



NATURAL RESOURCE ACCOUNT OF ANDHRA PRADESH FOR THE YEAR 2020-21 MINERAL & ENERGY RESOURCES



An initiative of Government Accounting Standards Advisory
Board under the aegis of CAG of India

MAY 2023

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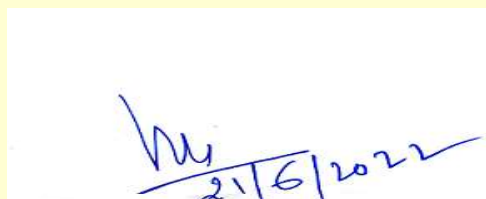
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MESSAGE OF STATE GOVERNMENT

The Government of Andhra Pradesh is committed to sustainable production of Mineral Resources in the State. Director of Mines and Geology has compiled the Natural Resources Account duly obtaining the mineral reserves/stocks data from the Asst. Director(District level) and authentic extractions as well as physical flows from the OMEPS (Online Mineral E-permit System) that is maintained by the Director of Mines and Geology, Andhra Pradesh.

I appreciate the efforts made by officials of Mines and Geology Department, Government of Andhra Pradesh, the Principal Accountant General (A&E) and the Principal Accountant General (Audit), Andhra Pradesh for bringing the Natural Resources Accounting Report 2020-21.

A handwritten signature in blue ink, followed by a horizontal line and the date '21/6/2022' written below it.

(Gopala Krishna Dwivedi)
Principal Secretary to the Govt. of A.P.
(Ind & Com) Department

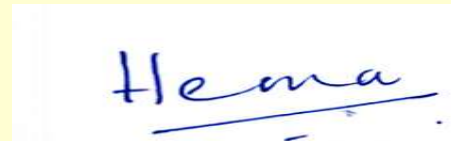
MESSAGE FROM THE ACCOUNTANTS GENERAL

Natural resources are materials present within and in the atmosphere of the earth. Man extracts or harnesses these to meet his needs and in the process, support life. Subsoil assets i.e. proved reserves, water and land along with their aquatic and terrestrial ecosystems and biota which exist naturally are termed as natural resources. For example, fossil fuels, coal, natural gas, metals, stone and sand, air, sunlight, soil and water are all referred to as natural resources.

The object of natural resource accounting is to provide information on the state of changes in the stocks of natural resources over a period of time at a reasonable frequency. It would also facilitate a convergence, thus enabling India achieve majority of the sustainable development goals set up globally.

In view of the growing awareness, importance and the need to ensure availability of resources for the use of the ensuing generations, this attempt is a beginning by the SAI of India, the C&AG, to make available information in a collated form for the use of all the stakeholders viz., the governments at both the Centre and States, industry and the citizenry at large for better governance and responsible usage.

From a beginning made last year through conduct of pilot studies in select States of the country to examine the feasibility of making this compilation, accounting of natural resources has come a long way in that the exercise has proved to be a big success due to the sustained involvement of the State Governments also alongside the offices of the Principal Accountants General of both Accounts & Entitlement and Audit this year. This compilation, which is a nascent attempt, would certainly evolve over the years through attempted automation by the input providers to ensure higher level of accuracy and reliability of data, both for planning and responsible usage.



(Lata Mallikharjuna) PRL. ACCOUNTANT GENERAL (A&E)	(Hema Munivenkatappa) PRL. ACCOUNTANT GENERAL (AUDIT)
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Executive Summary

The GASAB Secretariat in CAG's Office has come out with a Concept Paper on NRA in India in July 2020 which, inter-alia, envisaged a three-term plan for implementation of NRA in India in consonance with the strategy enshrined in the System of Economic and Environmental Accounting – Central Framework of the UN.

Besides the plans, the Concept Paper also suggested the templates for preparation of Asset Accounts on Mineral & Energy Resources. Simultaneous to the release of the Concept Paper, pilot studies were initiated (August 2020) in five States, of which, three States namely Goa, Meghalaya and Rajasthan have successfully completed the studies, preparing the model Asset Account on Mineral and Non-renewable Energy Resources in the States.

The final formats of Asset Accounts on Mineral & Energy Resources were released in the shape of a book in October 2021 for implementation in the States. First draft Asset Accounts was targeted for the year 2020-21 to be completed by 2022.

The work on preparation of the Asset Accounts in the State of Andhra Pradesh commenced with joint efforts of the Accountants General Offices and the State Government. This Report presents the first draft of the Asset Accounts on Mineral and Energy Resources in the State of Andhra Pradesh.

Effective implementation of a system of generating Asset Accounts on Mineral and Energy Resources in the State would aid in evidence-based good governance and have the following specific advantages.

- ***Preparation of NRA and meet the commitment made to meeting SDGs and SEEA framework.***
- ***Resources at a glance - a one pager document on State-wise major and minor minerals.***
- ***Compilation of physical and monetary values to enable cross verification of revenues vis-à-vis actual extractions.***
- ***Provide pace of exploitation – to bring out sustainability of resources.***
- ***Analysis of revenue vis-à-vis market value/export value will make it easier to assess and review the royalty rates – to protect State's revenue interest.***
- ***Enable assessment of revenue streams for the future.***
- ***Mine-wise data on resources – pan India.***

- ***Enabler of identification of alternate resources (economic as well as energy).***
- ***Close monitoring on illegal mining, and***
- ***Progress on commitment made at COP 26***

Salient features of this compilation are mentioned below:

State NRA Cell was formed during 12/2020 with members from PAG (A&E), PAG (Audit) and Department of Mines and Geology. (Para 3.1)

7 meetings were held between PAG (A&E), PAG (Audit) and DMG officials which helped in extracting the required data. A workshop was also held to guide the field offices (ADMGs) in data collection for the monthly data to be submitted from April 2022. (Para 3.2)

State Government took a proactive step and developed a separate screen in the existing e-permit system of the Mines and Geology Department to capture the data required for the preparation of OB and growth in stock. (Para 3.3)

35 minerals out of 48 mineral resources generated royalty for the State Government during 2020-21. (Para 4.5)

There were differences in the OB for 2020-21, as calculated from the IBM reports and as received from the DMG Office which was to be reconciled by the department. (Para 5.3)

₹ 339.82 crore was received as royalty revenue from mineral consuming Government Departments through book adjustments and treasury challans. Mineral wise break-up of the same was not available with the department and consequently could not be compiled. (Para 5.6)

For fuel minerals i.e. Crude Oil and Natural Gas, the onshore extraction only as reported by M/s ONGC is included. (Para 5.6)

There is a need for a robust framework in terms of Rule 45 of Mineral Concession Development Rules as amended in 2011 for ensuring the mapping of use/sale/export of minerals. (Para 6.2)

Automated quarterly reporting of NRA data needs to be implemented from April-2022 onwards. (Para 6.3)

Collection of all GPS Coordinates of the mine areas has the advantages of enabling district wise mineral map. These maps could be consolidated at the national level providing precise data on availability of resources across the country. At present, the GPS Coordination of all mines is not readily available with the State Government.

(Para 6.4)

Disclaimer Statement

Preparation of Asset Accounts is part of four-stage implementation strategy coined by the System of Economic and Environmental Accounting – Central Framework. This in turn is part of the Sustainable Development Goals to which India is a signatory. Thus, preparation of Asset Accounts on selective resources is an obligation for the country to be able to meet the international commitments.

The endeavor of Government Accounting Standards Advisory Board under the aegis of institution of Comptroller and Auditor General of India through its Accountants General Offices in States is only aimed at handholding the States in implementing Natural Resource Accounting commencing with the preparation of the first draft of Asset Accounts on Mineral and Energy Resources in a uniform and robust manner. Once the comprehensiveness and reliability of Asset Accounts prepared by the State Government stabilizes, State Government will produce this on regular basis.

The Asset Accounts have been prepared solely based on information/data provided by the concerned departments of the State Government and GASAB/CAG of India disclaims any responsibility for their correctness / inclusivity.

The validation by Audit Office is a test check that the data/information are supported by primary documents maintained in the offices of the concerned departments and is not an audit of stock of minerals and mining activities in the State.

Sustainability of resources is arrived by dividing the closing stocks of a particular year with annual reduction in that particular year. Hence the years shown in sustainability of resources may vary depending on the production / reduction of the mineral of the particular year.

The reduction in stocks (reserves) covers only the value captured from the e-permit system. The corresponding mineral revenue may not tally with the actual revenue as reported in Statement 14, because the mineral revenue includes e-permit system, seigniorage fee paid through challans debited from the mineral consuming Government Department, book adjustment and others like penalty, application fee etc. However, the Mineral revenue shown in the data is corresponding to the permitted quantity issued through e-Permit System.

CHAPTER - 1

INTRODUCTORY

1.1 Natural Resource Accounting – the Concept

Economic growth over decades has largely been an outcome of continued reliance on natural resources. Growth is clearly the major engine to create livelihood options; its reliance on increased resource use has, however, led to many negative externalities. The current paradigm of resource-led economic development sees a coupling between the availability of natural resources and economic growth.

Natural resources play a crucial role for economic development of a country and are crucial for their inbuilt value of inter-generational equity and sustenance.

Over the years, there has been increasing awareness about environmental issues across the globe and growing concern about the depletion and degradation of the natural resources. This concern gave birth to the idea of sustainable development goals which aims at ending poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. The sustainable development dialogue has brought to the fore the direct and indirect impact of human activity on the environment and there is now a consensus that continuing economic growth and human welfare are integrally dependent on the benefits obtained from the environment. The critical trade-offs between managing ecosystems and environmental resources for future sustainable economic and social development need to be understood for effective policy interventions.

Natural resources play a vital role in the sustainable economic development of any country. They need to be exploited in a sustainable manner so that the future generations can also avail of their advantages.

The rampant over-exploitation of these resources in recent times has resulted in harmful impact on the environment and issues of climate change and global warming have become a matter of discussions and deliberations round the Globe.

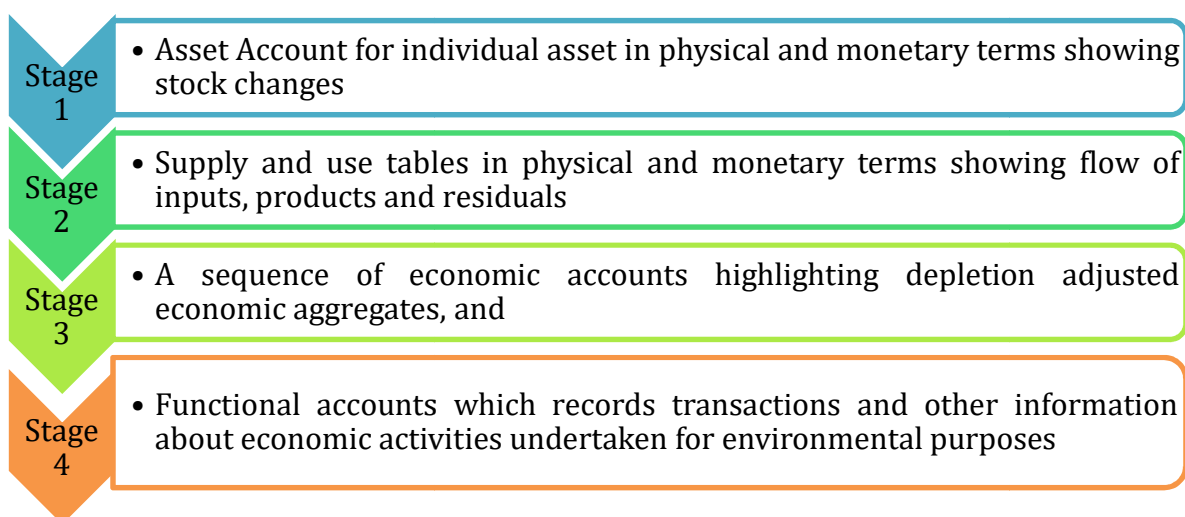
Conventional accounting captures data only of the measurable economic activity. In order to overcome this shortcoming and to capture the intimate interplay between the economic indices and the various components of the natural environment, the concept of NRA has emerged.

Agenda 21,
Rio +20, SDGs:
*Integrate nature into
decision making!!!*

It is based on the concept “Measurement of a resource leads to its better Management.” The idea is to quantify the damage to the environment so that it can be reduced from GDP to arrive at Green GDP. It would assist in taking policy decisions in respect of matters affecting environment directly and indirectly and bring us in a position to use our resources on a more sustainable basis and reducing the negative impact on the environment.

In keeping with the developments, the United Nations has been working towards an universally acceptable framework on environmental resource accounting which culminated into release of the (SEEA - CF) in 2012 which is the latest internationally accepted framework.

The SEEA (CF) prescribes a four-stage implementation process by compiling the following accounts as mentioned below:



However, while prescribing the aforesaid milestones for implementation of NRA across the world, the SEEA (CF) has also envisaged constraints to be faced by the countries in implementing NRA. SEEA (CF), thus, prescribed for flexibility in designing the accounts based on the specific environmental issues faced by a government. Depending upon the specific environmental issues faced, a country may choose to implement only a selection of the accounts included in the SEEA (CF). The SEEA (CF) provides that even if a country desires eventually to implement the full system, it may decide to focus its initial efforts on those accounts that are most relevant to current issues.

CHAPTER - 2

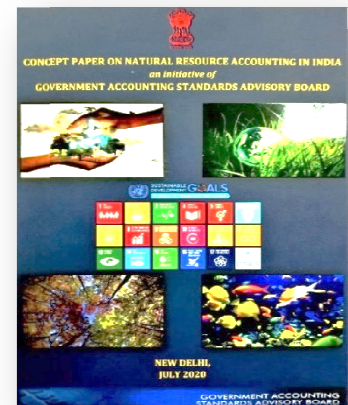
IMPLEMENTATION OF NRA IN INDIA – GASAB’S ENDEAVOUR

2.1 About (GASAB) Government Accounting Standards Advisory Board

The Government Accounting Standards Advisory Board (GASAB) was established in 2002 by the Comptroller and Auditor General of India with the assistance of Government of India to formulate Government accounting standards for improving Government accounting and financial reporting.

