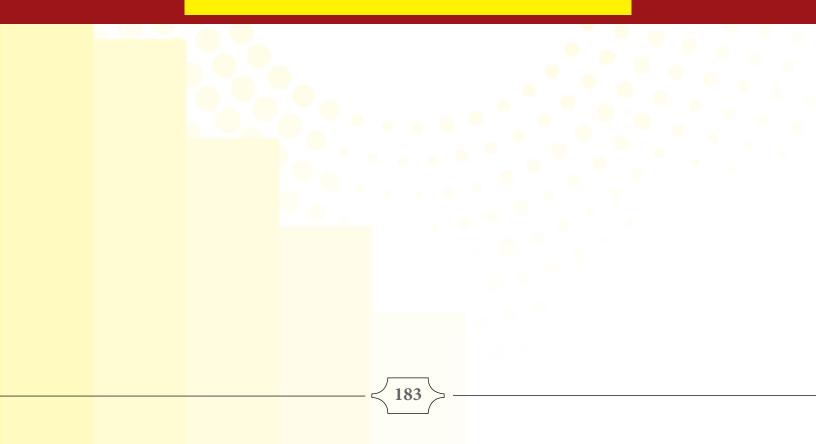
Chapter - 11

Natural Resource Management





Chapter-11 Natural Resource Management

"We are blessed to be a part of a culture where living in complete harmony with the environment is central to our ethos. Let's ensure that even the smallest step we take in our daily lives will be an effort towards conserving nature and natural resources."

— Narendra Modi

Madhya Pradesh is endowed with natural resources with a wide diversity of forests, wildlife, water resources and mineral resources. The natural resources of the state form an important part of its heritage and are vital for the needs of the present and future. Sustainable resource management forms an important part of the State Government's policy and it is committed to the broader objectives of the Sustainable Development Goals (SDGs) set by the United Nations, especially, the Goal 15 of 'Life on Land'. This is well demonstrated in the State's performance in the SDG India Index 3.0 (year 2020-21) published by the NITI Aayog, where Madhya Pradesh ranked second in the country with a score of 84 (out of 100) in Goal 15.

In this chapter of natural resource management, the status of Madhya Pradesh's forests and forest resources, water resources and mineral resources, their contribution to the State's revenue and economy and major schemes of the government have been discussed.

11.1 Forests

Madhya Pradesh has the largest recorded forest area (94.69 thousand sq. km) and forest cover (77.49 thousand sq. km) in the country (India State of Forest Report, 2021). A sizeable proportion of the State's population is directly dependent on the forests for their livelihoods and sustenance. This makes it crucial for the state to play a pivotal role in conserving and effectively managing forests and their resources.

The Government of Madhya Pradesh has initiated several programs in the forestry and allied sectors over the past few years. The budgetary allocation towards forests has seen a significant rise in the last one and a half decade, with the implementation of targeted government schemes and interventions. The state has been a pioneer in participatory forest management, being one of the earlier states to have adopted joint forest management. Madhya Pradesh is also the leading state in wildlife conservation, best exemplified by highest number of tigers in the country and introduction of cheetahs.

11.1.1. Important Policies and Initiatives

Madhya Pradesh has been a pioneer in taking proactive steps in conservation, forest-based livelihoods, rights-based management of natural resources, participatory forest governance, climate change mitigation, wildlife management and eco-tourism. Over the years, the state has started several initiatives and programs. Some of the major initiatives taken in the state are discussed below.

Notification of the Madhya Pradesh PESA Act

Madhya Pradesh has notified its PESA rules on the occasion of Tribal Pride Day on November 15, 2022. These rules have been made under PESA Act 1996. PESA rules empower gram sabhas to take decisions regarding natural resources in scheduled areas. This has given the tribal community more rights to take advantage of the natural resources of the Scheduled Areas, among other rights (Panchayat & Rural Development Department, 2023).

Implementation of Action Plan for Sustainable Forest Management

A ten-year action plan has been prepared for each forest division to ensure sustainable management of the State's forests by setting goals in accordance with the national and state forest policy, keeping the livelihoods of local communities at the Centre. In the FY2021-22, under the work plan for the purpose of conservation of water and soil, treatment work was done in 1.49 lakh hectare area in the managed regeneration group and 3.5 thousand hectares in the restoration group for the improvement of degraded forests. Rs. 15,418.39 lakh was spent in the scheme till December 2021 and 4.11 crore saplings were planted in the monsoon of the year 2021. (Madhya Pradesh Forest Department, 2022)

Green India Mission

The Green India Mission was launched in year 2014 as one of the 8 missions implemented under the National Action Plan for Climate Change by the Ministry of Environment, Forest and Climate Change, Government of India to deal with the adverse effects of climate change. The main objective of the mission is to enhance 'carbon sequestration' by improving the condition of forests, conservation of watershed areas and strengthening forest-based livelihoods of local communities. Action plan of Madhya Pradesh for the year 2022-23 has been approved by the National Executive Council of the Mission for the treatment of 32,538 hectares of forest area, amounting to Rs. 67.27 crore. For the year 2022-23, approval has been received for 5000 hectares area work. Under the year 2022-23, a total of 16,03,843 plants have been planted by treating an area of 26,389 hectares. (Madhya Pradesh Forest Department, 2023)

Bamboo Mission

Madhya Pradesh State Bamboo Mission was constituted in year 2013 for implementing the schemes of the National Bamboo Mission set up for holistic development of Bamboo sector. The major objectives of Bamboo Mission include promoting bamboo plantation in agricultural and community lands to provide quality raw material to bamboo based MSMEs and traditional bamboo artisans, encouraging technological innovations for increasing productivity of bamboo, promoting bamboo processing and product development units, imparting skill development trainings to traditional bamboo artisans, and encouraging research and development activities for value addition of bamboo. In FY2022-23, an Action Plan of Rs. 667.21 lakhs was approved for the state. Under the Bamboo Mission, bamboo plantation was done in 7,909 hectares of agricultural land in FY2022-23. In addition to this, under MGNREGA scheme, bamboo plantation work was carried out in 4,511 hectares of forest land through self-help groups of families residing in forest vicinity. (Madhya Pradesh Forest Department, 2023)

Moreover, under Aatmanirbhar Madhya Pradesh, the state government has identified 20 bamboo clusters for systematic development of bamboo sector by improving quality of bamboo and

promoting value addition and has carried out bamboo plantation, established bamboo processing and value addition units, and imparted skill up-gradation trainings and workshops to bamboo farmers and artisans.

| Growing Stock | % of growing stock of bamboo in the country | | |
|---|--|--|-------|
| Bamboo Bearing Area within Recorded Forest Area/Green Wash (in sq. km) | 18,394 | | 12.31 |
| No. of culms (in crores) | 476 <mark>.2</mark> | | 8.93 |
| Net Equivalent Green Weight (in 000' tonnes) | 22,284 | | 5.54 |

Table 11.1 : Bamboo Growing Stock in Madhya Pradesh

Source: India State of Forest Report 2021, Forest Survey of India, Government of India

11.1.2 Budgetary Allocation to Forest Department

The budget allocation for the Forest Department by the State has increased by about 389 percent between FY 2005-06 and the FY 2021-22. The increased allocation reflects the growing importance of forests and forest-related issues with the introduction of various central and state government schemes such as CAMPA, Green India, Bamboo Mission, and Project Tiger over the years. A significant increase has also been observed in the budget estimates of the Forest Department for the FY 2022-23 (Figure 11.1).



