



सत्यमेव जयते

# NATURAL RESOURCE ACCOUNT OF CHHATTISGARH FOR THE YEAR 2020-21 MINERAL & ENERGY RESOURCES



An initiative of Government Accounting Standards Advisory Board  
under the aegis of CAG of India  
**CHHATTISGARH 2023**



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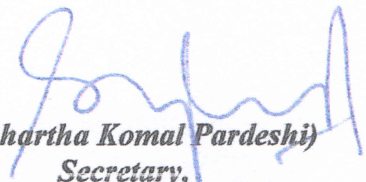
## MESSAGE OF STATE GOVERNMENT

*I on behalf of Mineral Resources Department, Government of Chhattisgarh appreciate the initiative taken by Government Accounting Standard Advisory Board (GASAB), Office of the Comptroller and Auditor General of India, to come out with the first Natural Resource Accounting (NRA) Report for Mineral and Energy Resources for the year 2020-21. The Report will provide the insights on the availability of mineral reserves, exploitation, and valuation of the reserves and usage of natural resources at a glance. This will assist the policy makers in aligning their goals and policies of extraction of resources via a 'vis' meeting international commitment in mitigating the environmental degradation.*

*It gives immense pleasure to me that mineral and energy resources were chosen first for this exercise as it is one of the crucial resource in Indian economy and one of the pertinent issues in dealing with detriment to environment. I would like to congratulate the officers of State Accountants General offices and our department who had worked profoundly and passionately for making this exercise a success. I would also like to thank the Government Accounting Standards Advisory Board (GASAB) to provide a forum for sharing views, discuss and express the concerns/constraints during the entire process of preparation of Asset Accounts.*

*I am sure that the findings and recommendations included in the Report will be a guiding principle for better and complete depiction of data right from the extraction of resources to supply and use of resources in future. Further, it will be handy for the academician, public representatives, researchers, climate change analyst, environmentalist and other stakeholders for their reference and study.*

*I wish good luck to entire members for their endeavor in bringing other natural resources viz. land, water and forest and wild life resources into their fold in coming years.*



**(Sidhartha Komal Pardeshi)**

**Secretary,**

**Mineral Resources Department  
Government of Chhattisgarh**



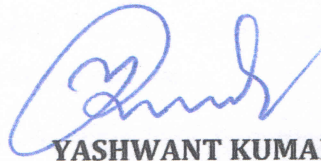
MESSAGE FROM THE PRINCIPAL ACCOUNTANTS GENERAL

Minerals are valuable natural resources. Being finite and non-renewable, their exploitation is guided by long term national goals and perspectives. Mineral exploration and development is closely linked with the development of the economy and upliftment of the local population. However, a harmony and balance is to be maintained between conservation and development as it intervenes with the environment and social structure.

Chhattisgarh is one of the foremost mineral rich States of the country. There are almost 28 minerals present in the State, including precious stones like diamond, iron-ore, coal, tin ore, bauxite and gold. In addition to its deposits of diamond and gold, the State is also known for having India's only producing tin mine and one of the world's best quality of iron-ore deposits at Bailadila in Dantewada district. These minerals are the 'source of treasure' and constitute the backbone of the industrial development of the nation.

Keeping this in view, Asset Accounts on Natural Resources initially of Mineral and Energy Resources of Chhattisgarh has been prepared for the year 2020-21 as per the guidance of Government Accounting Standards Advisory Board (GASAB) in office of the Comptroller and Auditor General of India. This report would assist in taking policy decisions in the matters affecting environment and to use the resources on a sustainable basis and reducing the negative impact on the environment.

We are thankful to the GASAB for providing necessary guidance in preparation of the report. Further, we also express our sincere thanks to the officers of Department of Geology and Mining, Government of Chhattisgarh, for providing necessary cooperation in preparation of this report. Lastly, we would also like to acknowledge and appreciate the efforts made by the entire team of the NRA Cell for preparing the Natural Resources Accounts.



**YASHWANT KUMAR**  
Principal Accountant General  
(Audit)



**PURNA CHANDRA MAJHI**  
Principal Accountant General  
(Accounts & Entitlement)





## 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 three States namely Goa, Meghalaya and Rajasthan which have successfully completed the studies, preparing the model Asset Account on Mineral and 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.