2.2 Concept Paper on NRA in India – released by GASAB

GASAB has taken the initiative (2019) to develop a framework for implementing NRA on priority as a nationally important project. GASAB came out with a Concept Paper on implementation of NRA in India in July 2020. The Paper, *inter-alia*, discussed the concept and its inter-relation with the SDGs and Climate Change, international progress on environmental accounting and merger of the concept with economic environmental accounting, progress in other countries.



A Concept Paper on Natural Resource Accounting in India - a product of Government Accounting Standards Advisory Board (GASAB) was published in July 2020. Keeping the international as well as national developments on NRA and the mandate of GASAB in suggesting accounting framework for enhancing the quality of decision making and public accountability in view combined with suggestion of Working Group on Environmental Auditing under the INTOSAI to handhold the country in developing NRA, the Concept Paper was a result of GASAB's efforts towards helping the causes of environmental accounting in India, climate change, and sustainable development goals.

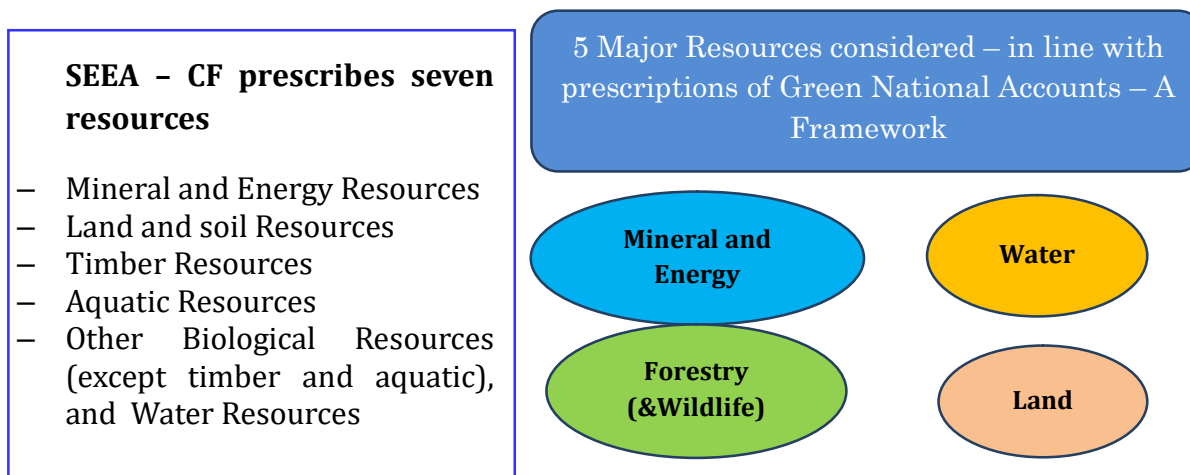
GASAB has suggested a well laid out implementation plan divided into three term goals in consonance with the strategy envisaged by the SEEA – CF.

The Paper, *inter-alia*, envisaged short, medium and long term goals in consonance with the four stage strategy suggested by the SEEA Framework, as mentioned below:

Short term goals	Mid-term goals	Long term goals
1. Preparation of Asset Accounts on Mineral and Energy Resources in States 2. Initiation and preparation of disclosure statement on revenues and expenditure related to natural resources <i>(2019-20 to 2021-22)</i>	1. Preparation of National Asset Accounts on Mineral and Non-Renewable Energy Resources 2. Preparation of Asset Accounts in respect of other four resources namely water, land and forestry & wildlife resources in the States 3. Preparation of supply and use Tables in physical and monetary terms showing flow of natural resource inputs, products and residuals <i>(2022-23 to 2024-25)</i>	1. Preparation of the economic accounts highlighting depletion adjusted economic aggregates; and 2. Preparation of functional accounts recording transactions and other information about economic activities undertaken for environmental purposes. <i>(2025 - 26 onwards)</i>

2.3 Goal 1 of the action plan envisaged in the Concept Paper

The initial stage of implementation strategy of NRA is preparation of the Asset Accounts on individual resources. The SEEA (CF) has listed out seven resources of which five major resources namely Mineral & Non-Renewable Energy Resources, Water Resources, Forestry & Wildlife Resources and Land Resources have been considered for taking up initially in the Concept Paper on NRA as mentioned in the Table and diagrams below:



2.4 Why - Mineral and Energy Resources

The Asset Accounts on Mineral & Energy Resources have been considered as the most important goal as it consists of non-renewable resources while other major resources fall in the other group and gets renewed naturally.

In keeping with the implementation stages as envisaged in the SEEA (CF), the flexibility embedded therein and the importance of non-renewable resources discussed above coupled with the prescription of SEEA that a country may decide to focus its initial efforts on those accounts that are most relevant to current issues, preparation of Asset Accounts on Mineral & Non-Renewable Energy resources have been conceptualised as the need of the hour and thus planned as the short term goal No. 1.

Mineral & Non-Renewable Energy Resources, being non-renewable resources have been considered as the first goal

2.5 Advantages of consolidating the Asset Accounts on Mineral & Non-Renewable Energy Resources

A system of collation of a periodic database in the shape of an Asset Accounts on available natural resources linked with inter-related factors like revenues and costs involved in exploitation of such resources, their sustainability for the future generations would be extremely helpful in monitoring the sustainability of resources, effective decision making, adoption/adaption of SEEA besides attaining other pressing international obligations like the Sustainable Development Goals and Climate Change.

Besides the above, the Asset Accounts would aid in evidence based good governance with the following specific inputs:



Resources at a glance: The Asset Accounts would enable a one pager document on the resource availability of each State.

Provide invaluable information and datasets on mineral repository and potential of States – could be used to showcase for varied purposes.

Physical flows and monetary values mapped – enabler of working out the value of extracted resources and also to help in monitoring of realisation of revenues vis-à-vis extraction of resources to help in identifying cases of leakage of revenue.

Pace of exploitation: Down the years, compilation of Asset Accounts would help in drawing up the pace of exploitation of resources over the years thus bringing out vital inputs like the pattern of resource usage and sustainability of resources – in years.

Revenue vis-à-vis market value: Ascribing money value with reference to the royalties/revenues combined with the market value would aid in continuous analysis of the royalty/duty/taxes to help the public exchequer.

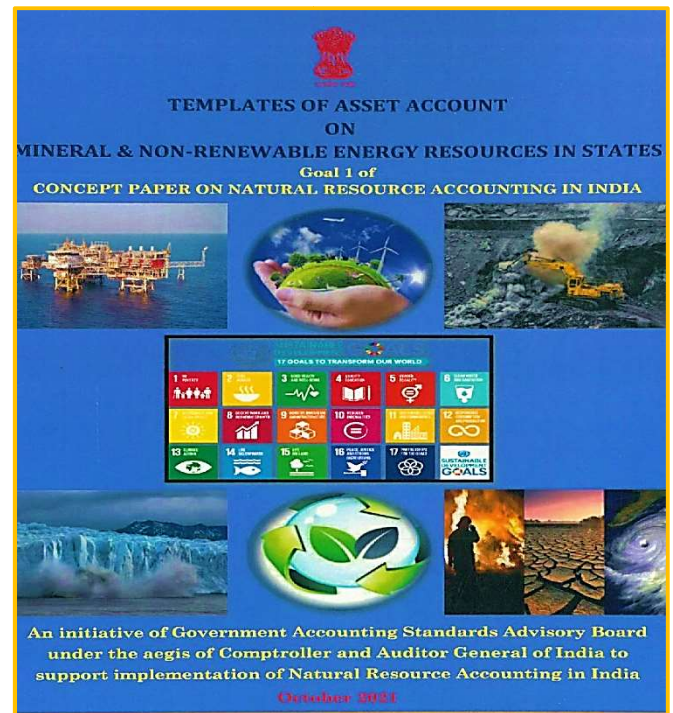
Sustainability of minerals in years – when analysed with revenues, has the potential to point towards revenue streams for future and will also enable State to identify alternate resources – both economic and energy resources.

Close monitoring on illegal mining: The inter-operability of supply and use of resources and their incorporation in the system of preparation of Asset Accounts would enable close watch on illegal mining. This will not only help in optimising resource base but will also help in containing unscientific mining thereby aiding in conservational efforts and restricting environmental degradation.

Thus, to sum up, Asset Accounts-once compiled, would bring out State-wise mineral repository along with other inputs like actual stock of resources, usage pattern, their values - aiding in evidence-based policy framing and most importantly sustainability of resources for future generations.

2.6 Evolution of the final templates

The templates of Asset Accounts on Mineral and Non-Renewable Energy Resources have been finalised after incorporating the comments of the Consultative Committee members and the experience gained in successful completion of pilots in three States. While the core framework as prescribed by the SEEA – CF has been retained, designs of the sub and detailed Tables have been worked out by GASAB based on country specific needs and other peculiarities besides constraints/data availability etc. to capture data required for the core framework and also to serve as repository of an inclusive informative database for use by policy makers, stakeholders, academia and other interest groups. The templates, as they stood then, were released in the form of a book titled Templates of Asset Accounts on Mineral and Energy Resources in States in October 2021.



The formats were constantly updated with inputs and experiences gained through their implementation in the States from October 2021 through March 2022. The final formats included six main tables for capturing the Basic Asset accounts (Table 1), Asset Accounts on physical flows along with sustainability of resources (Table 2), Physical flows of riverine resources (Table 2A), Valuation of riverine resources (Table 2B), Subsidiary asset accounts linking physical flows with valuation of resources (Table 3), Information on illegal mining (Table 3A), analysis of extraction, production and dispatch of resources (Table-4), Collection under District Mineral Foundation (Table5) and Progress in Generation and use of Renewable Energy Resources (Table6).

2.7 Additionalities – monitoring the targets committed to COP - 26

At the United Nations Climate Change Conference of 2021 or the COP 26, the Government of India committed the following:

1. India will take its non-fossil energy capacity to 500 GW by 2030.
2. India will meet 50 percent of its energy requirements from renewable energy by 2030.

3. *India will reduce the total projected carbon emissions by one billion tonnes from now till 2030.*
4. *By 2030, India will reduce the carbon intensity of its economy by more than 45 percent.*
5. *By the year 2070, India will achieve the target of Net Zero.*

In order to monitor the progresses to attain the above commitments, specific input Tables for collecting and collating information generation of new and renewable energy have been envisaged as Table 6.

2.8 Consultative Process

To ensure wider consultation with diverse stakeholders, GASAB has constituted consultative group in GASAB headquarters consisting of ministries in Government of India, five State Governments and the Accountants General in these States, expert agencies like National Remote Sensing Centre (NRSC), The Energy and Resources Institute (TERI) etc. Idea of constituting the groups was to draw technical expertise and inputs from subject experts and academia while steering the implementation process following the action plans suggested in the Concept Paper, with special emphasis on the preparation of Asset Accounts on the Mineral and Energy Resources in the States.

2.9 Training and capacity building

As the Concept Paper envisaged commencement of the project from States, it was important that proper training and capacity building was ensured for the Officers and staff members of not only the Accountants General Offices but the State Government Departments as well. Accordingly, virtual trainings/workshops were continuously held over the time of implementation of the project. Besides, State specific workshops were also held in several States like Gujarat, Jharkhand, Karnataka, and Punjab etc States.

2.10 Onboarding and handholding the States

In order to take the States on board as one of the most vital stakeholders in the implementation process, the highest echelons in the States were demi-officially informed (September 2021) by the Deputy CAG & Chairperson, GASAB about the endeavour of GASAB and vision of the project which was followed up with virtual presentation to the State. The views/suggestions emanated at this meeting were taken into consideration in updating/modifying the templates.

CHAPTER - 3

INITIATIVES IN THE STATE

3.1 Formation of State NRA Cell

State NRA Cell was formed in the month of December 2020 under the guidelines of GASAB with members from PAG (A&E) (1 Sr.Accounts Officer and 1 Asst. Accounts Officer), PAG (Audit) (1 Sr. Audit Officer and 1 Asst. Audit Officer) under the supervision of respective Sr.Deputy Accountants General and Principal Accountants General along with members from Director of Mines and Geology(1Joint Director of Mines &Geology and1 Royalty Inspector).

3.2 Follow up, trainings and capacity building

Seven meetings were held during the period from 06/2020 to 02/2022with the State Department for extracting the relevant data for the NRA account 2020-21. A virtual work shop was organized with all field offices (ADMGs) to facilitate the regular data capture through quarterly accounts from 2022-23 onwards. Nodal officers are being identified by ADMGs in every district to send and reconcile monthly NRA data as per Accountant General Office guidelines.

