

Chapter I

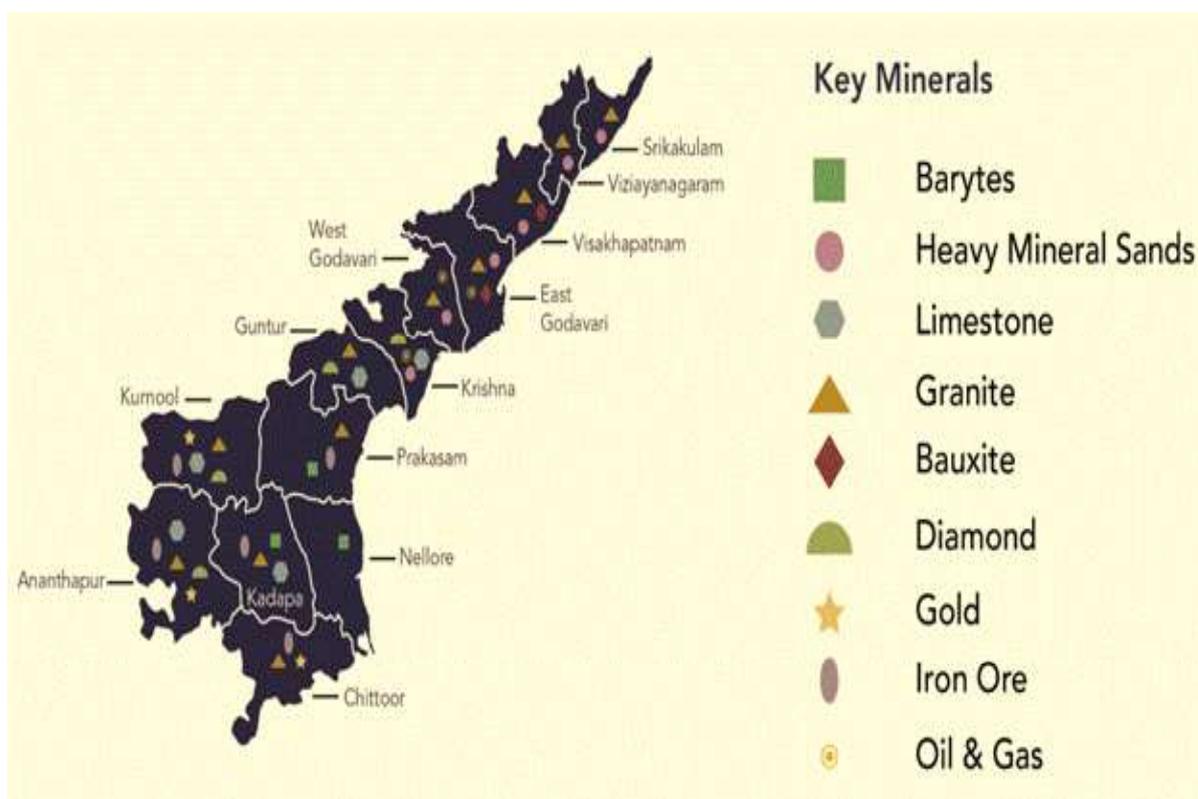
Introduction

1.1 Introduction to mineral resources

Minerals are broadly classified in two categories, *i.e.*, major and minor minerals. Minor minerals means¹ building stone, gravel, ordinary clay, ordinary sand other than sand used for prescribed purposes, and any other mineral which the Central Government may, by notification in the Official Gazette, declare to be a minor mineral. Major minerals include all minerals other than minor minerals.

The State of Andhra Pradesh has abundant major minerals *viz*, Limestone, Iron ore, Ilmenite and minor minerals *viz*, granite, road metal, barytes. State's varied geology has a rich and wide variety of minerals suitable for various mineral specific industries. The State is treasure house for 48 minerals and more specifically for Gold, Diamond, Bauxite, Beach Sand, Limestone, Coal, Dolomite, Quartz, Feldspar, Iron Ore, Granite and other building materials *etc.* The geographical distribution of main minerals in the State has been depicted in **Figure 1**.