Figure 11.1 : Budget Allocation to Forest Department since FY 2005-06

Source: Demand for Grants Demand Number 010—Forest, Madhya Pradesh Government In the above chart, the figures of the budget articles for the FY 2005-06, 2010-11, 2015-16 and 2020-21 have been taken.

- * Revised estimate of the budget of the Forest Department for the FY 2021-22.
- **Budget estimate of the Forest Department for the FY 2022-23.

The maximum expenditure of the Forest Department is in the establishment of executive planning organization and executive forest circles, which is 33.98% of the corresponding budget provision in FY 2021-22, the estimated budget provision is estimated to be reduced to 32% of the total budget for FY 2022-23. The estimated budget provision of Compensatory Afforestation Fund Management and Planning Authority (CAMPA) in the FY 2022-23 is estimated to be almost double (Rs. 856.04 crore) as compared to that of the FY 2021-22 (Madhya Pradesh Finance Department, 2023).

Keeping in view the essential role of public participation in forest conservation, the dividend provided to Joint Forest Management Committees has been increased from Rs. 15 crore in FY 2021-22 to Rs. 55 crore in the FY 2022-23. Under the implementation of the action plans, a budget provision of Rs. 402.36 crore is estimated for the FY 2022-23 for conservation groups. Apart from this, Rs. 124.90 crore in timber production, Rs. 146.13 crore under establishment of National Park, Rs. 76.07 crore in integrated development of wildlife habitat, Rs. 34.86 crore for plant preparation in nurseries, Rs. 14.88 crore for centrally sponsored scheme Integrated Bamboo Development Program, and Rs. 37.10 crore for National Afforestation Program (Green India) have been estimated for allocation in FY 2022-23.

11.1.3 Economic Activities

Revenue

The Madhya Pradesh Forest Department received a total of Rs. 1,262.24 crore in the year FY 2022-23 (till December 2022), against the target of Rs. 1,500 crore. At constant prices (FY 2011-12), the share of forestry sector in the gross state value addition (GSVA) is 2.22 % in the year 2020-21. The component-wise breakup of the revenue generated by the Forest Department in the state has been mentioned in the Table 11.2 (Madhya Pradesh Forest Department, 2023)

| | Financial Year | Timber (cubic meter) | Number of Firewood | Bamboo (ton) | Revenue Received (in Rs. 'crore) |
|---|-------------------------|-------------------------|-----------------------|-----------------------|-------------------------------------|
| | 2018-19 | 270,732 | 160,542 | 34,256 | 1,11 <mark>6.29</mark> |
| | <mark>20</mark> 19-20 | 209,210 | 126,811 | 2 <mark>7,10</mark> 6 | 1,03 <mark>6.83</mark> |
| | 202 <mark>0-2</mark> 1 | 176,472 | 101,861 | 37,218 | 1,29 <mark>4.68</mark> |
| | 2 <mark>02</mark> 1-22 | 176,790 | 109,302 | <mark>35</mark> ,621 | 1,444.12 |
| (| 2022-2 <mark>3</mark> * | 149,426 | <mark>81,434</mark> | 18,712 | 1,26 <mark>2.24</mark> |

Table 11.2 : Wood, Bamboo Production (Sale and Revenue Received)

Source: Madhya Pradesh Forest Department

Note: Information regarding Timber, fuel wood and Bamboo upto January 2023. Revenue information upto December 2022. The targeted production of Timber, Firewood and Bamboo is 1,76,000 cmt. 1,10,000 stacks and 30,000 ton respectively. The Revenue target is Rs. 1500 crore.

M.P. State Forest Development Corporation

The Madhya Pradesh State Forest Development Corporation was established in 1975 with the objective of transforming low-grade forest areas into high-grade forests by planting valuable and multi-use species that rapidly increase productivity and quality. The corporation is profitable since its inception, with accumulated profit of Rs. 625.05 crores till the year 2021-22. The details of year-wise production and revenue received are given in the Table 11.3. (Madhya Pradesh Forest Development Corporation, 2022)

| Financial Year | Timber (cubic meter) | Number of Firewood | Bamboo (ton) | Revenue Received (in Rs. 'crore) |
|-----------------------|-------------------------|-----------------------|--------------------|-------------------------------------|
| 2018-19 | 89,340 | 88,518 | 2,360 | 241.04 |
| <mark>20</mark> 19-20 | 84, <mark>186</mark> | 64,358 | 2,977 | 223.36 |
| 202 <mark>0-21</mark> | 68,309 | 57,259 | <mark>3,748</mark> | 181.88 |
| <mark>2021-22</mark> | <mark>6</mark> 0,023 | 32,938 | 2,689 | 199.18 |

Table 11.3 : Madhya Pradesh State Forest Development Corporation Wood & Bamboo Production (Sale and Revenue Received)

Source: Madhya Pradesh Forest Development Corporation: Note: The figures for the years 2020-21 and 2021-22 are before the statutory audit.

Minor Forest Produce (MFP)

The collection of forest produce is an important part of the survival strategy of the forest dwellers. Generally, the extremely poor and landless families of the society, especially the women, depend on the collection of Non-Timber Forest Produce (NTFP) for employment and food security. Therefore, to strengthen the livelihood of the collectors, a three-tier cooperative association of collectors has been formed in the state to organize the management of NTFP. There are 1071 Primary Forest Produce Cooperative Societies at the primary level, 60 District Forest Produce Cooperative Unions at the district level and Madhya Pradesh State Minor Forest Produce (Trade and Development) Cooperative Federation Limited at the apex level. After the implementation of the MFP-MSP scheme by the Government of India, Ministry of Tribal Affairs (TRIFED), firstly the minimum support price of 14 minor forest produce species was declared. In the second phase, rates were fixed for 18 species for collection of forest produce at minimum support price from the month of November 2020. In this way minimum price has been fixed for a total of 32 minor forest produce species. The work of setting up 107 Van DhanKendras is in progress under the project 'Pradhan Mantri Van Dhan Vikas Yojana' run by TRIFED.

A plan has been devised under AtmaNirbhar Madhya Pradesh for GI tagging of the State's forest produce as 'Madhya Pradesh Product' and wider market expansion. In this regard, after receiving proposals from different areas of the state, minor forest produce with special quality and their areas have been identified. Among these, the GI tagging process of minor forest produce like 'Tamiya honey' and 'Panna ka Amla' has started following scientific study and the compilation of relevant data. In addition, the process of adopting forest produce organic certification protocol is going on for quality, product tracing and tapping international markets.