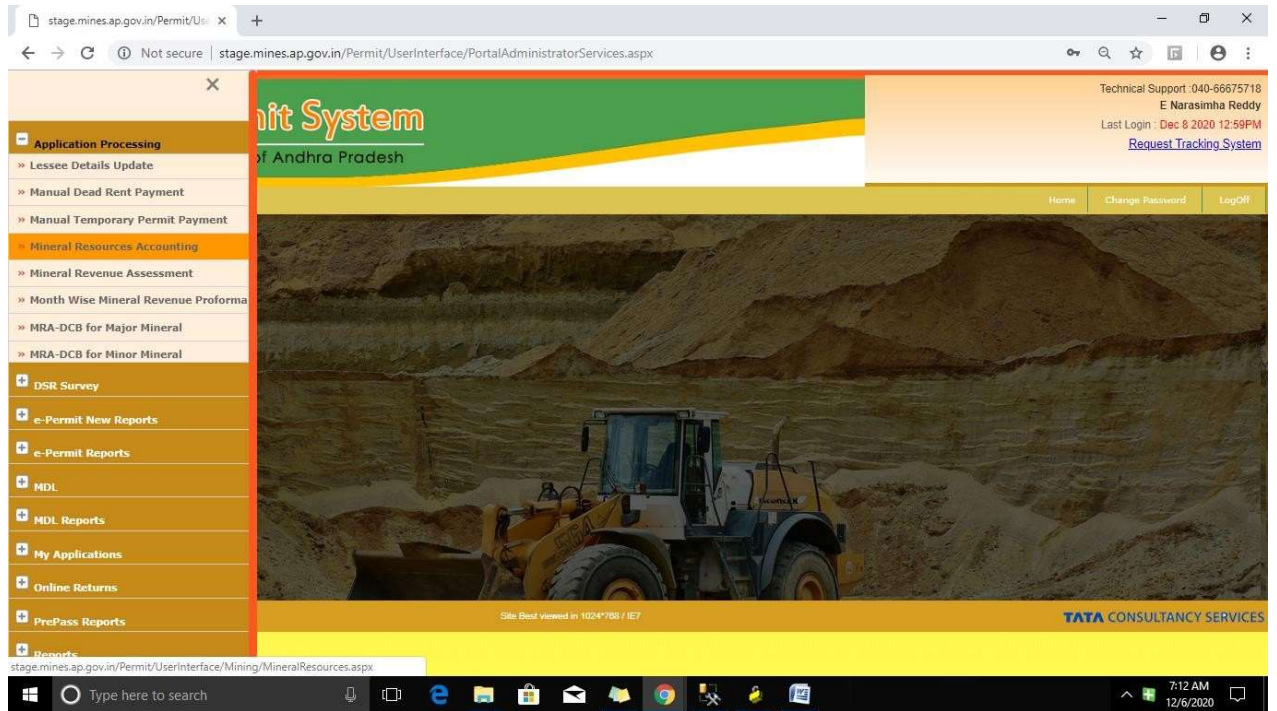
3.3 Innovations and good practices

3.3.1. Automated Mineral Administration System-Online Mineral E-permit System (OMEPS):

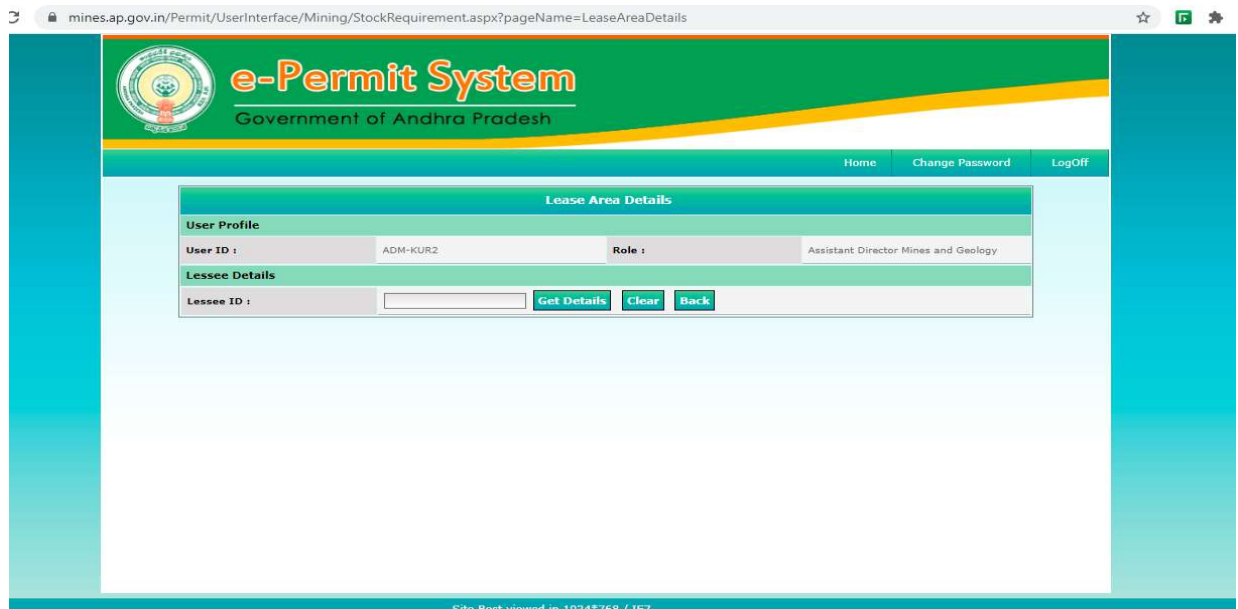
Department of Mines & Geology has e-permit system (an online platform in dot net) which was launched on 29.9.2014 at Visakhapatnam and further implemented throughout Andhra Pradesh (A.P), for both major and minor minerals from December 2014 onwards. At the instance of Accountant General (AG), for capturing the relevant data, a new screen was developed in this e-Permit System. All the district field offices were directed (7-12-2020) by DMG to upload the data in e-Permit System.

Screenshots of the OMEPS are depicted below:

Natural Resource Account of Andhra Pradesh



Glimpse of the new screen developed by the State Government to capture NRA specific data:



3.3. 2. Andhra Pradesh Mineral Vehicle Tracking System (APMVTs):

The Department of Mines & Geology with the assistance of APSAC (Andhra Pradesh Space Application Center) developed an Online Platform for real time surveillance of mineral carrying vehicles and monitoring of mineral transportation. It is a novel and innovative platform with state-of-the-art technology targeted towards curbing illegal mining and transportation.

3.3.3. Online system for regulation of buying, storing, transportation of minerals:

Department of Mines & Geology has developed the online system for regulation of buying, storing, transportation of minerals (online system for mineral audit). This system enables dealer to file an application online and obtain self-generated transit passes without levying any fee except nominal user charges. Further, this system facilitates the transfers of the stocks from leaseholder to dealer, dealer-to-dealer in line with the physical stock transportation and enables the departmental staff to monitor real time stock movement and keep constant vigilance.

3.3.4. Awards & Achievements of DMG-AP:

The Department of Mines & Geology, Government of Andhra Pradesh was conferred with the prestigious SKOCH SILVER AWARD under Digital India& e-Governance category and the 'SKOCH Order of Merit' awards for the Online system for Mineral Audit involving regulation of buying, storing, transportation of minerals during the 66thSKOCH Summit ceremony held online on 30thJuly 2020.

3.3.5. Outcome of Innovations and Practises related to e-Permit System:

Automated e-permits for all mineral leases having statutory clearances, without any manual interventions. GPS based vehicle tracking system (APMVTs) for real time tracking of sand carrying vehicles to curb illegal transportation

3.4 Methodology followed for the preparation of NRA data:

- Automated e-permits are being generated in OMEPS for leases of all minerals having clearance of AMP (Approved Mining Plan), EC (Environmental Clearance, and CFE (Consent for Establishment) & CFO (Consent for Operation).
- As the Mining Plan is a prerequisite for issuing Environmental Clearance for Mining projects, stocks (reserves) have been taken for preparation of NRA data from the approved mining plans of the particular minerals.

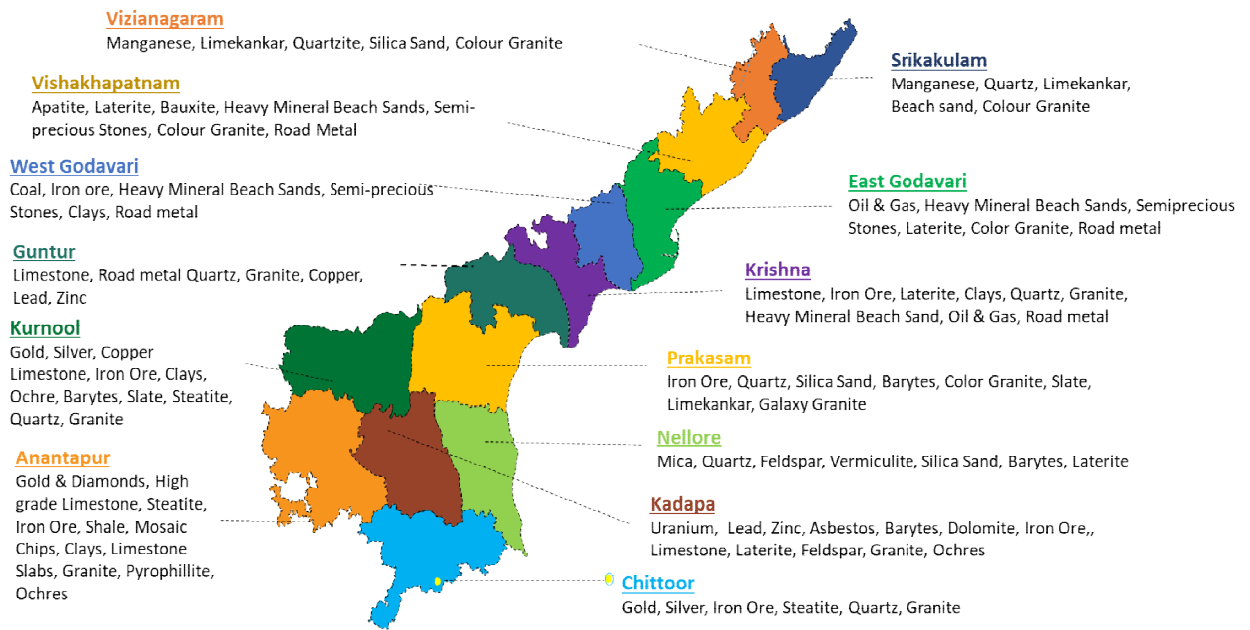
- The physical flows and actual extractions have been arrived from the OMEPS (Online Mineral e-Permit System).
- The mineral revenue shown in the NRA data is corresponding to the quantity issued through e-Permit System.

CHAPTER - 4

MINERAL PROFILE OF STATE AND SHORTLISTING OF RESOURCES

4.1 Mineral profile of Andhra Pradesh

Given below is the district wise distribution of mineral resources in Andhra Pradesh.



(Source: DMG, AP dt 1-5-2022)

As per the DMG website, Andhra Pradesh State has 48 minerals, including Gold, Diamond, Bauxite, Beach Sand, Limestone, Oil & Natural Gas, Manganese, Dolomite, Quartz, Feldspar, precious & Semi-precious stones, Clay, Calcite, Steatite, Iron Ore, Base Metals, Barytes, Granite, Limestone Slabs, Marbles, Dimensional Stones and other Building Minerals.

4.2 Strategic importance of minerals for the State

Of the 48 minerals available in the State, the major minerals as per their importance are discussed below:

Heavy Mineral Beach Sands:

Andhra Pradesh Beach sands are abundant in seven rare earth elements – garnet, ilmenite, leucoxene, monazite, rutile, sillimanite and zircon. These ores, when processed, yield

niobium, tantalum, titanium, thorium, and other elements which are important for a wide variety of industries such as electronics, chemical, energy, plastics, paints, construction, shipping, paper, optical instruments and nuclear power plants.

Oil and Natural Gas:

The Krishna Godavari basin in Andhra Pradesh is considered to be the one of the largest natural gas basins in the country.

Limestone:

Limestone comprises 95% of the raw material for cement manufacturing. Some other end user industries are Iron & Steel industry (in blast furnace as a flux), glass industry, fertilizer & cosmetics. Andhra Pradesh stands at 3rd position in terms of production of Limestone (12% of total production). Limestone availability is highest in southern region (Kurnool, Kadapa, Guntur, and Krishna).

4.3 Mining process followed in the State

Mandate:

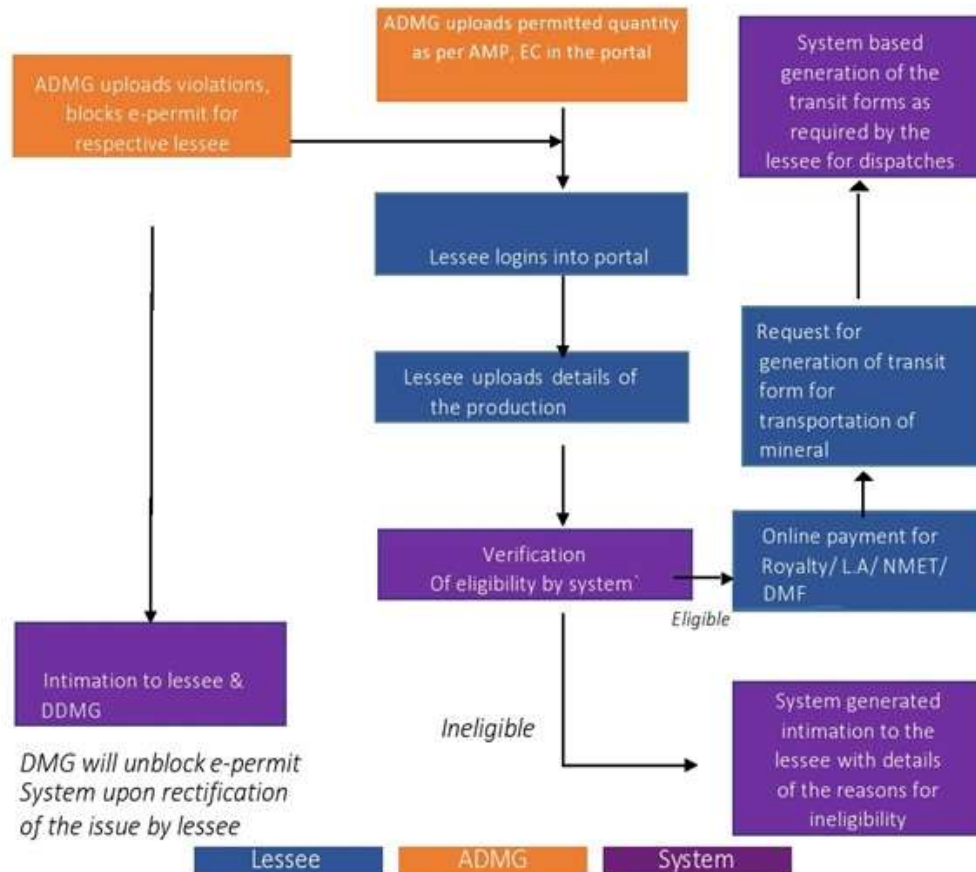
The Mines and Minerals (Development and Regulation) Act (MMDR Act) 1957 lays out the basic legal frame work for regulation of mines and development of minerals in the country.