Figure 1: Mineral map of Andhra Pradesh



Source: District wise mineral opportunities in Andhra Pradesh taken from Department's website

Andhra Pradesh is very rich in different types of minerals and the estimated quantities of important minor and major minerals available (as of 31 March 2021) in the State when compared to Nation as a whole is as detailed in **Table 1.1**.

¹ as defined in Section 3(e) of Mines and Mineral (Development and Regulation) Act, 1957

Table 1.1: Mineral profile of Andhra Pradesh*(Quantity in Million Ton)*

Sl. No.	Type of mineral	Mineral	Estimated quantity in India	Estimated quantity in Andhra Pradesh	Share of Andhra Pradesh (in percentage)
1.	Minor	Road metal*	981.11	181.44	18.49
2.		Barytes	49.47	42.60	86.11
3.		Dolomite	2,393.15	38.96	1.63
4.	Major	Limestone	87,388.75	831.23	0.95
5.		Iron Ore	6,835.70	22.11	0.32
6.		Manganese	112.49	2.41	2.14

Source: As per the information submitted by Mines & Geology Department, GoAP for compilation of Natural Resource Accounting (NRA) for the year 2020-2021.

Note: The NRA report for the year 2021-22 is yet to be published. * quantity in cum

There was huge variation in estimated quantity of limestone as per data submitted by Mines & Geology Department for compilation of Natural Resource Accounting and data (as of March 2020) published by Indian Bureau of Mines for Indian Minerals Year Book (MYB) 2022. The estimated quantity of limestone as per MYB 2022 was 2,27,589.26 Million Ton and 29,838.82 Million Ton for the Nation and Andhra Pradesh respectively. The variation in figures of limestone needs to be investigated and reconciled.

Further, the State reserve mineral map available in the public domain was last updated in 2014 which raises concerns for adequacy for planning current and future exploration and mining activities.

1.2 Framework for Governance and Management of mineral resources

The term ‘mining’ is broadly used to denote the extraction of minerals while for the minor minerals ‘quarrying’ is specifically used to indicate the extraction. Management of mineral resources is the responsibility of both Government of India (GoI) and State Government in terms of items listed under Union and State List² of the Seventh Schedule of the Constitution of India. Consequently, Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act) was enacted which gives Union the power (Section 2 of MMDR Act) to regulate mineral development for all minerals except minor minerals for which power was vested to the State Government (Section 15(1) of MMDR Act 1957).

The MMDR Act lays down the legal framework for regulation on mines and development of all minerals other than petroleum and natural gas. The Act was amended (January 2015) by GoI by Ordinance, 2015. Subsequently, the Mineral Conservation and Development Rules (MCDR), 2017, Mineral (Auction) Rules, 2015, Mineral Concession Rules 2016 etc., were also framed in line with various Acts and National Mineral Policy.

The MMDR Amendment Act 2015, brought the following major initiatives:

- Granting of mineral concessions shall be through auction³ for major minerals to ensure transparency.

