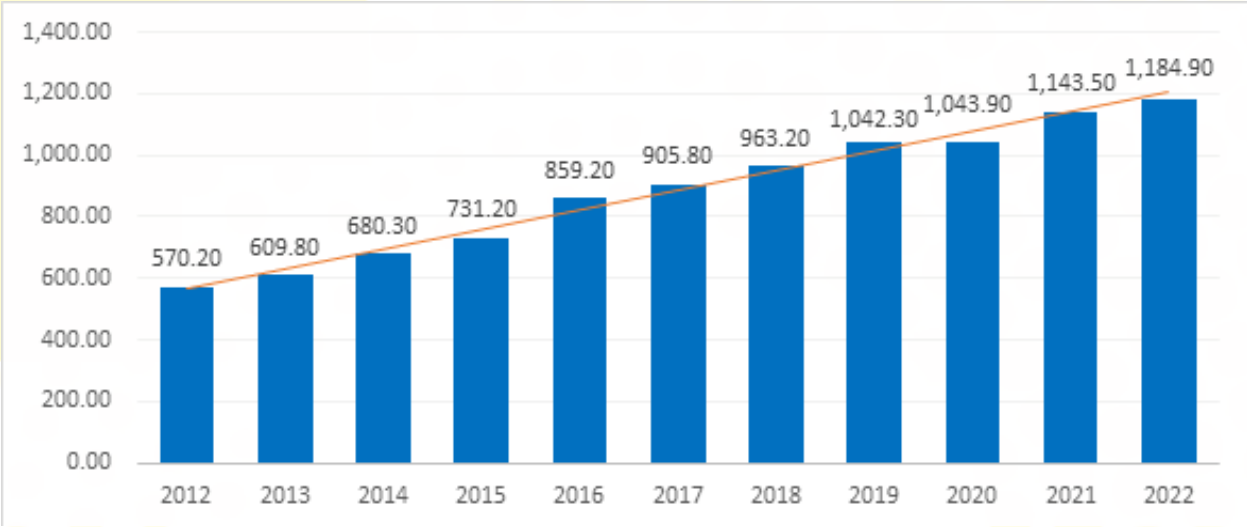

Figure 5.4 : Trend of Per capita power availability in Madhya Pradesh

Source: (RBI, 2022)

Power Consumer trends

The efforts to connect all households with electricity connection in recent years has resulted in expansion of the consumers. The state has Rs. 1.666 crore power consumers as at Mar 2021, which is 2.94% higher than that of in year 2019-20. The consumer count has shown a growth of 16.4% during the period 2017-18 to 2020-21. The irrigation connections have shown a significant growth of 25.5% followed by domestic user growth (14.25%) during this period.

Table 5.9 : Category wise consumer count

S.No.	Consumer Category	Consumer Count			
		2017-18	2018-19	2019-20	2020-21
1.	Domestic	10,574,041	11,564,215	11,845,696	12,081,200
2.	Non-domestic	967,665	1,024,339	1,071,641	1,122,933
3.	Street lighting	17,325	19,180	20,218	21,289
4.	Public water works	39,446	42,274	44,914	48,281
5.	Irrigation	2,593,047	2,799,495	3,075,883	3,254,483
6.	LT consumption	119,943	123,577	125,178	131,308

7.	HT Consumption	4350	4652	4870	4959
8.	Railways	0	0	0	0
9.	Non industrial	2266	2318	2430	2473
	Total	14,318,083	15,580,050	16,190,830	16,666,926

Source: (Annual Report of Energy Department, Government of Madhya Pradesh, 2020-21)

A rapid expansion of consumers in the low and high-tension industry category is positive development considering the high predictability and constant usage of these consumers. Likewise, the metering of irrigation connections is improving the performance indicators for the power sector.

Energy supplied

The state is comparable to top energy states for its power supplies. As per the data for the energy supply between April to December 2021, Madhya Pradesh showed a requirement of 62,324 million units. This is 5th highest in the country, much more than the GSDP ranking of the state (10th nationally), signifying a robust supplies network. A detailed look at this energy supplies by consumer segment gives deeper insights. (Ministry of Power, Governement of India)

The consumer segment details in Table No 5.10 shows that the energy supplied grew by 7.3 percentage CAGR during the period 2011-12 to 2021-22. This growth is led by a rapid increase in the domestic segment. The efforts taken by the department in terms of providing the metered connections for irrigation purposes and feeder separation is showcasing a irrigation segment growth of 9.9 percentage CAGR. This is a positive development in bringing clarity of power usage and consequent policy actions.

Table 5.10 : Energy supplied by consumer segments

(in Million units)

Energy supplied	2011-12	2015-16	2019-20	2021-22	Growth 2021-22 over 2011-12
Domestic (Including Licensee)	6932	10934	15142	17300	8.7%
Non-Domestic (Including Non-industrial)	2457	3504	4393	4247	5.1%
Public Lighting & Water works & Railways	2816	3132	2021	2221	-2.1%
Irrigation	9438	18882	22802	26725	9.9%
Industrial	7298	9060	11472	12185	4.8%
Total	28941	45512	55829	62678	7.3%
LT Consumption	19049	33768	42897	48917	9.0%
HT Consumption	9892	11744	12932	13760	3.0%

Source: (Energy Department, Governement of Madhya Pradesh, 2021-22)

Other Initiatives– Harnessing Technology for power sector efficiencies

As per Annual report of Energy department 2021-22, the energy department has taken significant technology initiatives to improve the internal and consumer facing processes. Some of these initiatives include Data-warehouse, Open source technology electricity billing, GIS Survey Application, Aadhaar Seeding and Land Record Mapping and Smart Electricity App.