Tendupatta (Tendu Leaf): Through the Madhya Pradesh Tendupatta (Trade Regulation) Act, 1964, provisions have been made to regulate the trade of tendu leaves and to establish State's monopoly in the trade. The maximum amount of profit from the trade is given as bonus to the collectors. The information about collection and sale of tendu leaves in the state in the last three years is as follows (Table 11.4). (Madhya Pradesh State Minor Forest Produce (Trading & Development) Co-operative Federation, 2023)

Table 11.4: Tendupatta Collection and Sale

(Quantity in lakh standard sacks; Price in Rs. crore)

| Collection | Year | ar Total Stored Quantity (lakh standard sacks) | | Quantity Sold (lakh standard sacks) | Selling Price (in Rs. crore) | |
|------------|------|--|-------|--|---------------------------------|---------|
| 2020 | | | 15.88 | | 15.44 | 606.65 |
| 2021 | | | 16.59 | | 16.34 | 843.65 |
| 2022 | | | 18.09 | | 17.22 | 1001.49 |

Source: Madhya Pradesh State Minor Forest Produce (Trading & Development) Co-operative Federation Conservation and Livelihood

11.1.4 Conservation and Livelihood

Wildlife Conservation

There are 11 national parks and 24 sanctuaries in the state in order to ensure the protection and development of wildlife and their habitats, and with the objective of biodiversity conservation, preparing for climate change and to ensure sustainable operation of ecological services in the state. Of these there are 6 tigers Reserve, 2 Kharmor (Lesser Florican) Sanctuary, 2 Son Bird (The Great Indian Bustard) Sanctuary, 3 Gharial (and other water animals) Sanctuary, and 2 National Parks have been established for fossil conservation. The total area under National Parks and Sanctuaries of the state is 11,000 sq. km, out of which the recorded forest area is 9.46 sq. km.In order to minimize human interference for wildlife conservation, families living inside the protected areas are being resettled with better opportunities for their socio-economic development. A budget provision of

15.00 crore has been made in the year 2022-23. (Madhya Pradesh Forest Department, 2023)

Wildlife Census: According to the All-India Tiger Assessment year 2018, the number of tigers declared in the state on July 2019 is 526. The number of tigers is also increasing outside the protected areas of the state. For the first time in the state, 7,000 vultures were found in the state-wide vulture census done in year 2016. In the second vulture census year 2019, the number of vultures increased to 8,300. In the year 2021 vulture census, the total count stood at 9,448. Last year, under 'Project Cheetah', 8 cheetahs brought from Namibia were brought to Kuno National Park in the state. With this, Madhya Pradesh has become the only state with cheetah population in the country. (Madhya Pradesh Forest Department, 2023)

Participatory Forest Management

Joint Forest Management Committees: In pursuance of the National Forest Policy, 1988, Joint Forest Management Committees were established in Madhya

Box 11.1 : Ankur Plantation Campaign

The Ankur Plantation Program has been started by the Environment Planning and Coordination Organization (EPCO) under the Environment Department, Madhya Pradesh Government. The program has been prepared to ensure public participation in increasing the green area of the state with the use of technology. Registrations to the program are done through the 'Vayudoot Mobile App'. Participants have to plant at least one sapling during the scheme period and upload the photograph on the app with GI-tag of the planted sapling.

The participants have to arrange saplings on their own and are responsible for taking care of it. The participants are provided with a participation certificate upon uploading a new photograph of the same plant through the Vayudoot app after 30 days of plantation. Pradesh through a Government of Madhya Pradesh resolution passed in year 2001. Madhya Pradesh is the leading state in the implementation of Joint Forest Management (JFM) in the country, with a strong JFM network of 15,228 Joint Forest Management Committees covering an area of 66,874 sq. km. (Source: India State of Forest Report 2019, Volume II).

Biodiversity Management Committees: Under the Biodiversity Act, 2002, Biodiversity Management Committees (BMC) have been constituted in the state to promote the conservation and sustainable use of biodiversity in the country's local bodies and for its documentation. There are a total of 23,557 Biodiversity Management Committees (BMC) that have been constituted in the state under the ambit of the Madhya Pradesh State Biodiversity Board. The setting up of BMCs has helped in the preparation and digitization of People's Biodiversity Registers (PBR) of each BMCs by the year 2020-21on the basis of secondary data received from the departments and local bodies. (AIGGPA, 2022)

Eco-tourism

The protected areas and sanctuaries of the state are major attractions for national and international tourists. Online booking has been arranged in Kanha, Pench, Panna, Satpura, Sanjay and Bandhavgarh Tiger Reserves to facilitate the arrival of tourists in the protected areas. Equalizing the fees of Indian and foreign tourists attracted the arrival of 24 lakh tourists in the tourism year 2021-22. With the aim of expanding eco-tourism activities, the Madhya Pradesh Wildlife (Protection) Rules, 1974 has been amended, with new wildlife experience and recreation areas being notified. (Madhya Pradesh Forest Department, 2023)

Research Extension and Lok Vaniki

In order to increase the productivity of Madhya Pradesh's forests and promote afforestation work on community and private land outside forest areas, high-tech plantations are being operated under 11 research and extension circles.

In the rainy season till September 2022, 4.42 crore plants of different species were supplied from the nurseries. In the year 2021, revenue of Rs. 4.06 crore was received from the sale of plants in non-forest areas. Nursery management system has been developed for online information of 4.42 lakh saplings in the state under the tree plantation drive of the agro-forestry programme.

In the financial year 2022-23, under the 'Study and Research Scheme', two research projects are being conducted through the State Forest Research Institute and three through Tropical Forest Research. In the rainy season 2022, 9.16 lakh saplings of different species have been planted in different districts through regional forest boards. (State Forest Research Institute Jabalpur, 2023)

11.2 Water Resources

Madhya Pradesh is a rich state in water resources. Water is a limited resource whose demand is increasing continuously, hence it is necessary to use water judiciously. The average surface water available to the state is 81.5 lakh hectare meter (at 75 percent dependable yield), of which 56.8 lakh hectare meter is utilized by the state. Rain fed rivers like Narmada, Chambal, Betwa, Son, Tapti and Mahi have been originated in the state. The estimated amount of groundwater resources in the state is about 34,159 million cubic meters (Water Resources Department, Madhya Pradesh). In addition to the rivers; lakes, ponds and wetlands are also included in the water resource system.

Box 11.2 : State's New Water Policy Promotes Traditional and Modern Knowledge

Considering the changing conditions and emerging future needs for water, the Madhya Pradesh State Water Policy, 2022 (Draft) has been prepared by making necessary amendments in the existing Madhya Pradesh State Water Policy, 2003 to ensure conservation, storage, management and control of water resources of the state. Further, an expert consultation program was organized with eminent subject matter experts of the country and state on 30 September 2022 under the Chairpersonship of Honourable Chief Minister, Government of Madhya Pradesh to get the experts suggestions and feedback on the draft water policy, 2022.

Water is a public asset. Thus, active participation of citizens, voluntary organizations and other stakeholders are necessary in the consumption, distribution, conservation and management of water resources. Apart from usage of water in domestic, agriculture, industry sector; water resources are also essential for maintaining the ecological system. Hence, to take care of needs of diverse stakeholders, state's new draft water policy leverages on traditional & cultural knowledge, modern technologies and innovations. Various aspects of the National Water Policy, 2012 have also been suitably incorporated in the Madhya Pradesh State Water Policy, 2022 (Draft).

Multiple departments contribute in the development, conservation and management of water resources in the state, out of which Water Resources Department and Narmada Valley Development Department are the prominent line departments. Panchayat and Rural Development, also contributes in development and conservation of water resources through community mobilization and by implementing flagship schemes such as Mahatma Gandhi National Rural Employment Agreement (MGNREGA), Pradhan Mantri Krishi Sinchayee Yojana–Watershed Development and Amrit Sarovar Yojana etc.

Total budget estimate under various sub schemes for Water Resources Department in the FY 2022-23 was Rs. 6,863.99 crore. The revised budget estimates for the Water Resources Department in FY 2021-22 was Rs. 6,760.95 crore. Similarly, for the Narmada Valley Development Department, the total budget estimate for FY 2022-23 has been Rs. 3,263.29 crore and the revised estimates for FY 2021-22 was Rs. 4,723.86 crore (Finance Department, GoMP, 2022-23).