² Union list: Serial Number 54 and State list: Serial Number 23

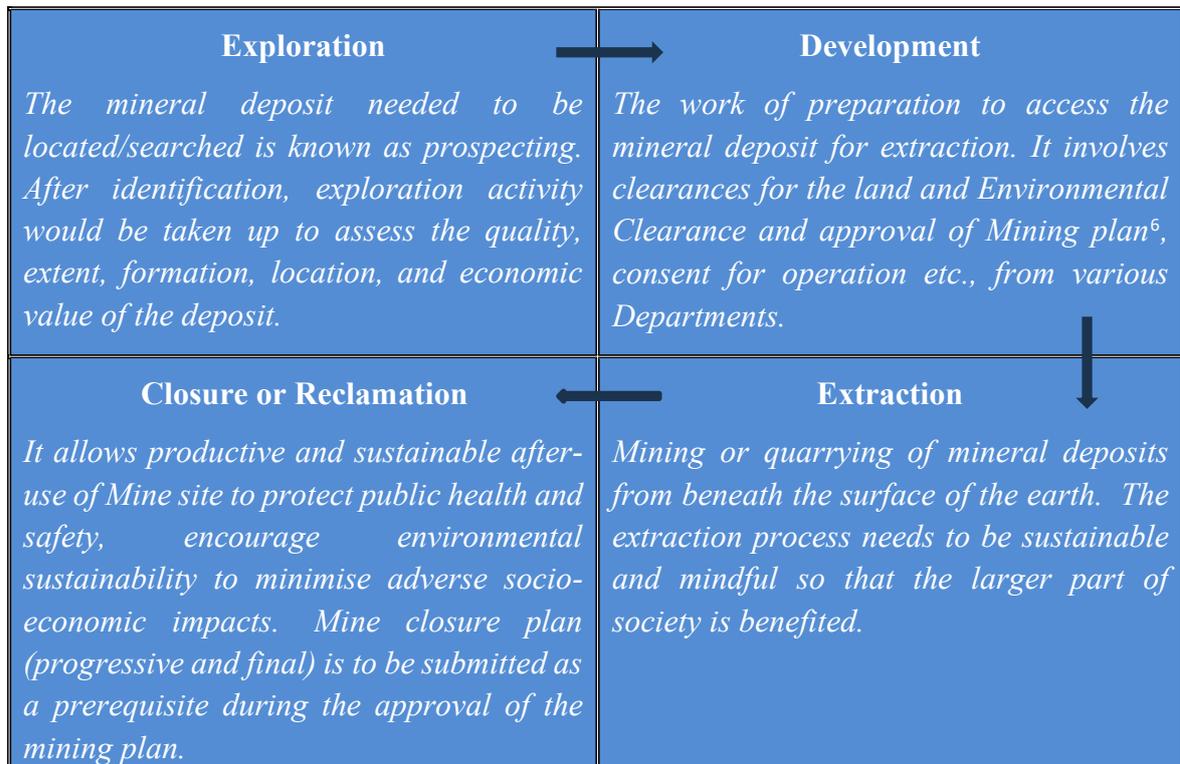
³ section 10 B and 11 of Mines and Minerals (Development and Regulation) Amendment Act, 2015

- Establishment of District Mineral Foundation⁴ (DMF) for the welfare of mining affected areas by using contributions from the mining activities.
- Establishment of National Mineral Exploration Trust⁵ (NMET) for regional and detailed mineral exploration in the country.

As per the provisions of MMDR Act, 1957, GoAP formulated Andhra Pradesh Minor Mineral Concession (APMMC) Rules, 1966 as amended from time to time.

1.3 Mining Process

Mining/ quarrying of mineral includes the complete process of identification of mineral deposit to reclamation of mining site. The mining process is broadly divided into four stages as detailed below:



1.4 Role of Departments involved in mining of minerals

The Mines & Geology Department is entrusted with both promotional and regulatory functions for overall development of mining sector and collection of mineral revenue to the State Exchequer. The Directorate of Mines and Geology oversee the functions of approval of mine plans for minor minerals, vigilance and monitoring of minerals production, survey and demarcation of areas, mineral revenue collection, mineral investigation and exploration and dissemination of mineral information.

⁴ section 9 (B) of Mines and Minerals (Development and Regulation) Amendment Act, 2015

⁵ section 9(C) of Mines and Minerals (Development and Regulation) Amendment Act, 2015

⁶ the mining plan is the plan of the lease hold area showing the nature and extent of the mineral body, spot or spots for mining operations, details of the geology including mineral resources and reserves of the area, details of proposed exploration program, method of excavation, handling of waste and mineral rejects, use of mineral and beneficiation of minerals, a tentative scheme of mining from year to year for five years, etc.

The Revenue and Forest Department issues No Objection Certificate⁷ (NOC) for the land leases meant for mining activity depending upon the jurisdiction. Andhra Pradesh Pollution Control Board (APPCB) issues Consent For Establishment (CFE) and Consent For Operation (CFO) of mines. State Environment Impact Assessment Authority (SEIAA) is the Environmental Clearance granting authority for mining lease of minor minerals and Ministry of Environment, Forest and Climate Change for major minerals. Indian Bureau of Mines (IBM) approves mining plan for major minerals.

1.5 Organisational Set up

The organisational set-up of the Mines & Geology Department is as shown in *Chart 1.1*.