The MMDR Act categorises minerals into minor minerals and major minerals. The State Government is empowered to frame rules for grant of mineral concessions for minor minerals, including fixation of royalty/ surface rent, while for the Major Minerals, controls and fixation of royalties etc., rests with Government of India, but are levied and collected by the State Government.

The State Government framed the Andhra Pradesh Minor Mineral Concession Rules 1966 (APMMC Rules) which govern the quarrying of minor minerals in Andhra Pradesh. Andhra Pradesh Water, Land, Trees Act (APWALTA) was enacted in 2002 and Andhra Pradesh Water, Land, Trees Rules (APWALTR) were framed in 2004.

As per Rule 9-M(2) of the APMMC Rules, due to any exigency and with the approval of State Government, DMG may order for issue of temporary permits (TPs) in any area on nomination basis through Andhra Pradesh Mineral Development Corporation (APMDC), pending finalization of auctions. Such TPs shall be issued for a period not exceeding 60 days.

Work flow of e-Permit system:



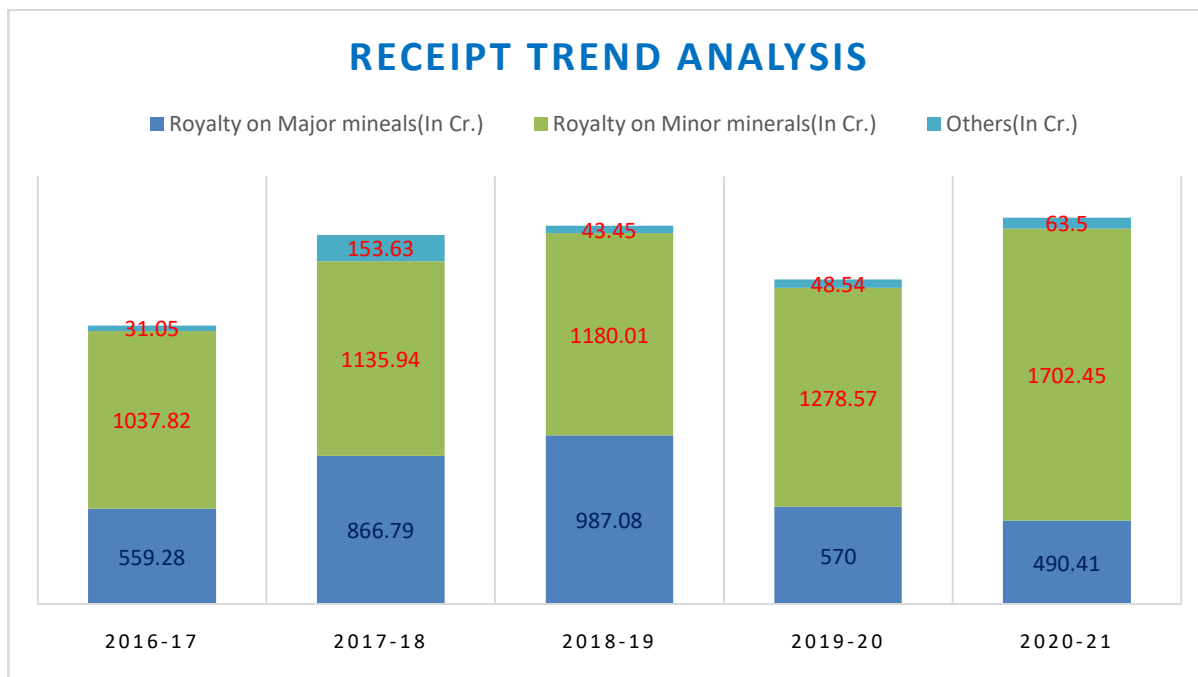
The solution implemented under the e-Permit system is as follows:

- a) Lease ID wise uploading of all requisite details: Permitted quantity as per AMP (Approved Mining Plan), EC (Environmental Clearance) and CFO (Consent for Operation).
- b) As per the approved quantities, lease holder may get the mineral permits by paying the necessary amounts like royalty/Seigniorage fee, District Mineral Foundation (DMF), Mineral Exploration Research and Innovation Trust (MERIT) for minor minerals, National Mineral Exploration Trust (NMET) for major minerals and User charges.

- c) On payment of royalty, transit form for transportation of minerals is generated as required by the lessees for dispatches.
- d) Further, it has the provision for payment for multiple head of accounts like royalty, DMF, MERIT and NMET etc. at the same time.
- e) E-Permit System segregates the payments received from the leaseholders into various revenue heads automatically online. This system has also been integrated with Comprehensive Financial Management System (CFMS)*.

4.4 Contribution of mineral resources in the revenues of the State

The revenue realised from extraction of mineral resources for the last five years (as per Statement 14 of Finance and Appropriation Accounts 2020-21) is shown below. There is gradual increase in the mineral revenues of the State during the last five years with exception of 2019-20 being the covid-19 affected period.



*Comprehensive Financial Management System (CFMS), an application being designed by Andhra Pradesh Centre for Financial System and Services (APCFSS).is to establish an enterprise-wide Financial Management System. that enhances efficiency in financial transactions, effectiveness in control, transparency in operations, accountability at all levels, sustainability in the long run and to all stakeholders.

During the period between 2016-17 and 2020-21, receipts from non-ferrous mining and metallurgical industries vis a vis total tax receipts of the State is illustrated below:

Comparison statement of mining receipts to total receipts for the last five years (₹ in crore)					
Particulars	2016-17	2017-18	2018-19	2019-20	2020-21
Non-ferrous mining and metallurgical industries	1628.15	2156.37	2210.54	1897.12	2256.36
Total receipts (tax revenue and non-tax revenue)	75638.1	82301.38	95214.13	89158.05	85264.26
Per cent of receipts to total receipts of the State	2.15	2.62	2.32	2.13	2.65

4.5 Short-listing of resources for this study

This being the first year of preparation of NRA accounts, the coverage on resources has been limited to those against which complete and reliable data was available. During the year 2020-21, revenue was realised only from 35 minerals out of 48 minerals available in the State (fuel minerals: 2, major minerals: 5, minor minerals: 28). Beach Sand mining in private sector (Ilmenite, Rutile, Leucosene, Zircon, Garnet, Monazite and Sillimanite) has been banned by GOI vide F.No.1/1/2019-M.VI dt: 01-03-2019. Mining for other major minerals is stalled due to legal implications (Bauxite). And mining process of Gold is in initial stages.

Thus for NRA 2020-21, data relating to 35 minerals where revenue is realised during the year is incorporated.

CHAPTER -5

ASSET ACCOUNT OF MINERAL AND ENERGY RESOURCES OF ANDHRA PRADESH

5.1 Scope

The first Natural Resources Asset Account of the State of Andhra Pradesh for the year 2020-21 covers 35 minerals out of 48 mineral resources (2 fuel minerals, 5 major minerals, 28 minor minerals). All the minerals where revenue was realised during the year 2020-21 were covered.

5.2 Objectives

The objectives are as follows:

- To prepare the Asset Account of mineral and energy resources of the State for better monitoring of resource extractions, usage, contain illegal mining and revenue optimization in the interest of the State.
- To assist the country/State in attaining the international commitment on becoming SEEA framework compliant and for effectively mapping the SDG indicators.
- To assist the policy makers with comprehensive data-set on availability, usage and sustainability of mineral for evidence based decision making.
- To provide inputs for monitoring the progresses towards national commitment made at the COP 26 on generation and usage of renewable energy resources.

5.3 Methodology of data collection and compilation of physical flows

- Department of Mines & Geology has an online platform OMEPS (operated under dot net) for issue of auto generated e-Permits to leaseholders.
- Mining plan is prerequisite for issuing environmental clearance for mining projects. Mining plans are being approved by IBM/Mines and Geology Department.
- Stock of minerals had been ascertained from the lessees in case of fuel minerals and the records of DMG for all other minerals.
- The physical flows like the additions and actual extractions have been arrived by compiling the lessee wise data into mineral wise data as furnished from all the field offices (ADMGs).

- Mineral revenue has been arrived at corresponding to actual extractions (physical flows) through e-permit system i.e. the mineral revenue shown in the NRA data is corresponding to the quantity issued through e-Permit System.
- Challans debited from the mineral consuming Government Department, book adjustment and others like penalty, application fee etc. are not covered in the revenue shown in the NRA data.
- Market values / sale prices have been taken from IBM website for attributing market value to the resources extracted through e-Permit System.
- No data is available with Mines and Geology department pertaining to the quantities consumed by the other department (Mineral consuming Government Department) (quantities as well as source).
- Test check carried out in Krishna district on 5 minerals to ascertain correctness of figures available in the e-permit system.

The data from the 13 districts was obtained/consolidated by DMG/HQrs. This data was then populated in the template designed by GASAB. The compiled data was scrutinized and compared with IBM Data for major minerals and Directorate of Economics and Statistics (DES) for minor minerals. The royalty revenue was analysed with the Government orders from time to time and average sale price is checked with IBM data. The royalty revenue realized was compared with the booked figures of Statement-14 of the Finance Accounts 2020-21.

Calculation of Opening Balances:

DMG receives monthly/yearly accounts of production/extraction/sale of major and minor minerals from ADMGs. These data sets in respect of all major and minor minerals are taken into account for finalizing the OBs for the year 2020-21.

For fuel minerals, i.e., Crude Oil and Natural Gas, the opening stock had been enumerated as per the information provided by the lessees to the DMG.

The riverine resources follow accumulation and depletion mechanism. Hence, stock could not be ascertained for these resources, tabulated separately Table-2A - Riverine resources - Physical flows & 2B Riverine resources - Valuations.

Based on the guidelines of GASAB, on being verified there is a variation in IBM and DMG data of OBs and CBs in respect of major minerals and however variations could not be reconciled. Hence, the data as reported by DMG office in respect of all major and minor minerals pertaining to working mines were taken into account in finalization of the OBs for the year 2020-21.

5.4 Methodology of monetisation of physical flows

Royalty rates are adopted as per Ministry of Mines notification, G.S.R. 621(E) d.t 2-9-2019 (major minerals) and GoMs No: 11 dated 11.02.2020 (minor minerals). Royalty values depend on the grading of the mineral. The royalty rates for major minerals are on ad-vole rum basis and thus, it has been averaged out. The Average Market Price values as maintained by the DMG have been considered.

5.5 Dual stage validation/verification of data

1. As per the GASAB guidelines, the Asset Accounts on Mineral and Energy Resources involved two stages of validation and limited verification after data collection and filling in the templates. The first stage of validation by the State Government and second stage of limited verification by AsG Offices.
2. The Accountant General (A&E), Andhra Pradesh has verified the data received from the DMG and assisted the State Government in preparing the Asset Accounts in the templates prescribed by GASAB. The Prepared Asset Accounts was shared with the DMG for first stage validation process. On receipt of Asset Accounts, the DMG has verified the information shown in the Asset Accounts with respect to the data available with them and returned the same duly validated with some additions/modifications to Accountant General (A&E). The Asset Accounts received after first stage validation were again scrutinised with reference to the modifications suggested by the DMG. The revised Asset Accounts was then taken up for second stage limited verification process.
3. After verification of the supporting documents submitted by the DMG to test check the credibility of the data/figures included in the accounts, some observations were brought out for further finalisation of Asset Accounts.
4. Physical Verification of mining plan data in One district Unit (ADMG Vijayawada, Krishna District) has been done due to paucity of manpower. The coverage is planned to be increased from next year, i.e., 2021-22 onwards.
5. As a measure of further check, data of all major and minor minerals has been verified for correctness by comparing figures in the Key Documents with OMEPS of Government of Andhra Pradesh.
6. After the completion of Dual validation and limited verification process by DMG and the AsG Offices, Asset Accounts were rechecked by AsG Office. All the points were discussed with the department. DMG was requested to resubmit the Asset Accounts taking into consideration some of major changes. On receipt of the revised Asset Accounts from DMG, same were again scrutinised thoroughly in the AG (A&E) office

and final Asset Accounts were prepared.

5.6 Challenges and limitations

Challenges:

1. It is noticed that an amount of ₹ 210.67 crore through treasuries and ₹ 129.15 crore through PAO book adjustments were remitted for royalty revenue received from Mineral consuming Government Departments for the year 2020-21. DMG clarified that the major portion of remitted amounts were from the departments viz., Irrigation, R&B, Panchayat raj for the civil works done by the departments. These figures have been included in Table-3 separately as no further information on physical flows attached to the revenues could be ascertained. Immediate action is required to gather this in full shape by DMG.
2. Mineral wise details for illegal mining are not maintained by DMG.

Limitations:

1. Fuel minerals i.e. Crude Oil and Natural Gas being exploited onshore by M/s Oil & Natural Gas Corporation Ltd. (M/s ONGC) are only reported. The offshore exploitation by M/s Reliance Petroleum Ltd. and multi-nationals like M/s Cairn Energy Pvt. Ltd. are not being reported as the revenue generated by these entities is not included in the revenues of State Govt.
2. Separate Major Head (0802) is not operated by the State government for fuel minerals. These were included in Major Minerals in 0853 MH.
3. The OBs and CBs are not ascertainable for riverine resources. Hence produced quantity is shown as reduction quantity.