Subsequently, in view of the national declaration at the Conference of the Parties (CoP) 26, efforts were made by GASAB to incorporate templates for collating information on progress in generation of renewable energy in States. These were intended to help the States and the Union to have a birds eye view of the progress made towards meeting the targets committed by the country at the CoP 26.

The work on preparation of the Asset Accounts in the State of Chhattisgarh 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 Chhattisgarh. 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.

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 the Report

- A Natural Resource Accounting (NRA) Cell has been established in the State to collaborate with the other stakeholders/departments for managing the resources in preparation of Accounts along with the officials of Principal Accountants General Offices of the State. This Report is the beginning of our endeavour in preparation of Asset Accounts on Mineral and Energy Resources for the year 2020-21. The remaining resources will be also covered as per the Mid term approach envisaged in this Report (Kindly refer Table in **paragraph 2.2**).
- The process started with the preparation of Asset Accounts on Mineral and Energy Resources for the year 2020-21. To address the issue of commitment made by Government of India (GoI) in CoP 26, a separate Table 6 regarding generation of power from renewable resources and non-renewable resources (**Refer Paragraph 2.7 of this Report**) have been envisaged. This is now referred as Asset Accounts on Mineral and Energy resources after that.
- For deriving the available reserves for each resources found in the State, Indian Bureau of Mines (IBM) figure as on 01 April 2015 as published in Minerals Statistics Book was reckoned. For other minor minerals which are under exclusive control of State Government, ascertaining the available reserves was a big challenge as such type of data was not available with them. Till things settle down and a common consensus is drawn for adopting methodology for deriving the available reserves, only those minerals were included in the Asset Accounts of 2020-21 which were classified as major minerals prior to the notification of 10 February 2015 as requested by the Mineral Resources

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<sup>1</sup> Finance Department, Statistics and Programme Implementation, Housing and Environment, Mineral Resources Department, Land Records, Water Resources and Forest and Climate Change Department

Department (MRD). Gradually the left out minor minerals will be included in succeeding years once the methodology of deriving the Opening Stock of reserves is finalized.

- The officials of Directorate of Geology and Mining (DGM) provided the requisite record/information to the office of Principal Accountant General (Accounts & Entitlement) for preparation of Asset Accounts. As envisaged in the Concept Paper and also in Guidelines/Standard Operating Procedures (SoPs) validation and limited verification of accounts was done in two stages first by the Department and then by the State Civil Audit Office. The changes/modifications after the validation was adopted in the Accounts before being published, physically and electronically.

### Major findings

- An online system [khanijonline.cgstate.gov.in](http://khanijonline.cgstate.gov.in) is functioning in the State for generation of permits and transit pass, payment of all statutory fees/royalties, verification at the check posts etc. had been made mandatory from January 2017 for major minerals. However, all the lessees could not be onboarded owing to poor connectivity resulting in manual system of issuance of permit/transit pass/payment is being operated parallel with the online system. This partially defeated the purpose of the online mechanism. **(Refer Paragraph 5.2.3.1)**
- Variation of figures of production of Coal, Iron ore-Lumps, Iron ore-Fines, Tin and Limestone as reported by IBM/CC with the compiled figures was 0.59 per cent, 6.61 per cent, 3.61 per cent, 82.18 per cent and 3.38 per cent respectively. Further analysis of the monthly returns revealed that in 57 mines there were differences in production and dispatch figure reported by State Government with IBM/CC. **(Refer Paragraph 5.2.3.2)**
- State Government is yet to declare the Market Value of the Fire Clay, China Clay and Soapstone. On analysis of market value of the minor minerals, it was noticed that instead of determining the market value of the minor minerals as per the market trends, the market value of the minor minerals had been declared in terms of multiple of royalty rates. **(Refer Paragraph 5.2.3.3)**
- There is absence of methodology for assessment of minor mineral resources of the State due to which all the minor minerals could not be included in the Asset Accounts for 2020-21. Opening balance of minor minerals except for those reclassified from major minerals after February 2015 is required to be determined for their inclusion in the Asset Accounts of future years in phased manner. **(Refer Paragraph 5.2.3.4).**

- Against the realisable amount of DMF and NMET of ₹ 1,589.42 crore and ₹ 105.70 Crore respectively, the Department realised ₹ 1354.39 crore and ₹ 92.51 crore respectively. This resulted in short collection of DMF and NMET of ₹ 235.03 crore and ₹ 13.19 crore respectively. **(Refer Paragraph 5.2.3.5).**
- Geo-tagging and Geo-fencing of the mines to have an effective control over mining activities is yet to be undertaken by the State Government. **(Refer Paragraph 5.2.3.6).**
- One to one tracking of royalty realisable and royalty realised for each mineral could not be done as there was no provision for separate Detail and Sub-Detail Head below Major Head-0853- Non-ferrous mining and metallurgical industries. **(Refer Paragraph 5.2.3.7)**