Chart 1.1: Showing the organogram of Mines & Geology Department



Source: As per Department website

At the Government level, the Principal Secretary is the Head of the Department and at the Directorate level, the Director, Mines and Geology (DMG) is responsible for administration and implementation of the related Mining Acts and Rules.

At the District level, the Deputy Director of Mines and Geology (DDMG) is the district administrator and member convenor to District Mineral Foundation (DMF). The DDMG approves mining plans and processes Minor Mineral Concession Applications⁸ and is the authority for approval of Mineral Revenue Assessments of the leases falling within the district.

Assistant Director, Mines and Geology (ADMG) is in-charge of the unit office, submits proposal in respect of prospecting license, mining/quarry lease applications, inspection of areas applied for mining leases and inspection of Mineral Based Industries. Prevention of smuggling and illegal extraction, and transportation of minerals is one of the responsibilities of ADMG. Other responsibilities are finalisation of assessment, collection of Mineral Revenue (Royalties, Seigniorage fee, *etc.*) and other demands and pursuing collection of arrears.

⁷ G.O.Ms.No.163, Industries & Commerce (Mines-II) Department, dated 16.11.2017

⁸ other than Granite, Marble, Ordinary Sand and Mineral Dealer Licenses within the District

Assistant Director (AD) Vigilance shall work under the supervision of Joint Director of Mines and Geology (JDMG) and is in-charge of the Regional Vigilance Squad having jurisdiction of two or three districts. The AD (Vigilance) inspects the illegal mining areas and seizes vehicles during the checking of mineral traffic.

1.6 Trend of Revenue receipts

The budget estimates and actual revenue receipts from the minerals under “Major Head - 0853 non-ferrous mining and metallurgical industries” and revenue receipts as per Mines & Geology Department during the period 2017-22 was as shown in **Table 1.2**.

Table 1.2: Details of budget estimates, actual revenue receipts and receipts as per Mines & Geology Department

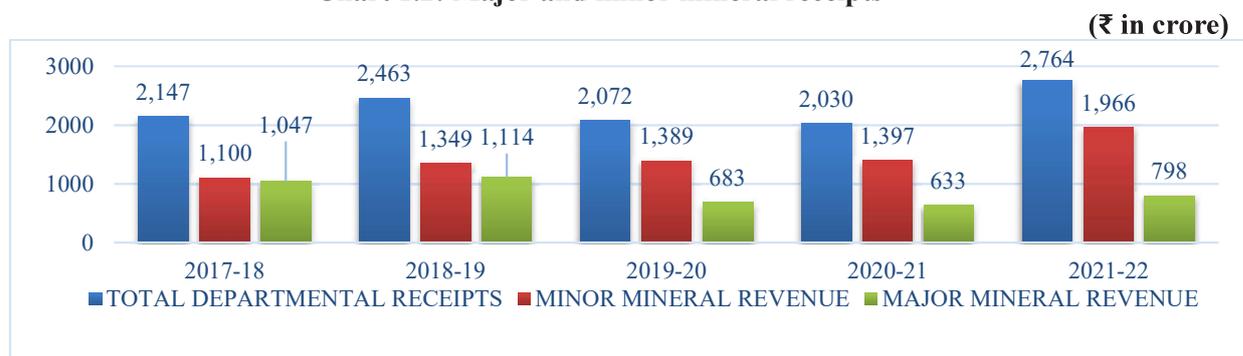
Sl. No.	Budget Estimate	Actual Revenue Receipt as per State Finance Accounts	Difference	Percentage of shortfall	Revenue receipt as per Department	Difference of Receipts as per Department and State Finance Account
	(A)	(B)	(C)=(A)-(B)	(D)=(C)/(A)X100	(E)	(F)=(E)-(B)
2017-18	2,200.00	2,156.36	43.64	2	2,147.48	(-) 8.88
2018-19	2,500.00	2,210.53	289.47	12	2,463.48	252.95
2019-20	3,950.00	1,897.12	2,052.88	52	2,072.07	174.95
2020-21	3,550.00	2,256.36	1,293.64	36	2,029.84	(-) 226.52
2021-22	3,550.00	2,983.00	567.00	16	2,764.23	(-) 218.77
Total	15,750.00	11,503.37	4,246.63		11,477.10	(-) 26.27

Source: Details furnished by the Department and State Finance Account

There was a significant shortfall in realisation of revenue which ranged between two to 52 per cent of the budgeted estimates. The short realisation of revenue when compared to estimated budget was more during 2019-20, though there was increase in revenue from ₹2,156.36 crore in 2017-18 to ₹2,983.00 crore in 2021-22.