5.7 Asset Accounts on Mineral & Energy Resources

5.7.1 Highlights

- The basic Asset Accounts for mineral and energy resources (Table 1) depicts in the following:
 - Opening stock of the Asset
 - Growth/discovery in stock
 - Total addition of stock
 - Reductions on extractions

- The Asset accounts on physical flows of mineral and energy resources along with sustainability of resources (Table 2) shows the following in respect of distinct classes of resources namely major minerals, fossil fuels, minor minerals:
 - Classification of resources
 - Opening stock, additions, reductions (Government sector, Private sector and other extractions), total extractions, closing stock
 - Sustainability of resources in years
- Riverine resources - physical flows (Table 2A) & Riverine resources - Valuations (Table-2B) depict the physical flows and valuations of riverine resources.
- Subsidiary asset accounts highlight the physical flow in volume, revenue receivable and average market value (Table-3).
- Data on illegal mining (Table 3 A),
- Analysis of extraction, production and dispatch of resources (Table-4).
- District Mineral Foundation (DMF) details (Table-5).
- Progress in generation and use of renewable energy resources details (Table-6).
- Revenue realised in the books of DMG was compared with Statement-14 of Finance Accounts. As observed the variation percentage is 14.90% on the Statement 14 of Finance Accounts. The variation is attributable to other items like dead rent, penalty, application fee etc. which are not covered in the revenue shown in the NRA data.
- As per the Government of India guidelines, Government of Andhra Pradesh established District Mineral Foundation (DMF) (Refer: G.O.Ms No.30 dt: 16.02.2017 read with G.O.Ms No 36 and G.O.Ms No.42)
- As regards DMF:
 - DMF is utilised for the creation and improvement of the physical and social infrastructure for the benefit of mine affected areas/families.
 - 2% of DMF is used for development of Information Technology, 55% for drinking water, setting up of effluent treatment plants and creation of health care facilities, 40% of the funds utilised for creation of building roads, bridges and waterway projects in the affected areas and developing alternate sources of irrigation and measures for enhancing environmental quality in mining districts. DMF shall meet the expenditure from this fund which shall not exceed total 3% on total fund collected in a financial year.
 - The Governing Council issue a report of the DMF for the preceding year not later than six months from the end of the preceding year of accounts.
- Mineral wise data for illegal mining and mineral consumption by other government departments was not furnished by the DMG.

- The percentage of renewable energy vis-à-vis total energy requirements as worked out Table-6(Progress in Generation and use of Renewable Energy Resources) is 21.39 % for the year 2020-21.
- There is variation between data as compared from IBM and as per DMG.

5.7.2 Asset Account – the Tables

The core framework as prescribed by the SEEA-CF has been retained; designs of the sub and detailed Tables have been worked out based on country specific needs and other peculiarities besides constraints/data availability etc.

Table1 provides the format for core frame work while Tables 2 and 3 provide templates for compiling the Asset Accounts and subsidiary Asset Accounts to capture data required for the core framework and also to serve as repository of an inclusive informative database for use by policy makers, stakeholders, academia and other interest groups. Tables 2A and 2B are designed to capture physical flows / valuation of riverine resources separately which may not have OB and CB.

Table 3A on illegal mining.

Due to non-availability of data Table 4 on extraction, production and dispatch could not be compiled.

Table5 depicts the data of District Mineral Foundation – is the fund collected as part of the royalty to monitor the welfare of the local mine affected people.

Table6 reveals the progress on Generation of renewable energy.

Natural Resource Account of Andhra Pradesh

Table-1: Basic Asset Account on Mineral & Energy Resources.

Table 1							
Basic asset account on Mineral & Non-Renewable Energy Resources for 2020-21							
	Fuel Minerals		Major Minerals				
Minerals	Crude Oil	Natural Gas	Iron Ore	Lime Stone	Manganese Ore	Vermiculite	W. Shale
physical unit	MT	SCM	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
Opening stock of environmental asset	14291.88	34180638.00	21853619.88	722531025.70	2473153.27	1676.00	1056905.00
Additions during the year:							
Growth in Stock							
Discoveries of new stock	154333.14	814336640.00	643860.00	150129362.00	180871.45	0.00	29540.00
Upward reappraisals							
Reclassifications							
Total Addition of stock	154333.14	814336640.00	643860.00	150129362.00	180871.45	0.00	29540.00
Reduction of stock							
Extractions	159371.65	775568046.00	378621.00	41432165.70	239853.00	840.00	32680.00
Normal loss of stock							
Catastrophic losses							
Downward reappraisals							
Reclassification							
Total reduction in stock	159371.65	775568046.00	378621.00	41432165.70	239853.00	840.00	32680.00
Revaluation of the stock							
Closing stock of environmental assets	9253.36	72949232.00	22118858.88	831228222.00	2414171.72	836.00	1053765.00

Natural Resource Account of Andhra Pradesh

Table 1 (Continued...)							
Basic asset account on Mineral & Energy Resources for 2020-21							
Minor Minerals							
Minerals	Ball Clay	Barytes	B.Granite	Calcite	China Clay	C. Granite	Cubes & Kerbs
physical unit	Tonnes	Tonnes	M3	Tonnes	Tonnes	M3	Tonnes
Opening stock of environmental asset	9060673.87	43805148.25	41566191.02	89062.00	3190406.89	209758016.71	4526578.55
Additions during the year:							
Growth in Stock							
Discoveries of new stock	10479742.00	6816.00	4988789.10	61275.00	0.00	3787753.72	2273.00
Upward reappraisals							
Reclassifications							
Total Addition of stock	10479742.00	6816.00	4988789.10	61275.00	0.00	3787753.72	2273.00
Reduction of stock							
Extractions	139116.00	1212038.50	787426.45	1003.00	70080.00	748851.49	143371.00
Normal loss of stock							
Catastrophic losses							
Downward reappraisals							
Reclassification							
Total reduction in stock	139116.00	1212038.50	787426.45	1003.00	70080.00	748851.49	143371.00
Revaluation of the stock							
Closing stock of environmental assets	19401299.87	42599925.75	45767553.67	149334.00	3120326.89	212796918.94	4385480.55

Table 1(Continued...)							
Basic asset account on Mineral & Energy Resources for 2020-21							
Minor Minerals							
Minerals	Dolomite	Feldspar	Fire Clay	Gravel / Earth	Latarite	L. Stone Slabs	Limekankar
physical unit	Tonnes	Tonnes	Tonnes	M3	Tonnes	M2	Tonnes
Opening stock of environmental asset	39923786.20	2105883.38	33949.00	2176575.24	5498617.35	89084955.90	9608.80
Additions during the year:							
Growth in Stock							
Discoveries of new stock	1161723.00	585414.00	42848.00	5228830.05	0.00	1943049.30	0.00
Upward reappraisals							
Reclassifications							
Total Addition of stock	1161723.00	585414.00	42848.00	5228830.05	0.00	1943049.30	0.00
Reduction of stock							
Extractions	2128467.00	219712.00	27090.00	2751419.60	71866.00	19482974.70	0.00
Normal loss of stock							
Catastrophic losses							
Downward reappraisals							
Reclassification							
Total reduction in stock	2128467.00	219712.00	27090.00	2751419.60	71866.00	19482974.70	0.00
Revaluation of the stock							
Closing stock of environmental assets	38957042.20	2471585.38	49707.00	4653985.69	5426751.35	71545030.50	9608.80

Natural Resource Account of Andhra Pradesh

Table 1(Continued...)							
Basic asset account on Mineral &Energy Resources for 2020-21							
Minor Minerals							
Minerals	Lime Stone	Mosaic Chips	Marble	Mica	Moulding Sand /Sand Others	Natural Clay/ Others	Phyrophillite
physical unit	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
Opening stock of environmental asset	77101665.75	1792151.32	3329501.09	381535.23	1025.80	333163.00	155356.40
Additions during the year:							
Growth in Stock							
Discoveries of new stock	819907.00	321754.64	268248.00	131656.00	0.00	363438.60	49950.00
Upward reappraisals							
Reclassifications							
Total Additionof stock	819907.00	321754.64	268248.00	131656.00	0.00	363438.60	49950.00
Reduction of stock							
Extractions	406060.00	129250.00	277.52	16716.50	980.00	51946.00	14762.00
Normal loss of stock							
Catastrophic losses							
Downward reappraisals							
Reclassification							
Total reduction in stock	406060.00	129250.00	277.52	16716.50	980.00	51946.00	14762.00
Revaluation of the stock							
Closing stock of environmental assets	77515512.75	1984655.96	3597471.58	496474.73	45.80	644655.60	190544.40

Table 1(Continued...)							
Basic asset account on Mineral &Energy Resources for 2020-21							
Minor Minerals							
Minerals	Quartz	Quartzite	Road Metal	Silica Sand	Steatite	slate(includes Slate Stone)	Yellow Ochre (Other)
physical unit	Tonnes	Tonnes	M3	Tonnes	Tonnes	Tonnes	Tonnes
Opening stock of environmental asset	31132332.88	18923947.87	161926227.98	10055774.82	4761905.10	214036.16	6550351.70
Additions during the year:							
Growth in Stock							
Discoveries of new stock	4539894.00	13904225.00	29837841.85	8273782.50	0.00	24326.00	0.00
Upward reappraisals							
Reclassifications							
Total Additionof stock	4539894.00	13904225.00	29837841.85	8273782.50	0.00	24326.00	0.00
Reduction of stock							
Extractions	547390.00	851897.00	10317785.20	1402110.00	102260.00	8810.00	46276.00
Normal loss of stock							
Catastrophic losses							
Downward reappraisals							
Reclassification							
Total reduction in stock	547390.00	851897.00	10317785.20	1402110.00	102260.00	8810.00	46276.00
Revaluation of the stock							
Closing stock of environmental assets	35124836.88	31976275.87	181446284.63	16927447.32	4659645.10	229552.16	6504075.70

Table-2: Asset Accounts on physical flows of Mineral and Energy Resources along with sustainability of resources.

Table 2										
Asset Accounts on physical flows of Mineral and Energy Resources along with sustainability of resources (2020-21)										
Classification	Unit	Sub classification	Opening stock of proved reserves	Addition to stock*	Reduction in stock			Total Extraction	Closing stock of proved reserves	Sustainability of resources in years (CB/Total Extraction)
					Extracted by/for					
					Govt Sector	Private Sector	Other extractions			
(in tonnes/cum - as the case may be)										
Fuel Minerals	MT	Crude Oil	14291.882	154333.137		159371.65		159371.654	9253.36	
	SCM	Natural Gas	34180638	814336640		775568046.00		775568046	72949232.00	
Major Minerals	Tonnes	Iron Ore	21853619.88	643860		378621.00		378621	22118858.88	58
	Tonnes	Lime Stone	722531025.7	150129362		41432165.70		41432165.7	831228222.00	20
	Tonnes	Manganese Ore	2473153.27	180871.45		239853.00		239853	2414171.72	10
	Tonnes	Vermiculite	1676	0		840.00		840	836.00	1
	Tonnes	W. Shale	1056905	29540		32680.00		32680	1053765.00	32
Minor Minerals	Tonnes	Ball Clay	9060673.87	10479742		139116.00		139116	19401299.87	139
	Tonnes	Barytes	43805148.25	6816		1212038.50		1212038.5	42599925.75	35
	M3	B.Granite	41566191.02	4988789.1		787426.45		787426.454	45767553.66	58
	Tonnes	Calcite	89062	61275		1003.00		1003	149334.00	149

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Tonnes	China Clay	3190406.89	0		70080.00		70080	3120326.89	45
M3	C. Granite	209758016.7	3787753.72		748851.49		748851.491	212796918.94	284
Tonnes	Cubes & Kerbs	4526578.55	2273		143371.00		143371	4385480.55	31
Tonnes	Dolomite	39923786.2	1161723		2128467.00		2128467	38957042.20	18
Tonnes	Feldspar	2105883.38	585414		219712.00		219712	2471585.38	11
Tonnes	Fire Clay	33949	42848		27090.00		27090	49707.00	2
M3	Gravel / Earth	2176575.24	5228830.05		2751419.60		2751419.6	4653985.69	2
Tonnes	Latarite	5498617.35	0		71866.00		71866	5426751.35	76
M2	L. Stone Slabs	89084955.9	1943049.3		19482974.70		19482974.7	71545030.50	4
Tonnes	Limekankar	9608.8	0		0.00		0	9608.80	0
Tonnes	Lime Stone	77101665.75	819907		406060.00		406060	77515512.75	191
Tonnes	Mosaic Chips	1792151.318	321754.64		129250.00		129250	1984655.96	15
Tonnes	Marble	3329501.094	268248		277.52		277.517	3597471.58	12963
Tonnes	Mica	381535.234	131656		16716.50		16716.5	496474.73	30
Tonnes	Moulding Sand / Sand Others	1025.8	0		980.00		980	45.80	0
Tonnes	Natural Clay/ Others	333163	363438.6		51946.00		51946	644655.60	12
Tonnes	Phyrophillite	155356.4	49950		14762.00		14762	190544.40	13
Tonnes	Quartz	31132332.88	4539894		547390.00		547390	35124836.88	64
Tonnes	Quartzite	18923947.87	13904225		851897.00		851897	31976275.87	38
M3	Road Metal	161926228	29837841.85		10317785.20		10317785.2	181446284.63	18
Tonnes	Silica Sand	10055774.82	8273782.5		1402110.00		1402110	16927447.32	12
Tonnes	Steatite	4761905.1	0		102260.00		102260	4659645.10	46
Tonnes	Slate	214036.16	24326		8810.00		8810	229552.16	26
Tonnes	Slate Stone	0	0		Slatestone quantity was added with slate		0	Slatestone quantity was added with slate	0

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	Tonnes	Yellow Ochre (Other)	6550351.7	0		46276.00		46276	6504075.70	141
Other Resources if any : Temporary Permits for Minor Minerals (Quantities excluding the existing reserves)	Cubic Meter	Building Stone				38400		38400		
	Cubic Meter	Gravel				3810251		3810251		
	MT	Gravel				25645.06		25645.06		
	Cubic Meter	Murram				53112		53112		
	Cubic Meter	Ordinary Earth				2807212		2807212		
	Cubic Meter	Road Metal				51520		51520		
	Cubic Meter	Road Metal/Building Stone/Rough Stone				179168		179168		

- Sustainability of resources are arrived by dividing the Closing Stocks of a particular year with Annual Reduction of the particular year. Hence the years shown in sustainability of resources may vary depending on the Production/ Reduction of the mineral of the particular year.**
- The reduction in stocks (reserves) covers only the value captured from the E-permit System the corresponding mineral revenue may not tally with the actual revenue achieved to that particular year, because the mineral revenue includes E-permit system, seignorage fee paid through challans debited from the mineral consuming Government Department, Book adjustment and others like penalty, Application fee etc. However the Mineral revenue shown in the data is corresponding to the permitted quantity issued through E-Permit System.**
- The permitted quantity shown in Temporary Permits is including the existing reserves of that particular mineral. Pertaining to Gravel and Road metal, the quantities shown in the key documents is including Temporary Permits.**
- The ordinary sand is falls under riverine resource category. Hence opening stock and closing stock are not applicable. Produced quantity is shown as reduction of quantity.**

Table-2A: Capturing riverine resources - physical flows.