11.2.1 Conservation and Management of Wetlands

Natural and man-made reservoirs, ponds, lakes, wetlands play an important role in the management of natural resources from environment perspectives. The state has rich cultural and social tradition of protecting and developing ponds.

Wetlands are an important aquatic asset for ecosystem services. Wetlands, like forests and trees, play an important role in carbon sequestration, as well as naturally purifying water. They are not only important for environment but also for livelihood. A large part of the population is dependent on wetlands for drinking water supply, fisheries, boating and water chestnut cultivation etc.

Wetland (Conservation and Management) Rules have been made in the year 2017 under the Environment Protection Act, 1986, following which State Wetland Authority has been constituted in each state and union territory. Thus, Madhya Pradesh State Wetland Authority has been constituted and functional in our state. According to the duties and responsibilities mentioned in the Wetland Rules 2017, a digital repository of 15,152 ponds with an area above 2.25 hectares has been prepared

by the Madhya Pradesh State Wetland Authority. Information is also being collected about ponds with less than 2.25 hectares area in the state. Special efforts have been made to designate environmentally important ponds/wetlands in the state under the Ramsar Convention. Apart from this, efforts are being made to identify other wetlands from the environmental perspective.

As per Wetland Rules 2017, the work of notifying all such wetlands in also under process for which investment is being made by the central and the state government. The Wetland Rules, 2017 are applicable as they get notified under Ramsar site or rules. Attempts are being made get funding support under the National Plan for Conservation of Aquatic Ecosystems (NPCA) to conserve wetlands which are important for environment, livelihood, drinking water and irrigation etc.

Box 11.3 : Ramsar Sites in Madhya Pradesh

Three wetlands of state have received the status of Ramsar Sites in July 2022, by the Ramsar Convention. These wetlands sites are: Sirpur Wetland of Indore, Yashwant Sagar of Indore, and Sakhya Sagar of Shivpuri district. Earlier, only one wetland site (Bhoj Wetland, Bhopal) was designated on 19 August 2002 in Madhya Pradesh under Ramsar Convention. Currently, there are 75 Ramsar sites in the country, including four Ramsar sites in the state. Madhya Pradesh is at the sixth place in the country along with Himachal Pradesh in terms of designated Ramsar sites. Under the Wetlands Convention (Ramsar, 1971), a total of 2471 Ramsar sites are being designated worldwide as on year 2022 in the list of wetlands of international importance (Ramsar Convention Secretariat, 2023). Also, Ministry of Environment, Forest and Climate Change, Gol have identified 120 wetlands in the state.

11.2.2 Ground Water Resources in Madhya Pradesh

The total annual replenishable ground water resources of Madhya Pradesh in the assessment year 2022 is 35.24 billion cubic meters (BCM), which is slightly declined in comparison to the year 2013 (35.98 BCM). However, a slight increase in total annual replenishable ground water resources has been observed in the assessment year 2017 (36.42 BCM) and 2020 (36.16 BCM). A steady declining trend has been observed in the net annual ground water availability in the state as compared to the year 2013. In the assessment year 2013, about 34.16 BCM of net annual ground water was available in the state, which is declined to 33.38 BCM in the assessment year 2020 and subsequently declined to 32.58 BCM in the assessment year 2022 (Central Ground Water Board, 1995, 2013, 2017, 2020, 2022).

The annual groundwater draft is the amount of groundwater extracted annually for various uses. In the assessment year 2022, total annual groundwater draft of the state was 19.25 BCM, out of which 17.39 BCM (90.34 percent) was used for irrigation, 0.17 BCM (0.88 percent) for industrial use, and 1.69 BCM (8.77 percent) in is used for domestic purposes (Central Ground Water Board, 2022). Year-wise details of ground water resources of the state are available in Table 11.5.

| Particulars | 2013 | 2017 | 2020 | 2022 |
|---|---------------------|-------|-------|-------|
| Total Annual Replenishable Ground Water Resources (BCM) | 35.9 <mark>8</mark> | 36.42 | 36.16 | 35.24 |
| Net Annual Ground Water Availability (BCM) | 34.16 | 34.47 | 33.38 | 32.58 |
| Annual Ground Water Draft (BCM) | 19.36 | 18.88 | 18.97 | 19.25 |

Table 11.5 : Summary of Ground Water Resources in Madhya Pradesh

Source- Central Ground Water Board

The stage of ground water development is the ratio of the net annual ground water availability to the total annual replenishable ground water, which is expressed in percentage. There has been a steady increase in the stage of groundwater development in Madhya Pradesh. In the assessment year 1995, the level of stage of ground water development in the state was 16.67 percent, which has been increased to 55 percent, 56.82 percent and 59.10 percent respectively in the assessment years 2017, 2020 and 2022. Although, it is lower than the country's stage of ground water development figures during the same period, but the gap between State's and the country's stage of ground water development in the stage of groundwater development in the stage of groundwater development in the country in the assessment years 1995, 2017, 2020 and 2022 was 30.04 percent, percent, 63.33 percent, 61.60 percent and 60.08 percent respectively (Figure 11.2) (Central Ground Water Board, 1995, 2013, 2017, 2020, 2022).

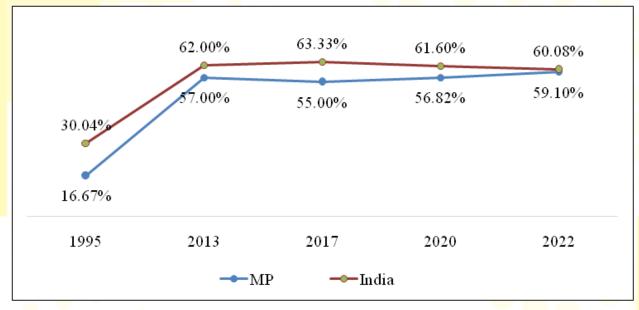


Figure 11.2 : Stage of Ground Water Development

Source- Central Ground Water Board

The ground water assessed units/development blocks are categorized into safe, semi-critical, critical, over-exploited and saline categories based on status of ground water development. In Madhya Pradesh, the number of development blocks in safe category were 264 in the year 2004; which is declined to 226 blocks (71% of the total development blocks/units in the assessment year) in the year 2022. This indicates the increasing pressure on ground water resources. During the same period, the number of semi-critical blocks/units in the state increased from 19 to 60 (19% of the total development blocks/units in the assessment year) and over-exploited blocks increased from 24 to 26 (8% of the total development blocks/units). According to ground water assessment report, 2022, out of total 7089 assessment units/development blocks in the country; 4780 blocks are categorized as safe (67% development blocks/units), 1006 as over-exploited (14% block/units) and 158 blocks are categorized as saline (2% block/units). Basis of ground water development, the trend of assessed development blocks/units of the Madhya Pradesh are shown in the Figure 11.3 below.