Further, as per data furnished by the Mines & Geology Department, the actual revenue realised under major and minor minerals for the period 2017-22 was as shown in **Chart 1.2**.

Chart 1.2: Major and minor mineral receipts



Source: Details furnished by the Department

The revenue realised from minor minerals was on increasing trend when compared to major minerals, whereas there was drastic decrease during the period 2019-22 when compared with 2018-19. This was due to slowdown of activities amid global pandemic, as there was

sluggishness in cement industries which are major consumers of limestone. Thus, less consumption of limestone is one of the reasons for decrease in revenue under major minerals.

1.7 Audit Objectives

The Performance Audit was conducted to assess whether:

- Effective systems and procedures were in place for utilisation of funds meant for exploration activities and granting/ renewal of mining leases.
- Effective mechanisms were in place to ensure extraction of mineral was within the approved limits and associated revenues were properly assessed, collected, and deposited.
- Effective mechanisms were in place for prevention, detection of unauthorised mining activities and powers vested with the Department were effectively enforced as deterrent for minimising the same.

1.8 Audit Criteria

The Performance Audit (PA) drew audit criteria from the following Acts/ Rules:

- Mines and Minerals (Development and Regulation) Act, 1957 amended from time to time;
- Minerals (Other than Atomic and Hydrocarbons Energy Minerals) Concession Rules, 1960 and 2016;
- Andhra Pradesh Minor Mineral Concession Rules, 1966 as amended from time to time;
- Environment Impact Assessment Notification 2006;
- Andhra Pradesh District Mineral Foundation Rules, 2016, Mineral (Auction) Rules, 2015 and Andhra Pradesh Minor Mineral Auction (APMMA), Rules 2022;
- Mineral Conservation and Development Rules, 1988 and 2017;
- Granite Conservation and Development Rules, 1999;
- Manual of Mines and Geology Department, Andhra Pradesh, 1983;
- National Mineral Exploration Trust Rules, 2015;
- Mineral Exploration, Research, and Innovation Trust, Rules 2016;
- National Mineral Policy, 2019;
- Mineral (Evidence and Content) Rules, 2015;
- Metalliferous Mines Regulations, 1961;
- Government Orders, Circulars issued by Government and various judgements;
- Indian Bureau of Mines (IBM) Manual for Inspection of Mines, 2017, Notes on illegal mining issued by IBM;
- United Nations Framework Classification Guidelines, 2009.

1.9 Audit Scope and Methodology

The Performance Audit was taken up during June 2022 to January 2023 covering the period 2017-18 to 2021-22 with focus on the objectives mentioned above.

Two (Krishna and Kurnool) out of 13 districts⁹ (DDMGs) were selected based on the areas having more number of limestone leases, and completion of Differential Global Positioning System (DGPS)¹⁰ survey. Two more districts (Kadapa and Visakhapatnam) were selected using random sampling method. Thus overall, four¹¹ out of 13 DDMGs and eight¹² out of 22 ADMGs were covered during the present audit. Limestone being the highest revenue contributor of ₹1,780.88 crore (95 per cent) of total revenue (royalty) of ₹1,868.22 crore under major minerals during 2017-22 was selected for detailed scrutiny. Further, the audit of offices of the Principal Secretary, Industries and Commerce (Mines) Department, Director, Mines and Geology and other entities related to mining activities viz., Indian Bureau of Mines (IBM), Directorate General of Mines Safety (DGMS), State Environment Impact Assessment Authority (SEIAA) and Andhra Pradesh Pollution Control Board (APPCB) were also covered.

The audit included scrutiny of records/ files on mining leases to review the monitoring of mining activities and compliance of the statutes. Audit also visited and obtained inputs from agencies/ entities connected with mining activities and the inputs obtained were suitably incorporated in the report wherever necessary.