### **Exclusion**

- a. The figures of 'extraction permitted during the year' could not be included as the requisite information was not made available by the Directorate of Geology and Mining.
- b. Major minerals like Gold and Diamond are not included in the report as the proved reserve was not estimated and these mines were not allocated for mining and the figures of proved reserve as on 01.04.2015 is not available in the State Reviews of Indian Minerals Yearbook 2019 (Part-I).
- c. Minor minerals such as Low grade limestone, Dimensional stone, Flag stone, Stone (Boulder, *Gitti*, dressed stone), ordinary sand, *bajri*, *moorum*, clay for making bricks etc. have been left out as the data was not made available by the State Government department.

### **Recommendation**

- Measures should be taken to onboard all the mining and quarry lease holders in **khanijonline.cgstate.gov.in** system to have effective control on mining/quarry activities in the State. The State Government may prepare a roadmap for inclusion of all the mining lease holders in *Khanij Online* System so that the manual process can be done away with and a robust mechanism for effective checks on mineral activities can be ensured.
- A system of regular issue of market value of all the minerals by the District Offices may be ensured. Further, the market rates should be determined taking into account of the market trends and other factors affecting the price.

- Methodology for ascertaining the availability of minor minerals (except Dolomite) reserves in the State should be taken up and communicated to State NRA Cell so that all the available minerals can be included in the Asset Accounts.
- Separate Detail and Sub-detail heads may be opened in the State budget to capture Mineral wise information on royalties, penalties, consultancy charges, application fees, dead rent, surface rent etc.
- Since, the receipts from mining activities constitute a substantial portion of the State Government's revenue, it is recommended that the State Government may undertake geo-tagging and geo-fencing of all mine area within a fixed time frame to ensure effective monitoring of mining activities and also maximizing the revenue.



## Disclaimer

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 verification done by Audit Office intends to check on a test basis that data/information is supported by primary document maintained in the offices of the concerned departments.





## 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.



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

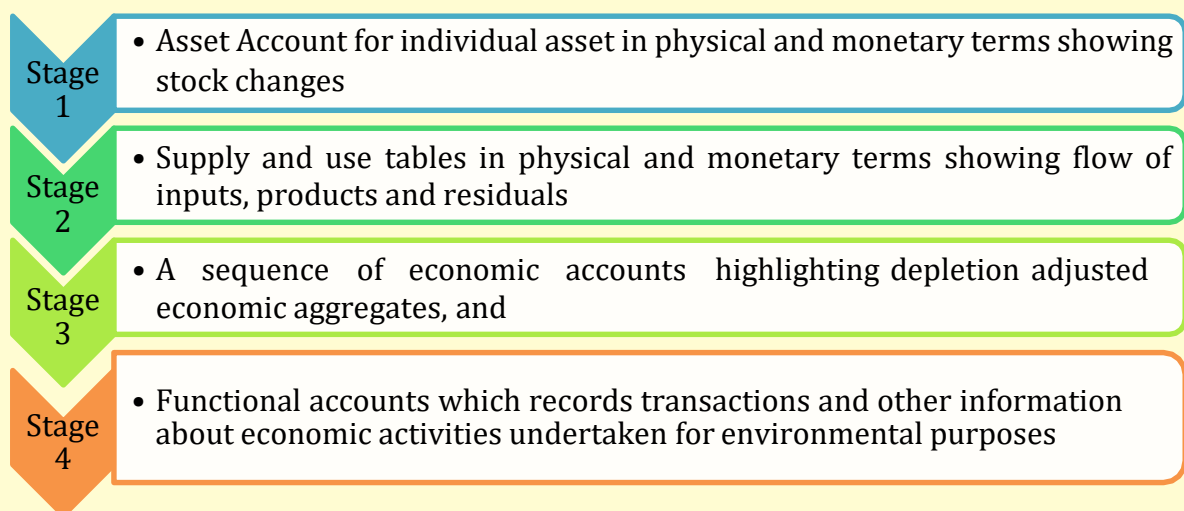
Conventional accounting captures data only of the measurable economic activity. In order to overcome this shortcoming and to capture the intimate interplay between the economic indices and the various components of the natural environment, the concept of NRA has emerged.