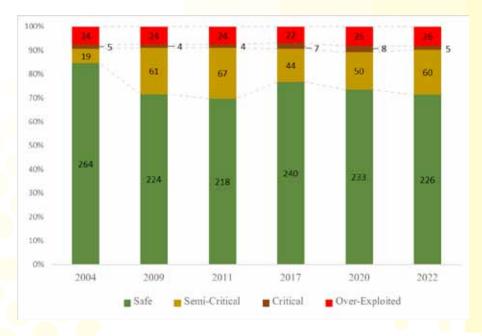


Figure 11.3 : Categorization of Blocks based on Ground Water Development Source- Central Ground Water Board,

Between assessment year 2020 and 2022, an improvement in the ground water resources have been observed in four assessment units/development blocks of the state. Out of these, 'Indore Urban' assessment unit of Indore district has been shifted from Over-Exploited category to Critical category. Similarly, other three assessment units namely Bhanpura and Malhargarh (from District-Mandsaur) and Jabalpur Urban (District-Jabalpur) have now shifted from Critical to Semi-critical category. Apart from these, a decline in ground water level has been observed during the same period in eight assessment units/development blocks of the state and no changes were observed in 305 assessment units/development blocks (Central Ground Water Board, 2022).

In addition, the depth of ground water in Madhya Pradesh during the month of May, which indicates pre-monsoon condition, was 40 meters below the ground level. Figure 11.4 and Figure 11.5 below show the depth of water table before and after monsoon.



Figure 11.4 : Depth of Ground Water Table (mbgl) in May

Source- Central Ground Water Board,

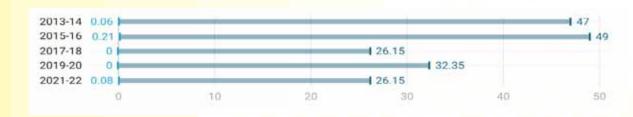


Figure 11.5 : Depth of Ground Water Table (mbgl) in November

Source- Central Ground Water Board.

Water level in the month of November is observed for the post-monsoon situation. The depth of ground water level in November is observed in the range of 26-49 meters below ground level.

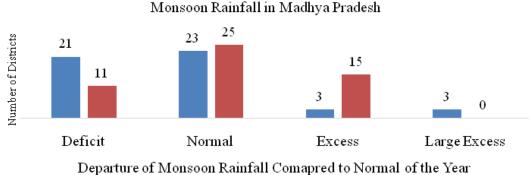
Table 11.6 below shows that normal rainfall in the state is estimated to be in the range of 1073-1088 mm. The monsoon rainfall has shown erratic pattern in the last few years in the state.

| Assessment Year | Normal Rainfall (mm) | Monsoon Rainfall (mm) | Remark |
|-----------------|----------------------|-----------------------|-----------------------------------|
| 2013-14 | 1073 | 1274.2 | 3 <mark>4.3% more</mark> rainfall |
| 2015-16 | 1073 | 829.0 | 10 <mark>.0%</mark> less rainfall |
| 2017-18 | 1073 | 653.9 | 25. <mark>0%</mark> less rainfall |
| 2019-20 | 1088 | 1351.1 | 44 <mark>% more rainfall</mark> |
| 2021-22 | 1088 | 991.7 | 8.9% less rainfall |

Table 11.6 : Summary of Monsoon Rainfall in Madhya Pradesh

Source- Water Resources Department, GoMP

Figure 11.6 shows the rainfall pattern in the districts of Madhya Pradesh. There has been an increase in the number of districts with excess rainfall in year 2020 as compared to the year 2015. The number of districts receiving normal monsoon rainfall have also increased, while the number of districts receiving deficient rainfall has decreased.



2015 2020

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Source- Central Ground Water Board, 2017, 2020

In the regional rainfall pattern, districts in the west and southern regions of the state received above normal rainfall. Most of the districts of Central and Eastern Madhya Pradesh received normal rainfall. Whereas, the Northern districts, especially the Bundelkhand region, recorded deficit rainfall (Figure 11.7).

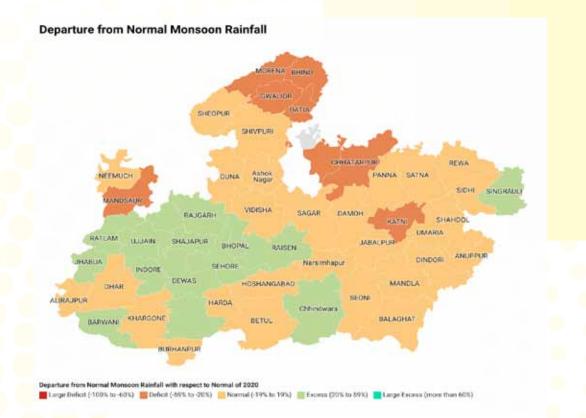


Figure 11.7 : Monsoon Rainfall Compared to Normal Rainfall, 2020

The Figure 11.8 compares the departure of monsoon and post-monsoon rainfall from normal rainfall for the year 2020, which shows that the number of districts receiving deficit and large deficit post-monsoon rainfall is high. The number of districts receiving normal post-monsoon rainfall is less as compared to the monsoon season rainfall. This indicates the erratic rainfall patterns.

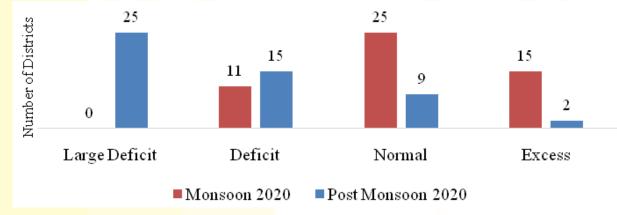


Figure 11.8 : Departure of Rainfall from Normal Rainfall in Madhya Pradesh (2020) Source- Central Ground Water Board, 2020

Box 11.4 : Jalabhishek Abhiyan

Jalabhishek Abhiyan is an initiative of the state government to encourage people's participation in water resource development and management. Under this campaign, large number of check dams, stop dams, bori bandhan and other water harvesting structures have been constructed along with river revival initiatives and plantation drive at the river banks under Narmada Seva Yatra. About 4.5 lakh water structures have been built with people's participation aiming to check village's water in the village and farm's water in the farm land.

11.2. 3 Performance of MP in NITI Aayog's Composite Water Management Index

Madhya Pradesh ranked third in the Composite Water Management Index for the year 2018 amongst the high-performing states in non-Himalayan states. The state has been best performer in the 'Source' augmentation and restoration of water bodies' and 'Major and medium irrigation— Supply side management' thematic area. Previously, the state also secured third and second ranks in the year 2016 and 2017 respectively (NITI Aayog, 2018).

11.2.4 Reservoirs in Madhya Pradesh

The Central Water Commission (CWC) monitors 143 major reservoirs in the country. Out of these, 11 reservoirs belong to Madhya Pradesh. The data of these reservoirs as on 19 January 2023 shows that out of total 11 reservoirs, 4 reservoirs have more than 80 percent of their live storage capacity at full reservoir level (FRL) (Central Water Commission, 2023). The details of water level of major reservoirs of the state are mentioned in Table 11.7 below.