Audit engaged the Energy and Wetlands Research Group, Indian Institute of Science (IISc), Bangalore as Consultant to study the volume of Limestone mineral extracted from the mining leases using remote sensing technology from a technical perspective. The study covered areas in two mandals viz., Jaggaiahpet and Kolimigundla under the jurisdiction of two ADMGs (Nandigama and Banaganapalle), covering an average extent of each limestone lease of 180.85 hectares. The Department has communicated its concern over the fact that the study by the Consultant IISc Bangalore has been relied upon for auditing and that the assessment made by IISc was approximate and hence could not provide the accurate quantity of mineral extracted and the method was not practical. Audit's response is that the Remote sensing studies by technical experts, are reliable as a constructive tool, for assessing illegal mining situation. In this instance, the exercise has been useful in estimating the Limestone mineral extracted for the purpose of examining whether the quantity of mineral extracted was approximately as per the Mining Plan and facilitating detection of illegal mining activities.

The objectives, scope and methodology of audit were discussed at the level of Government in an Entry Conference held in June 2022. Exit Conference with the Government was held in March 2024 wherein, the major audit findings were discussed. The written replies of the Government and the responses given during the Exit Conference have been considered appropriately while finalising this Report.

⁹ in the erstwhile district setup of Andhra Pradesh

¹⁰ it is an enhancement to the global positioning system that provides improved location accuracy. It uses a network of fixed, ground-based reference stations to broadcast the difference between the positions indicated by the global positioning system satellite and the known fixed positions

¹¹ Kadapa, Krishna, Kurnool and Visakhapatnam

¹² ADMG Kurnool & Banaganapalle, ADMG Kadapa & Yerraguntla, ADMG Vijayawada & Nandigama and ADMG Visakhapatnam & Anakapalli

1.10 Compliance to recommendations of Public Accounts Committee

A Standalone Performance Audit (PA) on Functioning of the Directorate of Mines & Geology was conducted covering the period 2006-07 to 2011-12. The Audit Report¹³ included audit findings mainly on Administration and Management of Mineral Concessions, issues relating to environment and internal control, human resources, and other issues. The Public Accounts Committee (PAC) examined the report in 2015 & 2016. The PAC offered (February 2016) certain recommendations which include *viz.*, (i) the applications/mineral concessions cannot be kept pending for more than 30 days, (ii) a system be developed to ensure that mining leases are granted only after approval of the mining plans and the mining activities take place as per approved mining plans, (iii) the Government may consider the issue of seeking separate reports, for specific purpose, from the revenue authorities while issuing, renewing, and re-granting different mineral concessions duly stating the duration for which the mineral concessions are to be granted, (iv) provisions may be made for regular review of inoperative leases at fixed intervals for determining the leases to prevent blockage of mining areas.

In this regard, the Assistant Director (Administration) of Mines and Geology replied that all the recommendations of PAC were complied with.

However, the current audit revealed that the irregularities noticed earlier were still persisting. Thus, the Government/Department have taken ineffective punitive/corrective action on the recommendations made by PAC.

1.11 Audit Constraints

The Department did not provide basic records, statistical data on mineral-wise royalty and seigniorage fee earned, status of Mineral Concession Application, renewal of application at various stage of approval, dispatch of non-working leases, levy of penalty and number of triggers received for illegal mining. There was inconsistency in data furnished to audit on different occasions at various levels.

Due to non-availability of basic records and statistical data, the effectiveness of systematic plan in the Department could not be ascertained. The observations were made to the extent of records made available to Audit.

1.12 Acknowledgement

Audit acknowledges the cooperation of the Department in the production of the available data/records and the information required for the purpose of this Performance Audit. Audit also acknowledges technical inputs/ support extended by the Energy and Wetlands Research Group, Indian Institute of Science, Bengaluru. Audit has relied, *inter alia*, upon the Consultant's study for observations relating to estimating the volume of Limestone mineral extracted from the mining leases in two mandals, included in this Report.

¹³ C&AG's Report (Revenue Sector) No. 2 of 2014 and laid on the table of the House on 06.09.2014