Water resources

The total length of the rivers in M.P is approximately 3956 km and 553 km share boundaries with other states.

Major Canals of the Madhya Pradesh

Canal system in Madhya Pradesh contribute 17.92% of the total irrigated area Which amounts to 2766.8 Thousand Hectares of area. The table below details the canal of Madhya Pradesh.

Table 5.11 : major canals of the districts

Canal	River	Beneficiary Districts
Chambal Canal	Chambal	Bhind, Morena, Sheopur, Mandsaur, Neemach, Gwalior
Tawa canal	Tawa	Hoshangabad
Halali Canal	Betwa	Vidhsha, Raisen
Barna canal	Barna	Raisen, Sehore
Wainganga canal	Wainganga	Balaghat, Bhandara (Maharashtra)
Dejla-Dewada canal	Kunda	Khargone
Satak	Satak	Khargone
Mahi canal	Mahi	Jhabua, Dhar
Narmada canal	Narmada	Khandwa, Khargone, Barwani
Rajghat Canal	Betwa	Shivpuri, Guna, Datiya, Tikamgarh

The use of water for irrigation is closely associated to power usage in the state. As indicated in Table No 5.7 'Budget allocations for different Infrastructure' of previous section, the state has committed a significant amount in budget for expansion of irrigation services to meet the increased demand of power consumption for irrigation purpose. Following section provides comparative and performance details for this sector. The use of water for drinking purposes is detailed in subsequent section.

Irrigation potential developed by Water Resources department

The Water Resources Department has allocated 3499 thousand hectares of irrigation potential in the year 2022-23 through large, medium and small irrigation schemes. 256 thousand hectares of irrigation was used as on November 2022 (Kharif). Year-wise Irrigation potential and utilization is shown in Table 5.12.

Table 5.12 : Irrigation potential and utilization

(Thousand hectares)

Year	Large, medium irrigation potential	Use of minor irrigation potential	Use of total irrigation potential
2016-17	1998.63	904.11	2902.74
2017-18	1814.16	658.88	2473.04
2018-19	2080.32	889.06	2969.38
2019-20	2116.3	1008.70	3125.01
2020-21	2353.78	1029.67	3383.46
2021-22	2505.25	994.02	3499.28

Source: (Water Resources Department, Governement of Madhya Pradesh, 2023)

Command Area Development

In order to increase agricultural production by developing and utilizing maximum irrigation potential in the areas under better land, water management and large and medium irrigation projects in the state, irrigation projects have been included in the Command Area Development and Water Management Programme by the Ministry of Water Resources, New Delhi, Government of India. As on March 2022, field channel construction work has been carried out in a total of 7,19,371 hectares against the total command area of 10,37,765 hectares of 23 (13 major and 10 medium) irrigation projects under the Directorate. Out of these 23 projects, 10 projects have been covered by the Government of India under Pradhan Mantri Krishi Sinchai Yojana on priority basis. In the FY 2022-23, budget provision of Rs. 28.45 crore has been made and a target has been set to construct field channels in 6856 hectares area. The work is in progress (Annual Report of Narmada Valley Development Authority, 2021-22).

Irrigation potential developed by Narmada Valley Development Authority

Construction of water course and field channel in the projects constructed and under construction under Narmada Valley Development Authority is in progress.

Table 5.13 : Command development details

S.No.	Project Name	Estimated irrigation potential	Progress (as on December 2021)
1	Rani Avanti Bai Lodhi Sagar	1,57,000	70,921
2	Baragi Diversion	2,45,00	1,518
3	Maan	15,000	15,000
4	Jobat	9,850	9,850
5	Indira Sagar	1,23,200	48,919
6	Omkareshwar	1,46,800	45,082
7	Apperbeda	9,900	990
Total		7,06,750	2,01,190

Source: (Annual Report of Narmada Valley Development Authority, 2021-22)

The projects under construction and under construction are targeted to provide irrigation facility in 7.50 lakh hectare area in the year 2021-22, for which water flows from the canals of the projects are continuing. The details of annual irrigation from the year 2017-18 to the year 2021-22 are as follows:

Table 5.14 : Irrigation area developed by Narmada Valley Development Authority

	2017-18	2018-19	2019-20	2020-21	2021-22
Annual irrigation in lakh of hectares	5.42	5.70	5.85	5.70	7.50 (Target)

Source: (Annual Report of Narmada Valley Development Authority, 2021-22)

Rural Drinking water

Madhya Pradesh Public Health Engineering Department is providing pure drinking water to rural habitations through hand pumps and tap water supply schemes. About 5.62 lakh hand pumps and more than 20 thousand tap water supply schemes in 127 habitations of the state have been fully covered by providing water to 80,221 habitations at the rate of 55 liters per person per day.

Pure drinking water through household tap connections has been provided to 56 lakh rural households of the state. Through this scheme, a target has been set to provide pure drinking water household tap connections by the year 2024.

In single village tap water schemes, cost amount of Rs. 13610.49 crore has been sanctioned in 20667 villages and cost Rs. 29022.67 crore has been sanctioned for 48 group tap water schemes of 15420 villages. The work of all these approved schemes is in progress. About 20.95 lakh household tap connections will be obtained from these schemes (Public Health Engineering Department, Government of Madhya Pradesh, 2022).

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