| S N | Name of | FRL (m) | Current | Live | Current | Storage as % of live capacity at F | | apacity at FRI |
|-----|----------------------------|-----------------------|------------------------|-----------------------------------|--------------------------|------------------------------------|--------------|--------------------------|
| | Reservoirs | | Reservoir Level (m) | Capacity at FRL (BCM) | Live Storage (BCM) | Current year | Last year | Last 10 years average |
| 1 | Gandhi Sagar | 399.9 | 397.97 | 6.827 | 5.465 | 80 | 82 | 72 |
| 2 🦲 | Tawa | 355.4 | <mark>35</mark> 0.93 | 1.944 | 1.283 | 66 | 66 | 52 |
| 3 | Bargi | 422.76 | 421.38 | <mark>-</mark> 3.1 <mark>8</mark> | 2.835 | 89 | 85 | 74 |
| 4 | Bansagar | 3 <mark>41.</mark> 64 | 33 <mark>9.8</mark> 4 | 5.166 | <mark>4.</mark> 358 | 84 | 73 | 75 |
| 5 | Indira <mark>S</mark> agar | 262.13 | <mark>258.88</mark> | 9.745 | 6.791 | 70 | 54 | 58 |
| 6 | Barna Dam | 348 <mark>.5</mark> 5 | 347.13 | 0.456 | 0.363 | 80 | 64 | 58 |
| 7 | Omkare <mark>s</mark> hwar | <mark>19</mark> 6.6 | 19 <mark>4.</mark> 18 | 0.299 | 0.057 | 19 | 17 | 18 |
| 8 | Sanjay Sarovar | 519.38 | <mark>514.95</mark> | 0.508 | <mark>0.22</mark> | 43 | 42 | 30 |
| 9 | Rajghat Dam | 370.89 | 368.3 | 1.945 | 1 <mark>.433</mark> | 74 | 92 | 56 |
| 10 | Kolar Dam | 462.2 | 4 <mark>56</mark> .71 | 0.27 | 0.171 | 63 | 47 | 37 |
| 11 | Atal Sagar | 346.25 | 341.35 | 0.835 | 0 <mark>.561</mark> | 67 | 99 | 52 |

Table 11.7 : Summary of Major Reservoirs in Madhya Pradesh

Source- Central Water Commission, Reservoir Level Storage Bulletin, as on 19 January 2023

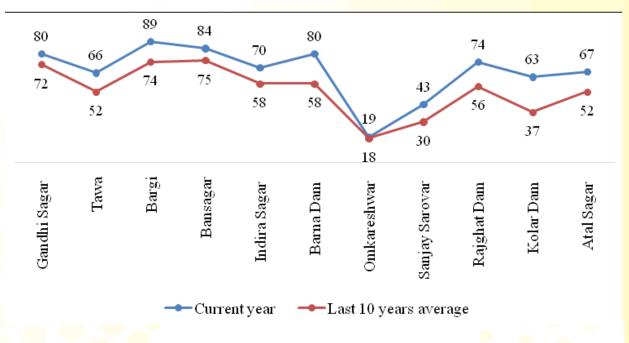


Figure 11.9 : Storage as % of Live Capacity at FRL

Source- Central Water Commission, Reservoir Level Storage Bulletin, as on 19 January 2023

- Pradhan Mantri Krishi Sinchayee Yojana- Watershed Development: Rajiv Gandhi Watershed Management Mission is the nodal organization for planning, implementation and monitoring of watershed projects, which is under Panchayat and Rural Development Department, Madhya Pradesh. The main objectives of Pradhan Mantri Krishi Sinchayee Yojana-Watershed Development are (1) Economic development of the community based on the watershed of ecosystem regeneration and upgradation of production systems (2) Natural resource management through sustainable activities at the community level (3) To improve the socio-economic condition of resource-poor and asset-less families, disabled and women. For the Pradhan Mantri Krishi Sinchayee Yojana The budget estimate for the FY 2022-23 for watershed development was Rs. 200 crores. The revised estimate for the scheme for FY 2021-22 was Rs. 80 crores (Finance Department, Madhya Pradesh, 2022-23).
 - Under the scheme, 82 new projects costing Rs. 1,088.27 crore are being implemented covering 4.95 lakh hectare area in 36 districts of the state. The scheme has a provision of Rs. 22,000 per hectare for watershed management projects, in which 60:40 ratio is provisioned for funding support between center and state government.
 - A total amount of Rs. 225.97 crore has been made available under the scheme since its inception, against which an expenditure of Rs. 170.55 crore (75.47%) incurred in financial progress.
 - About 2,373 water harvesting structures have been constructed since its inception under the scheme, resulted in 5,182 hectares of land under irrigation facility.
- **Atal Bhujal Yojana-** The project period is from year 2020-21 to 2024-25. The scheme aims at water conservation and improvement in ground water level. The total cost of the scheme

is Rs. 314.54 crores, which is 100 percent grant from the Government of India and the World Bank. The project is being implemented in six districts (Sagar, Damoh, Chhatarpur, Panna, Tikamgarh and Niwari) of Bundelkhand region in Madhya Pradesh and nine blocks (Sagar, Patharia, Chhatarpur, Naugaon, Rajnagar, Ajaygarh, Palera, Baldevgarh and Niwari), which is expected to benefit 8,319 square kilometer area covering 678 Gram Panchayats (Water Resources Department, 2021). Atal Bhujal Yojana is being implemented in seven States of the country (Madhya Pradesh, Gujarat, Haryana, Karnataka, Maharashtra, Rajasthan and Uttar Pradesh) with a total outlay of Rs. 6,000 crore. Under the Atal Bhujal Yojana, total targets for training programs at the State, district, block and gram panchayat levels were 5, 30, 54 and 7,616 respectively between year 2020-21 to 2022-23, against which, the achievements at the State, district, development block and gram panchayat levels were 10, 24, 60 and 7,988 respectively (Atal Bhujal Yojana Portal, 2023).

Mission Amrit Sarovar- Under the Azadi ka Amrit Mahotsav with an aim to conserve water, it is targeted to construct at least 75 Amrit Sarovar (ponds) totaling 50,000 ponds in all rural districts of the country by 15 August 2023. Each Amrit Sarovar is expected to have at least 10,000 cubic meters of water holding capacity and pond area of minimum one acre (0.4 hectare). A total of 93,670 sites have been identified for the construction of Amrit Sarovar in the country as on December 2022, out of which, the total number of works started are 54,215 and out of the works started, construction of 27,318 Amrit Sarovars (50.39 percent) has been completed (Mission Amrit Sarovar Portal, 2023).

Madhya Pradesh is at the second position in the implementation of Mission Amrit Sarovar, based completion of Amrit Sarovar. The total targets allocated by the Government of India to Madhya Pradesh was construction of 3,900 Amrit Sarovar. Against which, 7,311 sites have been identified in the State, and construction works have been started at 5,372 sites. Out of the started works, construction of 2,648 Amrit Sarovar have been completed, which is 62.59 percent of the targets allocated to the State. (Mission Amrit Sarovar Portal, 2023).

The Amrit Sarovar being constructed under Azadi Amrit Mahotsav are not only creating water storage capacity, but also creating and recording everlasting place specific stories of glory, pride, history, heritage, heritage, social and religious movements, culture and other characteristics of the region. Amrit Sarovar's are multi-purpose water bodies promoting livelihood opportunities and developing as a tourist destination. People's participation and their ownership, better engineering and inter-departmental convergence are easily visible in the construction of these Amrit Sarovar, which are emphasizing on conservation and storage water resources as well as strengthening of rural economy and employment opportunities. Efforts are on to make Amrit Sarovar ideal ponds by encouraging efforts for drainage line treatment in the catchment area of Amrit Sarovar and to directly link families with livelihood activities like tourism, fishing, water chestnut production or other activities etc. Apart from voluntary labour & material contribution, more than 30.87 crores have been mobilized as machinery supports (including donation of land) through people's participation under the Mission Amrit Sarovar.