Table-2A									
Riverine resources-Physical flows									
Classification	Grade-wise sub classifications	Available reserves at the beginning of the year(as per mining plans)	Accumulation during the year	Reduction in stock in Cubic Meters				Remaining reserves at the end of the year	Sustainability of resources in years(if ascertainable)
				Extracted by/for		Other extractions including exports	Total extractions		
				Govt Sector	Private Sector				
(M3)									
Riverine Resource	Sand		22560818		22560818		22560818	0	

The Ordinary Sand is falls under Riverine Resource category, hence Opening Stocks and Closing Stocks are not applicable, produced quantity is shown as reduction quantity, as the Ordinary sand is Riverine Resources.

Table-2B: Capturing riverine resources – Valuations.

Table-2B									
Riverine resources-Valuations									
Particulars	Grade-wise sub classification	Physical unit extracted showing Govt,Private and other Sectors as in Table 2A			Valuation of resources (In Crore)			District Mineral Foundation	
		Govt Sector	Private Sector	Other extractions	Revenue receivable	Total revenue receivable	Average Market value	Amount receivable	Amount received
Inputs as in Table 3 may be broadly followed	Sand(in M3)		22560818		409.73	409.73	967.86		

Table-3: Subsidiary Asset Accounts linking detailed physical flows in respect of Mineral and Non renewable Energy Resources with the valuation of resources.

Table 3														
Subsidiary Asset Accounts linking detailed physical flows in respect of Mineral and Non- Renewable Energy Resources with the valuation of resources for the year 2020-21														
Particulars	Classification/ Sub classification of minerals	Physical unit (in tonnes/cum) extracted showing Govt, Private and other sector					Royalty Rates	Total valuati on of Resour ces as per Royalt y Rates (In Crore)	Valuation of resources					
									Revenue receivable (in crore) showing Govt, Private and other sector			Total revenue receivabl e	Average Market Price	Average Market value (as ascertaine d from the IBM or State Statistical Departmen t) %
		Physical Unit	Govt Sect or	Private Sector	Other extrac tions	Total			Gov t Sect or	Privat e Secto r	Other extrac tions	(Rs. in crore)	in Rupees	In Crore

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Opening stock/availability of resources at the beginning of the year														
Fuel Minerals	Crude Oil	MT		14291.88	14291.882	*							18258.17	26.09
	Natural Gas	SCM		34180638.00	34180638	*							6.40	21.88
Major Minerals	Iron Ore	Tonnes		21853619.88	21853619.88	multiple values							700.00	1529.75
	Lime Stone	Tonnes		722531025.70	722531025.7	multiple values							516.00	37282.60
	Manganese Ore	Tonnes		2473153.27	2473153.27	multiple values							2986.00	738.48
	Vermiculite	Tonnes		1676.00	1676	NA							300.00	0.05
	W. Shale	Tonnes		1056905.00	1056905	NA							500.00	52.85
Minor Minerals	Ball Clay	Tonnes		9060673.87	9060673.87	75	67.96						700	634.25
	Barytes	Tonnes		43805148.25	43805148.25	Multiple values	0.00						8000.00	35044.12
	B.Granite	M3		41566191.02	41566191.02	Multiple values	0.00						60000.00	249397.15
	Calcite	Tonnes		89062.00	89062	90	0.80						1169.49	10.42
	China Clay	Tonnes		3190406.89	3190406.89	60	19.14						500	159.52
	C. Granite	M3		209758016.71	209758016.7	Multiple values	0.00						35000	734153.06

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Cubes & Kerbs	Tonnes	4526578.55	4526578.55	135	61.11					1000	452.66
Dolomite	Tonnes	39923786.20	39923786.2	100	399.24					500	1996.19
Feldspar	Tonnes	2105883.38	2105883.38	100	21.06					900	189.53
Fire Clay	Tonnes	33949.00	33949	60	0.20					400	1.36
Gravel / Earth	M3	2176575.24	2176575.24	Multiple values	0.00					500	108.83
Latarite	Tonnes	5498617.35	5498617.35	Multiple values	0.00					500	274.93
L. Stone Slabs	M2	89084955.90	89084955.9	Multiple values	0.00					500	4454.25
Limekankar	Tonnes	9608.80	9608.8	90	0.09					606	0.58
Lime Stone	Tonnes	77101665.75	77101665.75	90	693.91					400	3084.07
Mosaic Chips	Tonnes	1792151.32	1792151.318	90	16.13					1000	179.22
Marble	Tonnes	3329501.09	3329501.094	Multiple values	0.00					5000	1664.75
Mica	Tonnes	381535.23	381535.234	Multiple values	0.00					30000	1144.61
Moulding Sand /Sand Others	Tonnes	1025.80	1025.8	100	0.01					400	0.04
Natural Clay/ Others	Tonnes	333163.00	333163	NA	0.00					400	13.33
Phyrophillite	Tonnes	155356.40	155356.4	200	3.11					800	12.43

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Quartz	Tonnes		31132332.88		31132332.88	90	280.19					500	1556.62
Quartzite	Tonnes		18923947.87		18923947.87	90	170.32					500	946.20
Road Metal	M3		161926227.98		161926228	Multiple values	0.00					900	14573.36
Silica Sand	Tonnes		10055774.82		10055774.82	100	100.56					600	603.35
Steatite	Tonnes		4761905.10		4761905.1	Multiple values	0.00					4000	1904.76
Slate	Tonnes		214036.16		214036.16	175	3.75					600	12.84
Slate Stone	Tonnes		Slatestone quantity was added with slate		0	NA	0.00					600	0.00
Yellow Ochre (Other)	Tonnes		6550351.70		6550351.7	60	39.30					400	262.01
Total Revenue receivable on OB as per royalty rates							1876.87	Total Average Market Value of Opening Stock					1092486.11
Additions during the year:													
Growth in Stock			0.00										
Discoveries of new stock													
Fuel Minerals	Crude Oil	MT		154333.14	154333.137								

	Natural Gas	SCM		814336640.00		814336640							
Major Minerals	Iron Ore	Tonnes		643860.00		643860							
	Lime Stone	Tonnes		150129362.00		150129362							
	Manganese Ore	Tonnes		180871.45		180871.45							
	Vermiculite	Tonnes		0.00		0							
	W. Shale	Tonnes		29540.00		29540							
Minor Minerals	Ball Clay	Tonnes		10479742.00		10479742							
	Barytes	Tonnes		6816.00		6816							
	B.Granite	M3		4988789.10		4988789.1							
	Calcite	Tonnes		61275.00		61275							
	China Clay	Tonnes		0.00		0							
	C. Granite	M3		3787753.72		3787753.72							
	Cubes & Kerbs	Tonnes		2273.00		2273							
	Dolomite	Tonnes		1161723.00		1161723							
	Feldspar	Tonnes		585414.00		585414							
	Fire Clay	Tonnes		42848.00		42848							

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Gravel / Earth	M3		5228830.05		5228830.05								
Latarite	Tonnes		0.00		0								
L. Stone Slabs	M2		1943049.30		1943049.3								
Limekankar	Tonnes		0.00		0								
Lime Stone	Tonnes		819907.00		819907								
Mosaic Chips	Tonnes		321754.64		321754.64								
Marble	Tonnes		268248.00		268248								
Mica	Tonnes		131656.00		131656								
Moulding Sand /Sand Others	Tonnes		0.00		0								
Natural Clay/ Others	Tonnes		363438.6		363438.6								
Phyrophillite	Tonnes		49950.00		49950								
Quartz	Tonnes		4539894.00		4539894								
Quartzite	Tonnes		13904225.00		13904225								
Road Metal	M3		29837841.85		29837841.85								
Silica Sand	Tonnes		8273782.50		8273782.5								

	Steatite	Tonnes	0.00	0									
	Slate	Tonnes	24326.00	24326									
	Slate Stone	Tonnes	0.00	0									
	Yellow Ochre (Other)	Tonnes	0.00	0									
Reclassifications				0									
Total Addition:			1052298143.35	1052298143									
Actual reductions during the year:													
Fuel Minerals	Crude Oil	MT	159371.65	159371.654									
	Natural Gas	SCM	775568046.00	775568046									
Major Minerals	Iron Ore	Tonnes	378621.00	378621									
	Lime Stone	Tonnes	41432165.70	41432165.7									
	Manganese Ore	Tonnes	239853.00	239853									
	Vermiculite	Tonnes	840.00	840									
	W. Shale	Tonnes	32680.00	32680									
Minor Minerals	Ball Clay	Tonnes	139116.00	139116									

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Barytes	Tonnes		1212038.50		1212038.5								
B.Granite	M3		787426.45		787426.454								
Calcite	Tonnes		1003.00		1003								
China Clay	Tonnes		70080.00		70080								
C. Granite	M3		748851.49		748851.491								
Cubes & Kerbs	Tonnes		143371.00		143371								
Dolomite	Tonnes		2128467.00		2128467								
Feldspar	Tonnes		219712.00		219712								
Fire Clay	Tonnes		27090.00		27090								
Gravel / Earth	M3		2751419.60		2751419.6								
Latarite	Tonnes		71866.00		71866								
L. Stone Slabs	M2		19482974.70		19482974.7								
Limekankar	Tonnes		0.00		0								
Lime Stone	Tonnes		406060.00		406060								
Mosaic Chips	Tonnes		129250.00		129250								
Marble	Tonnes		277.52		277.517								

Mica	Tonnes		16716.50		16716.5								
Moulding Sand /Sand Others	Tonnes		980.00		980								
Natural Clay/ Others	Tonnes		51946.00		51946								
Pyrophyllite	Tonnes		14762.00		14762								
Quartz	Tonnes		547390.00		547390								
Quartzite	Tonnes		851897.00		851897								
Road Metal	M3		10317785.20		10317785.2								
Silica Sand	Tonnes		1402110.00		1402110								
Steatite	Tonnes		102260.00		102260								
Slate	Tonnes		8810.00		8810								
Slate Stone	Tonnes		Slate stone quantity was added with slate		0								
Yellow Ochre (Other)	Tonnes		46276.00		46276								
Temporary Permits for Minor Minerals (Quantities)	Ordinary Sand	M3		22560818.00		22560818							
	Building Stone	Cubic Meter		38400.00		38400							

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xcluding the existing reserves)	Gravel	Cubic Meter		3810251.00		3810251								
	Gravel	MT		25645.06		25645.06								
	Murram	Cubic Meter		53112.00		53112								
	Ordinary Earth	Cubic Meter		2807212.00		2807212								
	Road Metal	Cubic Meter		51520.00		51520								
	Road Metal/building Stone/Rough Stone	Cubic Meter		179168.00		179168								
Revenue related to exploitation of resources out of total revenue included in Statement 14 of State Finance Accounts											2256.36			
Other extractions, not taxed (if any)														
Normal reduction in stock														

Catastrophic losses including natural and manmade disasters														
Downward reappraisals														
Reclassifications														
Production loss														
Exports														
Reduction due to mining activities not approved by Deptts														
Total reduction:														
Extractions permitted during the year														
Fuel Minerals	Crude Oil	MT		159371.65		159371.654	*	71.48		71.48		71.48	18258.17	290.98

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	Natural Gas	SCM		775568046.00		775568046	*	44.07		44.07		44.07	6.40	496.44
Major Minerals	Iron Ore	Tonnes		378621.00		378621	multiple values	3.52		3.52		3.52	700.00	26.50
	Lime Stone	Tonnes		41432165.70		41432165.7	multiple values	331.46		331.46		331.46	516.00	2137.90
	Manganese Ore	Tonnes		239853.00		239853	multiple values	5.15		5.15		5.15	2986.00	71.62
	Vermiculite	Tonnes		840.00		840	NA	0.04		0.04		0.04	300.00	0.03
	W. Shale	Tonnes		32680.00		32680	NA	0.20		0.20		0.20	500.00	1.63
Minor Minerals	Ball Clay	Tonnes		139116.00		139116	75	1.04		1.04		1.04	700	9.74
	Barytes	Tonnes		1212038.50		1212038.5	Multiple values	49.01		49.01		49.01	8000.00	969.63
	B.Granite	M3		787426.45		787426.454	Multiple values	267.46		267.46		267.46	60000.00	4724.56
	Calcite	Tonnes		1003.00		1003	90	0.01		0.01		0.01	1169.49	0.12
	China Clay	Tonnes		70080.00		70080	60	0.42		0.42		0.42	500	3.50
	C. Granite	M3		748851.49		748851.491	Multiple values	190.06		190.06		190.06	35000	2620.98
	Cubes & Kerbs	Tonnes		143371.00		143371	135	1.94		1.94		1.94	1000	14.34
	Dolomite	Tonnes		2128467.00		2128467	100	21.28		21.28		21.28	500	106.42
	Feldspar	Tonnes		219712.00		219712	100	2.20		2.20		2.20	900	19.77