11.3 Minerals

Minerals have an important contribution in the state's economy and industrial progress. In terms of abundance of mineral resources, Madhya Pradesh is one of the eight major mineral rich states of the country. In the 6th National Mines and Mineral Conclave, New Delhi, July 2022, Madhya Pradesh Government, Mineral Resources Department has received first and second prize in two different categories, whose prize money was Rs. 3 crore and Rs. 2 crore respectively. In addition to this, in the year 2021-22, a memento and amount Rs. 2 crore for the successful auction of mineral blocks has also been received from the Government of India.

11.3.1 Important Policies and Initiatives

M.P. Minor Mineral Rules 1996

State's Mineral Resources Department is continuously working through exploitation, conservation, exploration and continuous monitoring of minerals under the rules recognized by the law. In the state, M.P. Minor Mineral Rules 1996 is effective. Except the minerals (sand and gravel) specified in schedule-one and schedule-two of this rule, the rest of the minerals are accepted on the mineral lease/excavation lease on government and private land. Due to the declaration of 31 major minerals as minor minerals by the Government of India, these 31 minerals have been included in Schedule-V of Minor Mineral Rules, 1996, by publishing a notification on dated 13.02.2018. As a result of this amendment, the prospecting licenses of these minerals which were approved before 22.01.2021, in those safe cases, the state government has decided to accept mining leases for a period of 30 years in many cases. In order to speed up the allocation of mines, promote investment in the state and provide maximum employment opportunities to the local laborers in approved mines, in respect of 31 minor minerals of schedule-five amendment has been made in the Madhya Pradesh Minor Mineral Rules, 1996. In addition to the royalty payable in schedule-one and schedule-two and schedule-five in the Madhya Pradesh Minor Mineral Rules 1996, it is proposed to take 10 percent equivalent amount of the royalty payable under the head of the District Mineral Foundation. Some minerals are also being exploited by the Madhya Pradesh state Mining Corporation constituted under the Mineral Resources Department.

Madhya Pradesh Sand Rules

The Madhya Pradesh Sand (Mining, Transport, Storage and Trade) Rules have been implemented from 2019, As a result, in the sand availability districts of the state, the process of allotment of mines as a group through e-tender was done by the Madhya Pradesh State Mineral Corporation Limited, and now the process of e-tender allocation is being done by the District Collectors. Regulation fee has been provisioned at the rate of Rs 25.00 per cubic meter on the vehicles of minor minerals coming from the Border States in the State.

Environment Management / Environment Clearance

Environmental management in mines is regulated by Environmental Clearance (EC) by Ministry of Environment Forest & Climate Change or State Level Environment Impact Assessment Authority, Consent to Establish / Consent to operate by Madhya Pradesh Pollution Control Board, Assurance of compliance with the environmental norms by Madhya Pradesh Pollution Control Board. All the mines in the State are therefore required to deploy necessary pollution control devices including mist spray, foggers, dust suppression arrangements, pollution control during mineral crushing and sizing, where ever required. Sand mining, especially illegal mining of sand from rivers and natural water bodies has been a matter of environmental concern over the years before the Hon'ble Supreme Court and the National Green Tribunal. Strict control is being exercised in the state by following the guidelines issued from time to time by the Ministry of Environment, Forest and Climate Change, Government of India (Madhya Pradesh Pollution Control Board, December 2021).

Simplification of procedures for environment clearance in the state

There have been several interventions to simplify the environmental clearance (EC) process under the Ease of Doing Business of the Madhya Pradesh Government and other important implementation guidelines are as follows:- Fixed time period and compliance for environmental approval of B-1 and B-2 category cases, according to the EIA notification 2006, the minimum time limit for disposal of B-category cases by the Government of India is 105 days. As per the order of the Madhya Pradesh Government, Environment Department, the time limit for B-2 category cases has been fixed at 30 working days and for B-1 category cases, the time limit has been fixed at 60 working days, All the proceedings related to environmental clearance by SEIAA and SEAC have been ensured online, from receiving applications on the environment portal of the Ministry of Environment, Forest and Climate Change, Government of India to issuing an environmental clearance. For the convenience of the project proponents, the updated status of their cases is also displayed on the website of MP-SEIAA.

Simplification of procedures to encourage industrial investment

In order to encourage industrial investment in Madhya Pradesh, the procedures related to environmental permission/consent have been simplified, such as:

- Ending the practice of submitting physical documents for obtaining consent/authorization and arrangement for faceless scrutiny of received applications.
- Simplifying the procedures, the consent/authority-based e-signature system is implemented online (Transparent Consent Management System).
- There has been an arrangement for the board's water/air consent/registration facilities in 30 working days.
- Provision for automatically generated provisional permission by computer if the case is not resolved in 30 working days.
- Facility to provide consent/authorization through WhatsApp on registered mobile.
- Auto renewal facility on the basis of self-certification of the consent of orange and green category industries.
- Exemption from consent by classifying 744 industries in white category. In addition, reduction in charges by rationalization of Board's water and air consent fee and administrative charges for authority under the Environment Protection Act, 1986, public hearing fee etc. from 01.04.2022.
- 'Vivad se Vishwas' scheme was implemented with a view to facilitating industries/ institutions without consent.

- For categories of small, medium, and industries with investments up to 50 crores, the system of issuing water/air consent for minimum of 05 years is implemented.
- E-talk facility implemented for communication with industries/institutes.
- Real-time dashboard facility for tracking cases under process.

Application of science and technology in mining

National Mineral Development Corporation and Indian Institute of Technology Kharagpur will develop spectral methods, products and algorithms for exploration using drones for mining. The collaboration between NMDC and IIT Kharagpur would further lead to the development of software spectral tools for mineral excavation and capacity building programs on mining technology. Drone-based Geophysical Surveys and Hyperspectral Studies for Mineral Exploration would be conducted by National Mineral Development Corporation for the first time in Madhya Pradesh. Discovery for various minerals and exploration for diamonds is being conducted by National Mineral Development Corporation , 2022).

11.3.2 Mineral Exploration

The estimation of mineral deposits is useful for setting up industries in the state. After survey/prospecting of mineral deposits, mineral revenue is earned after identification and auction of mineral blocks. Reserves of different categories of major minerals are economically available in the state. The details of the status of mineral reserves for the year 2015 and year 2018 are shown in Table 11.8

| Mineral Name | 2015-2018 Total stock* |
|----------------|------------------------|
| Diamond | 28.70 |
| Pyrophyllite | 28. <mark>55</mark> |
| Dolomite | 23 <mark>11</mark> .39 |
| Manganese ore | 57.71 |
| Coal | 29284.95 |
| Limestone | 9341.85 |
| Rock Phosphate | 58.05 |
| Diaspore | 7.56 |
| Copper Ore | 283.42 |
| Bauxite | |

Table 11.8 : Mineral Reserves of the State

*Note: - Unit of Diamond is in Million Carat whereas for other minerals is in Million Ton Source: - Indian Mineral Yearbook, 2019 & 2020, Indian Bureau of Mines.

From year 2017 to November 2022, under the Regional Seasonal Exploration Program limestone, bauxite, rock phosphate, laterite reserves have been estimated in some districts of the state. Limestone – 838.99, bauxite – 7.99, rock phosphate – 3.6 and laterite – 1.87 million tonnes respectively in the assessment. In the year 2021-22, under the regional session exploration program,

prospecting work has been done in 02 areas of limestone in district Satna, 01 area in Dhar, 01 area of limestone in district Damoh, 01 area of bauxite in district Dindori of the state. In the year 2022-23, prospecting work is being done in 02 areas in district Satna, 01 area in Dhar and 01 area in district Damoh, bauxite in 01 area in district Dindori for limestone mineral. Mineral deposits will be estimated only after the completion of prospecting work in the above areas.

11.3.3 Production of Vital Minerals

According to the production figures for the financial year 2021-22, Madhya Pradesh ranks first in the production of diamond, copper ore and manganese ore, second in the production of rock phosphate and limestone and third in the country in the production of coal. It ranks fifth and sixth in the production of iron ore and bauxite respectively. The production value of major minerals in the state in the financial year 2021-22 was Rs 21,213.23 crore (final), which is 5.41 percent more than the production value of major minerals produced in the last financial year Rs 20,123.63 crore.

The year-wise details of increase/decrease in the production of important minerals in the state in the past years are shown in Table 11.9.

Mineral 2019-20 Decrease 2020-21 Decrease 2021-22 Decrease Financial S. (provisional) no. (provisional) / increase / increase year 2022-23 (Revised) 1 increase from last from last till December from last year (%) vear (%) (P.) year (%) Coal 1257.26 5.95 1325.31 5.41 1379.53 5.03 961.72 1 Bauxite (-)8.54 (-)7.86 6.03 (-)3.79 4.24 2 6.86 6.32 9.07 3 Copper ore 25.44 0.10 22.39 (-)12.00 24.42 14.31 Iro<mark>n o</mark>re 4 33.43 19.31 40.94 22.46 73.99 80.73 32.41 5 Manganese 9.<mark>63</mark> 2.08 9.34 (-)2.96 8.49 (-)9.10 5.32 ore 6 Rock 1.00 0.97 0.98 (-)2.081.13 15.45 2.37 Phosphate Diamond (-)25.03 13916 (-)51.70 266.00 (-)98.087 28816 326.72 (carat) Limestone 50<mark>1.40</mark> 8 471.18 (-)5.95 460.99 (-)2.16 8.77 322.15

Table 11.9 : Production of important minerals in the state

(in lakh tonnes)

Note: - (1) Revised figures of 2019-20 have been published by IBM, Nagpur for March 2021 and revised figures for 2020-21 and provisional figures for 2021-22 have been quoted from publications of March 2022 (advance) by IBM.

(2) IBM The March 2022 (advance) publication of the Coal production figures for the financial year 2020-21 shows 474.35 lakh tonnes, which appears to be a human error, which has been found in the final figures of I.B.M. Amendments are inevitable, therefore, in place of the above figure, as per the publication of March 2021, the provisional figure of coal production has been taken as 1325.31 lakh tonnes only, which will be revised on receipt of the revised figure.

(3) In Article 12.3.2, in determining the place of Madhya Pradesh in India with respect to the production of various major minerals, I.B.M. Production figures for FY 2021-22 as on March 2022 (advance) have been used. The figures for financial year 2022-23 is as per information received from the district offices.

There has been an increase in the production of important minerals such as coal, copper ore, iron ore, rock phosphate and limestone in the state in the financial year 2021-22 as compared to the year 2020-21. The percentage increase was recorded as 5.03, 9.07, 80.73, 15.45 and 8.77 percent respectively. During the same period, there was a decrease in the production of bauxite, manganese ore and diamond. The percentage reduction was recorded as 3.79, 9.10 and 98.08 percent respectively (Indian Bureau of Mines, 2019, 2020, 2021, 2022).

The value of important minerals in the state in lakh rupees from financial year 2019-20 to December of financial year 2022-23 is shown in Table 11.10.

Table 11.10 : Value of important minerals in the state

| /. | | - `` | |
|-----|---------|----------|---|
| lin | l a l/h | Rupees) | |
| | акн | RUDPES | 1 |
| | | nupecco, | |

| S. no. | Mineral | Financial year 2019-20 (R.) | Financial year 2020-21 (P.) | Financial year 2021-22 (P.) | Financial year 2022-23 Till December (P.) |
|-----------|-----------------|--------------------------------|--------------------------------|--------------------------------|--|
| 1 | Coal | <mark>1,</mark> 497,874.42 | 1,758,686.37 | 1,808,301 <mark>.72</mark> | 1,260,637.92 |
| 2 | Bauxite | 5,469.53 | 4,798.18 | 4,935.90 | 3,434.19 |
| 3 | Copper ore | 39,254.59 | 39,372.13 | 43,966.22 | 2 5,75 <mark>4.8</mark> 1 |
| 4 | Iron ore | 17,290.68 | 21,468.70 | 46,679.40 | 20,444.69 |
| 5 | Manganese ore | 62,208.12 | 56,844.83 | 68,319.64 | 42,790.33 |
| 6 | Rock Phosphate | 943.04 | 920.07 | 1,113.98 | 2,318.95 |
| 7 | Diamond (carat) | 3,525.00 | 1,476.96 | 180.51 | 221.72 |
| 8 | Limestone | 123,323.60 | 128,796.09 | 147,825.52 | 9 <mark>4,</mark> 978.42 |

Source - Monthly Statistics of Mineral Production March 2021 & March 2022, Indian Bureau of Mines, Nagpur.

Note: - (1) Value of minerals in the financial year 2019-20 and 2020-21 is as per I.B.M. publication March 2021 & March 2022 (Advance). While the information available at that time for the financial years 2022-23 is calculated by multiplying the average prices of 2021-22 with the production figures received from the district.

(2) The value of copper ore is calculated according to the annual return of Hindustan Copper Limited and the value of coal is calculated according to royalty.

(3) The grade wise per tonne price of coal is issued by Coal India Limited from G1 to G17, which varies. The price shown in this information is the simple average price of all the grades of coal produced in the state out of the above grades.

(R.) – Revised

(P.) – Provisional

11.3.4 Budgetary Provisions and Revenue

According to Table 12.11, in the budget estimate FY2022-23, a total of 200 crores on minor construction work and other charges and a total of 300 crores on major construction work and submajor construction work under the scheme "5453 District Mineral Fund", in this way total 500 crores were provisioned.

Table 11.11: Scheme-wise (sub-scheme) details of provisions

(Amount in crore)

| S. no. | Scheme wise (Sub Scheme) | Accounting FY 2020-21 | Revised estimate FY 2021-22 | Budget estimate FY 2022-23 |
|-----------|--|--------------------------|--------------------------------|-------------------------------|
| 1 | 0182 Establishment of Survey of Minerals | 13.79 | 16.53 | 21.06 |
| 2 | 2294 Establishment of directorate | 26.21 | 31.08 | 46.64 |
| 3 | 2713 Laboratory Establishment | <mark>- 1.13</mark> | 1.35 | 2.37 |
| 4 | 5453 District Mining Fund | 0 | 0 | 500.00 |
| 5 | 6606 Transfer of mineral surcharge to reserve fund | 719.44 | 738.44 | 700.00 |
| 6 | Other | 0 | 0 | 2.33 |
| | Grand total | 760.55 | 787.40 | 1,272.40 |

Source: - Demands for Grants 2022-23, Demand No. 025 – Mineral Resources Department

In the financial year 2021-22, the revised target of mineral revenue was kept at Rs 7,000 crore, against which revenue of Rs 7,122.71 crore was received in the treasury. Similarly, in the year 2022-23, a revenue target of Rs 8,000 crore has been kept, against which Rs 5,899.32 crore has been received by the month of December 2022.

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