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Fire Clay	Tonnes	27090.00	27090	60	0.16	0.16	0.16	400	1.08
Gravel / Earth	M3	2751419.60	2751419.6	Multiple values	12.32	12.32	12.32	500	137.57
Latarite	Tonnes	71866.00	71866	Multiple values	0.54	0.54	0.54	500	3.59
L. Stone Slabs	M2	19482974.70	19482974.7	Multiple values	11.82	11.82	11.82	500	974.15
Limekankar	Tonnes	0.00	0	90	0.00	0.00	0.00	606	0.00
Lime Stone	Tonnes	406060.00	406060	90	3.65	3.65	3.65	400	16.24
Mosaic Chips	Tonnes	129250.00	129250	90	1.16	1.16	1.16	1000	12.93
Marble	Tonnes	277.52	277.517	Multiple values	0.01	0.01	0.01	5000	0.14
Mica	Tonnes	16716.50	16716.5	Multiple values	1.34	1.34	1.34	30000	50.15
Moulding Sand /Sand Others	Tonnes	980.00	980	100	0.01	0.01	0.01	400	0.04
Natural Clay/ Others	Tonnes	51946.00	51946	NA	0.31	0.31	0.31	400	2.08
Phyrophillite	Tonnes	14762.00	14762	200	0.30	0.30	0.30	800	1.18
Quartz	Tonnes	547390.00	547390	90	4.93	4.93	4.93	500	27.37
Quartzite	Tonnes	851897.00	851897	90	7.67	7.67	7.67	500	42.59
Road Metal	M3	10317785.20	10317785.2	Multiple values	87.31	87.31	87.31	900	928.60

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	Silica Sand	Tonnes		1402110.00		1402110	100	14.02		14.02		14.02	600	84.13
	Steatite	Tonnes		102260.00		102260	Multiple values	1.60		1.60		1.60	4000	40.90
	Slate	Tonnes		8810.00		8810	175	0.13		0.13		0.13	600	0.53
	Slate Stone	Tonnes		Slatestone quantity was added with slate		0	NA	0.00		0.00		0.00	600	0.00
	Yellow Ochre (Other)	Tonnes		46276.00		46276	60	0.28		0.28		0.28	400	1.85
Temporary Permits for Minor Minerals (Quantities excluding the existing reserves)	Ordinary Sand	M3		22560818.00		22560818	NA	409.73		409.73		409.73	429	967.86
	Building Stone	Cubic Meter		38400.00		38400	Multiple values	0.35		0.35		0.35		
	Gravel	Cubic Meter		3810251.00		3810251	Multiple values	17.15		17.15		17.15		
	Gravel	MT		25645.06		25645.06	Multiple values	0.06		0.06		0.06		
	Murram	Cubic Meter		53112.00		53112	Multiple values	0.24		0.24		0.24		
	Ordinary Earth	Cubic Meter		2807212.00		2807212	Multiple values	12.63		12.63		12.63		
	Road Metal	Cubic Meter		51520.00		51520	Multiple values	0.46		0.46		0.46		

	Road Metal/building Stone/Rough Stone	Cubic Meter		179168.00		179168		1.61		1.61		1.61		
								1579.13		1579.13		1579.13		
	*Revenue received from Mineral consuming Government Departments					Through Treasury Challans			210.67			210.67		
						Through PAO Book Adjustment			129.15		129.15			
			Total Royalty Revenue as per Reduction/Production during the year					1918.95		1918.95		1918.95	Total Average Market Revenue as per Reduction / Production	14787.16
Closing stock														
Fuel Minerals	Crude Oil	MT		9253.36		9253.365	*					18258.17	16.89	
	Natural Gas	SCM		72949232.00		72949232	*					6.40	46.69	
Major Minerals	Iron Ore	Tonnes		22118858.88		22118858.88	60.41	133.62				700.00	1548.32	
	Lime Stone	Tonnes		831228222.00		831228222	76.5	6358.90				516.00	42891.38	
	Manganese Ore	Tonnes		2414171.72		2414171.72	90.32	21.80				2986.00	720.87	

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	Vermiculite	Tonnes	836.00	836	13.5	0.00					300.00	0.03
	W. Shale	Tonnes	1053765.00	1053765	60	6.32					500.00	52.69
Minor Minerals	Ball Clay	Tonnes	19401299.87	19401299.87	75	145.51					700	1358.09
	Barytes	Tonnes	42599925.75	42599925.75	531	2262.06					8000.00	34079.94
	B.Granite	M3	45767553.66	45767553.66	2931.88	13418.50					60000.00	274605.32
	Calcite	Tonnes	149334.00	149334	90	1.34					1169.49	17.46
	China Clay	Tonnes	3120326.89	3120326.89	60	18.72					500	156.02
	C. Granite	M3	212796918.94	212796918.9	1930.94	41089.8					35000	744789.22
	Cubes & Kerbs	Tonnes	4385480.55	4385480.55	135	59.20					1000	438.55
	Dolomite	Tonnes	38957042.20	38957042.2	100	389.57					500	1947.85
	Feldspar	Tonnes	2471585.38	2471585.38	100	24.72					900	222.44
	Fire Clay	Tonnes	49707.00	49707	60	0.30					400	1.99
	Gravel / Earth	M3	4653985.69	4653985.69	45	20.94					500	232.70
	Latarite	Tonnes	5426751.35	5426751.35	150	81.40					500	271.34
	L. Stone Slabs	M2	71545030.50	71545030.5	8	57.24					500	3577.25
	Limekankar	Tonnes	9608.80	9608.8	90	0.09					606	0.58

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Lime Stone	Tonnes	77515512.75	77515512.75	90	697.64					400	3100.62
Mosaic Chips	Tonnes	1984655.96	1984655.96	90	17.86					1000	198.47
Marble	Tonnes	3597471.58	3597471.577	120	43.17					5000	1798.74
Mica	Tonnes	496474.73	496474.734	1375	68.27					30000	1489.42
Moulding Sand /Sand Others	Tonnes	45.80	45.8	100	0.00					400	0.00
Natural Clay/ Others	Tonnes	644655.60	644655.6	NA	0.00					400	25.79
Phyrophillite	Tonnes	190544.40	190544.4	200	3.81					800	15.24
Quartz	Tonnes	35124836.88	35124836.88	90	316.12					500	1756.24
Quartzite	Tonnes	31976275.87	31976275.87	90	287.79					500	1598.81
Road Metal	M3	181446284.63	181446284.6	90	1633.02					900	16330.17
Silica Sand	Tonnes	16927447.32	16927447.32	100	169.27					600	1015.65
Steatite	Tonnes	4659645.10	4659645.1	325	151.44					4000	1863.86
Slate	Tonnes	229552.16	229552.16	175	4.02					600	13.77
Slate Stone	Tonnes	Slatestone quantity was added with slate	Slatestone quantity was added with slate	NA	0.00					600	0.00
Yellow Ochre (Other)	Tonnes	6504075.70	6504075.7	60	39.02					400	260.16
Total Revenue receivable on CB as per royalty rates					61000.82	Total Average Market Value of Closing Stock					1136442.56

1. The director of Mines & Geology has reported royalty values for the reduction/production only. The department expressed their inability to calculate the royalty rates for OB/CB. Values for OB and CB had been attempted as indicated in the templates circulated by GASAB. The correct figures could not be arrived where no data/multiple values available in the G.Os.
2. While calculating the royalty values for OB and CB, where specific Royalty Rates were not mentioned in G.Os zero was taken and for reduction, the royalty values were taken as per DMG figures.
3. No separate Major Head is operated by the State government for Fuel Minerals. These were included in Major Minerals and the receipts included in 0853 MH.
4. Royalty rates on CB for the minerals with multiple values are calculated by averaging the royalty rates.
 - Iron ore = $13.5+9+9+3=34.5/4=8.63*700/100=60.41$
 - Lime stone = $81+72=153/2=76.5$
 - Manganese = $405+1.55=6.05/2=3*2986/100=90.32$
 - Vermiculite = $300*4.5\%=13.5$
 - White shale = $500*12\%=60$
 - Barytes = $480+355+220+1100+500=2655/4=531$
 - B.Granite = $4600+3680+3450+1550+3450+2875+2700+1150=23455/8=2931.88$
 - C.Granite = $3450+2875+2700+1150+2700+2470+2300+1150+1925+1650+1375+1100+1925+1650+1375+1100=30895/16=1930.94$
 - Laterite = $200+100=300/2=150$
 - Limestone slabs = $10+6=16/2=8$
 - Marble = 120
 - Mica = $2000+750=2750/2=1375$
 - Road metal = 90
 - Steatite = $100+550=650/2=325$
 - Gravel earth = 45

Table 3A: Table showing information on illegal mining

Table 3A						
Name of the District	Authority which detected the offence(dept./police/enforcement/ Others)	detection of illegal mining by the departmental authorities on which challans issued and offence report registered				
		Name of the minerals with grades (if available) *	Physical quantity/ volume	Revenue involved	Fine levied and collected (in ₹)	Provisions under which compounding done
	department vigilance	major minerals	1060 MT	13 lakh	115.74 lakh	
	department vigilance	minor minerals	6682746.53 MT	22889.76 lakh	4146.75 lakh	

*Mineral wise details not available

Table-4: Analysis of extraction, production and dispatch of resources.

Table not compiled as data not provided by State Government.

Table-5: Table showing analysis of district mineral foundation.

Table-4								
Table showing analysis of District Mineral Foundation								
Classification	Name of Mineral	Units	Volume of minerals produced on which DMF was realisable	Rate at which DMF realisable	DMF Realisable	Total DMF realised in Crs	Variations, If any	
							In Crs	Percentage
Major Minerals	Iron Ore	Tonnes	378621	30% of Royalty	30% of 3.52 =1.06	1.06		
	Lime Stone	Tonnes	41432165.7		30% of 331.46 =99.44	99.44		
	Manganese Ore	Tonnes	239853		30% of 5.15 =1.54	1.54		
	Vermiculite	Tonnes	840		30% of 0.04 =0.01	0.01		
	W. Shale	Tonnes	32680		30% of 0.20 =0.06	0.06		
Minor Minerals	Ball Clay	Tonnes	139116	30% of Seigniorage Fee	30% of 1.04 =0.31	0.31		
	Barytes	Tonnes	1212038.5		30% of 49.01 =14.70	14.70		

B.Granite	M3	787426.454	12.5% of Seigniorage Fee	12.5% of 267.46 =33.42	33.42			
Calcite	Tonnes	1003	30% of Seigniorage Fee	30% of 0.01 =0.00	0.00			
China Clay	Tonnes	70080		30% of 0.42 =0.13	0.13			
C. Granite	M3	748851.491	12.5% of Seigniorage	12.5% of 190.06 =23.76	23.76			
Cubes & Kerbs	Tonnes	143371	30% of Seigniorage Fee	30% of 1.94 =0.58	0.58			
Dolomite	Tonnes	2128467		30% of 21.28 =6.39	6.39			
Feldspar	Tonnes	219712		30% of 2.20 =0.66	0.66			
Fire Clay	Tonnes	27090		30% of 0.16 =0.05	0.05			
Gravel / Earth	M3	2751419.6		Multiple Values	12.72			
Latarite	Tonnes	71866		30% of 0.54 =0.16	0.16			
L. Stone Slabs	M2	19482974.7		30% of Seigniorage Fee	30% of 11.82 =3.54	1.27*	2.27	64%
Limekankar	Tonnes	-			-	0.00		
Lime Stone	Tonnes	406060			30% of 3.65 =1.10	1.10		
Mosaic Chips	Tonnes	129250			30% of 1.16 =0.35	0.35		
Marble	Tonnes	277.517		30% of 0.01 =0.00	0.00			
Mica	Tonnes	16716.5		30% of 1.34 =0.40	0.40			
Moulding Sand /Sand Others	Tonnes	980		30% of 0.01 =0.00	0.00			

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Natural Clay/ Others	Tonnes	51946	30% of 0.31 =0.00	0.09		
Phyrophillite	Tonnes	14762	30% of 0.30 =0.09	0.09		
Quartz	Tonnes	547390	30% of 4.93 =1.48	1.48		
Quartzite	Tonnes	851897	30% of 7.67 =2.30	2.30		
Road Metal	M3	10317785.2	30% of 87.31 =26.19	26.19		
Silica Sand	Tonnes	1402110	30% of 14.02 =4.21	4.21		
Steatite	Tonnes	102260	30% of 1.60 =0.48	0.48		
Slate	Tonnes	8810	30% of 0.13 =0.04	0.04		
Yellow Ochre (Other)	Tonnes	46276	30% of 0.28 =0.08	0.08		
Total			235.34	233.07		

***64% or 2.27 crore of DMF less received for Limestone slabs.**

Table-6: Progress in generation and use of renewable energy resources.

Sector	Energy Requirement by sector 2020-21	Energy Sources vis-à-vis total energy requirement during the year FY 2020-21				Generation / Additional generation of renewable energy during the year (MU)	Percentage increase in generation of renewable energy over the previous year	Percentage of renewable energy vis-à-vis total energy requirement during the year
		Nonrenewable energy		Renewable energy		Solar Power	Solar Power	
		Generated within state	Sourced from outside the state	Generated within state	Sourced from outside the state	Wind Power	Wind Power	
						Hydel	Hydel	
Other Sources	Other Sources							
Units -->	MW	MW	MW	MW	MW	MU	%	%
Industries	2433	7717.362	2429.48	Solar 3657.626	-	Solar 6348.898	13.17%	21.39%
Domestic	15290			Wind 3767.95	-	Wind 6121.705	-10.42%	

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Agriculture	11743			Mini Hydel 28.70	8.25	Mini Hydel 148.385	-14.99%
Commercial	3785			Biomass 132.50	-	Biomass 134.56	20.52%
Traction and Railways	643			Bagasse 105.00	-	Bagasse 48.94	-10.18%
Others	9416			Industrial waste 21.66	-	Industrial Waste 15.079	-19.54%

Note: The total Generation is 59914.96 MU. Hence, Renewable Energy in FY 2020-21 is divided by Total Energy Generated in FY 2020-21 and percentage is arrived i.e. $12817.57/59914.96 \times 100 = 21.39\%$

5.7.3 Findings of the study

- Number of minerals may exhaust in periods ranging up to 10 years (5 minerals), up to 20 years (8 minerals) and up to 30 years (1 mineral) as per the present closing stock.
- There was misclassification of revenues realised on fuel minerals to MH: 0853 instead of MH: 0802.
- Gap in values between royalty rates and average market prices was found to be very high. Average market price is about 7 times more than the royalty rates. Guidelines for collection of royalty rates are reviewed once in every four years by the State Government, whereas average market price varies monthly.
- Illegal mining data was given separately for major minerals and minor minerals.
 - For major minerals fines imposed for ₹ 115.74 lakh.
 - For minor minerals fines imposed for ₹ 4,146.75 lakh.
 - Breakup for individual minerals is not furnished by DMG.
- As observed from DMF details, 64% less received for Limestone slabs.
- The figures of DMG and IBM for major minerals vary largely and require reconciliation.
- System of raw mineral extracted, produced and mineral despatches to the mineral based industries requires to be introduced in the revenue interest of the State.
- Mineral wise data is not available for the minerals consumed/royalty paid by other government departments which hindered depiction of extraction for Government/ Private Sector separately.

5.7.4 Recommendations

- Immediate action to be taken by Government of Andhra Pradesh to deal with the extinction of resources.
- Reconciliation of DMG figures with IBM data. A better coordination is required between the department and lessees.
- Implementation of geo tagging and GPS Coordinates improves the monitoring of the mining areas, thereby reducing illegal mining.
- System of capturing data on mineral consumption by other departments.
- Remittances of revenues from Crude Oil and Natural Gas under proper head of accounts.
- More robust methodology needs to be installed for revising the royalty rates periodically in line with the average market values.
- **Detailed** information on detection of illegal mining needs to be captured.

CHAPTER - 6 FUTURE CONTINUITY PLAN

6.1 Guidelines / SoPs issued by GASAB

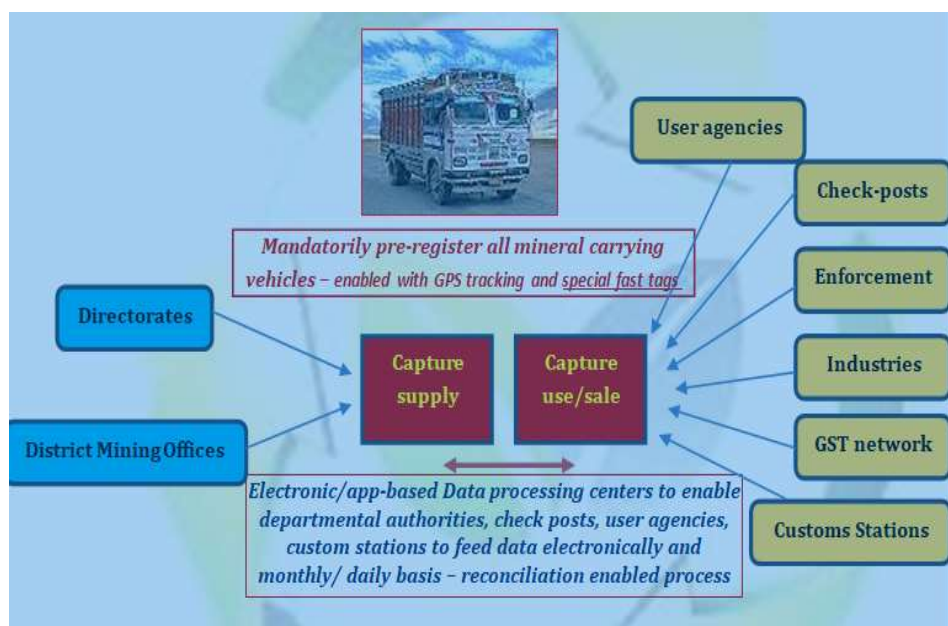
Asset Accounting process for Mineral and Energy Resources is to be a continuous process now onwards. Hence, there is a need for instituting systems and procedures for regularly capturing the data on physical flows of resources, while other inputs like addition in stock, average revenues, market prices, extractions not approved by the DMG and subsequently detected by various agencies could be collected from different sources while finalizing the Asset Accounts.

GASAB has issued Guidelines/SoPs in June 2022 suggesting methodologies for quarterly reporting framework and novel initiative of mapping the supply and use of resources. These will ensure timely collection and collation of data for the Asset Accounts. The mapping of supply and use of resources will enable 360 degrees profiling of mineral extraction and their use for effective management and optimisation of resources for the State exchequer. These are discussed in the succeeding paragraph.

6.2 Need for mapping the supply and use/sale/export.

Revenues from Minerals and Energy Resources consists of substantial part of State's receipt and largely help the entities welfare fund and other planned activities of the State. Hence, it is imperative to implement cross-verification mechanism to prevent misuse of resources and optimize revenue yields from exploitation of minerals. A robust framework must be put in place to ensure zero tolerance on resource and revenue pilferage.

A suggested mechanism for enhancing the control measures for optimizing monitoring on resource sale/use/consumption for better resource management and revenue yields to be adopted as per the following flowchart:



Source: GASAB

The DMG agreed to furnish the data as envisaged in the guidelines circulated by GASAB and issued a memo to all ADMGs to furnish the required information and required change management in e-permit system is in process.

6.3 Quarterly Reporting Framework.

From the April 2022, the quarterly reporting framework for Asset Account on Minerals and Energy Resources has to be implemented as suggested by the GASAB.

The DMG has agreed to implement the quarterly reporting framework for the Asset Account from April 2022. Prescribed formats have been circulated to ADMG Offices to submit their information on asset account on quarterly basis to DMG.

At present, the DMG will collect the information from all ADMG Offices and submit the quarterly report to AG office manually. A meeting was held with Joint Director, DMG and all the points were discussed in detail for the preparation of Asset Account for the year 2021-22 and report for quarter ending June 2022. The department has assured their full co-operation in this regard.

6.4 Recommendations for improving management of mineral and energy resources of the State and optimization of revenue yields there from

The following approaches are recommended to make the system robust and inclusive in the best interest of conservation, sustainability of resources, and optimisation of revenues for the State exchequer.

a) Statutory approach

- The State as part of enhanced statutory controls over mining activities, extractions/ productions/ dispatch and revenue yields should automate the e-permit system, with bar-coding of permits real time information sharing on permits issued pre-registration, GPS tagging of carriage vehicles with unladen weight and special fast tags for easy monitoring of minerals carried at the weigh bridges.
- The State may consider making it mandatory for the check posts (both intra and inter-State/customs check posts at international borders)/receiving points at industries to e-verify the permits – making them invalid for re-use. Else, movement/receipt should be allowed only upon full payment of royalty, fees, fines, etc.
- The State may consider enacting laws for making the lease holders/their personnel, departmental officials, industries/their personnel authorised to receive produces - personally liable for recovery of royalty, fees, fines, etc., in cases of movement/acceptance/consumption of minerals without valid permits/multiple use of permits. Also, enhancing the nature and quantum of penal measures to act as high deterrent on illegal mining activities.
- The State may consider introducing rewards scheme in the lines as prevalent in Central Excise and Customs Department for suitably rewarding the informers/Officers/whistle blowers leading to detection of illegal mining.

b) Other approach:

The following could consist of the probable steps (in addition to those taken/being taken by the States) leading to a complete monitoring mechanism on usage/sale of mineral produces.

- Statutory interventions for ensuring strict monitoring on permitted mining activities and deterring illegal mining and their sale/use as discussed under statutory approach.

- Mapping the contact points through which minerals are passed within and outside the State/country, user agencies, consuming industries, wholesale/bulk selling points (getting them registered similar to the practice in Forest Department to register the sawing mills).
- Establishing seamless flow of information from these sources to the Directorates managing the resources on usage and sale of resources and their continuous validation vis-à-vis the e-permit system.
- Installing systems for automated verification mechanisms as above to raise red flags on unauthorised supply/consumption of minerals – issuing notice for further action.

For further detail recommendation in Chapter VII of compendium of Asset Accounts on Mineral and Energy Resources released by GASAB in October 2022 may be referred (<https://gasab.gov.in/gasab/pdf/Compendium-of-Asset-final.pdf>)

c) Need for GPS/geo-tagged district-wise mineral maps

The GPS/geo-tagged district-wise mineral map would help in consolidation at the national level for providing precise data on availability of resources across the country along with their pace of extractions, revenue generations, market values, available stock of resources. Mine and Resource wise collection of GPS co-ordinates will help in creation of resource-wise maps by each States with mine indicators as per their GPS co-ordinates.

Gradually, other data sets like that of Indian Bureau of Mines, Directorate of Hydrocarbons, etc. could be possible to be mapped into these GPS enabled mapping system for resources. Requisite mapping could be enabled navigating the readers to the latest Asset Accounts providing information on total stock of resources in the district, annual extraction, revenue realised, and other details captured through our Asset Accounting processes in the districts and compiled State-wise. State of Maharashtra has prepared district wise mineral map with GPS/geo-tagged.

Annexures

1. State NRA Cell - list and contact details
2. Minutes of meeting of State NRA Cell.

Annexure — I

ANDHRA PRADESH STATE NRA CELL

The following members constitute the AP State NRA Cell.

PAG (A&E):

- 1) Sri RVK Sai Gandhi, Sr. DAG (A/cs & VLC)
- 2) Smt. KLV Durga, Sr.AO
- 3) Sri D. Karteek AAO

PAG (AUDIT):

- 4) Immanuel Swaroop cormaty, Sr. DAG (AMG-III)
- 5) Sri P.Jagannadha Rao Sr.AO
- 6) Sri B. Ranjith Kumar, AA0

Directorate of Mines and Geology:

- 7) Sri V G Venkata Reddy, Director
- 8) Sri Srinivasa Rao, Joint Director
- 9) Sri Phani Kumar, Royalty Inspector



प्रधान महालेखाकार (ले एवं एक.), आंध्र प्रदेश का कार्यालय, विजयवाड़ा-520 002
OFFICE OF THE PRINCIPAL ACCOUNTANT GENERAL (A&E)
Andhra Pradesh , Vijayawada – 520 002



Annexure — II

PAG (A&E),AP/VJA/NRA/2021-22/

Dt. 2-3-2022

A meeting/workshop organized by the O/o PAG (A & E) on 25.2.22 on Draft Guidelines issued by GASAB on preparation of Asset Accounts for the year 2022-23. The following officers participated through MS office teams.

- 1) Sri R V K Sai Gandhi, Sr. DAG (A/cs & VLC)
- 2) Smt. K L V Durga, Sr.AO NRA Cell
- 3) Sri P.Jagannaclha Rao, Sr.AO (Audit)
- 4) Sri D. Karteek, AAO NRA Cell
- 5) Sri Ranjith Kumar, AAO (Audit)
- 6) Officers from DMG office and
- 7) ADMGs from all districts of AP

Sr.DAG(A/cs & VLC) in his inaugural speech while appreciating the cooperation extended by the Mining Department in preparation of Asset accounts for the year 2020-21, raised some issues to be attended by the department for the smooth data flow for the year 2022-23. Monthly reports from 4/21 to 2/22 may be submitted to this office to check the availability of the data in the prescribed proforma. This enables to revisit the e-permit system for the changes to be made.

A presentation was given by Sr.AO, NRA Cell explaining the format in which the data for 2022-23 is to be submitted and the checks to be incorporated in collecting the data of illegal mining. Copy of the presentation is enclosed herewith.

Key issues addressed:-

- 1) Software updation for automated data to be captured from 2022-23 onwards
- 2) Other department's mineral-wise consumption data.
- 3) End users details not captured.
- 4) IBM & Statistics data not matching with DMG data -to be rectified.
- 5) Minerals used by industries.
- 6) Illegal mining data.



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Andhra Pradesh , Vijayawada – 520 002



Reply from the Department:-

1. As regards final template on automation of data to be captured for 2022-23 it is replied that necessary instructions will be given to District offices to capture the data.
2. Other department mineral-wise consumption data - the department replied that to ascertain data from Engineering Departments in the districts. Follow the procedure to collect the data as done in the earlier Janmabhoomi works.
3. End users details not captured - -Data would be collected from e-permit system.
4. Minerals used by industries - The source place for consuming mineral quantity as well as source for recovery of royalty/fees will be furnished in due course.
5. Illegal mining - Dedicated data would be collected and provided with in leased area/outside the leased area. Suitable instructions were already issued to the field offices.
6. Nodal officers would be arranged in every district to send and reconcile monthly NRA data as per AG Office guidelines.

The approved mining plan depicts only assumed quantities. Change of quantities would also possible. Mining plans may be suitably reassessed. The same has to be recorded in growth in stock/reduction in stock/catastrophic losses due to mining etc.

The meeting ended with vote of thanks.

K L V Durga

Sr.Accounts Officer / NRA Cell