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 System of Economic and Environment Accounting - Central Framework (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 issue.

## CHAPTER 2: IMPLEMENTATION OF NRA IN INDIA – GASAB’S ENDEAVOUR

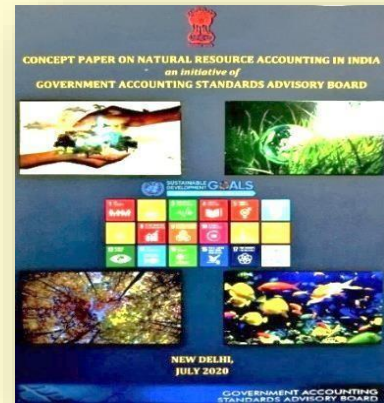
### 2.1 About (GASAB)- Government Accounting Standards Advisory Board

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-released by GASAB

GASAB has taken the initiative (2019) to develop a framework for implementing NRA on priority as a nationally important project.

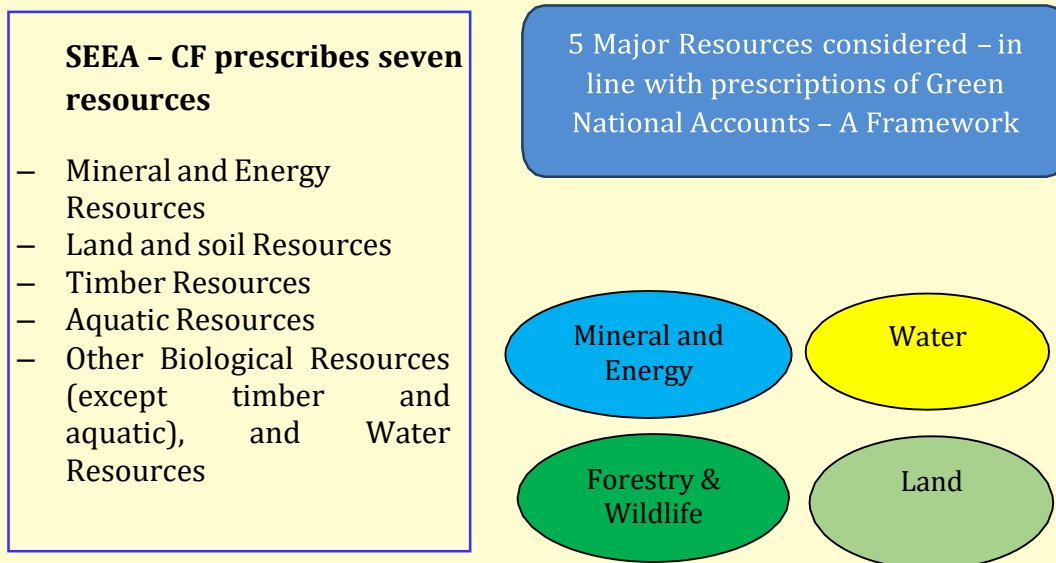
The Paper, *inter-alia*, envisaged short, medium and long term goals in consonance with the four stage strategy suggested by the SEEA Framework, as mentioned below:



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  (2019-20 to 2021-22)	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  (2022-23 to 2024-25)	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.  (2025 - 26 onwards)

### 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 & 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 & Energy resources have been conceptualised as the need of the hour and thus planned as the short term goal No. 1.

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

The Asset Accounts on Mineral & Energy resources, once generated, will have the capacity to provide valuable information, at a glance, to the policy makers at the State and Central levels regarding the availability, use, resource generation and balance stock along with a forecast about the stream of revenues that the stock of resources will generate for the future generations. The stock of resources could also assist the policy makers in identifying future alternative source of energy and financial resources. These are discussed in detail in the succeeding paragraph.

## 2.5 Advantages of consolidating the Asset Accounts on Mineral & 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 and ensuring evidence based good governance, 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 good governance with the following specific inputs:



Thus, the Asset Accounts, once compiled, has the potential of multi-pronged advantages for the States in particular and the country at large as summarised below:

**Resources at a glance:** The Asset Accounts would enable a one pager document on there source 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 States 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 optimizing resource base but will also help in containing unscientific mining thereby aiding in conservational efforts and restricting environmental degradation due to unscientific and unsustainable mining activities.

**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.**

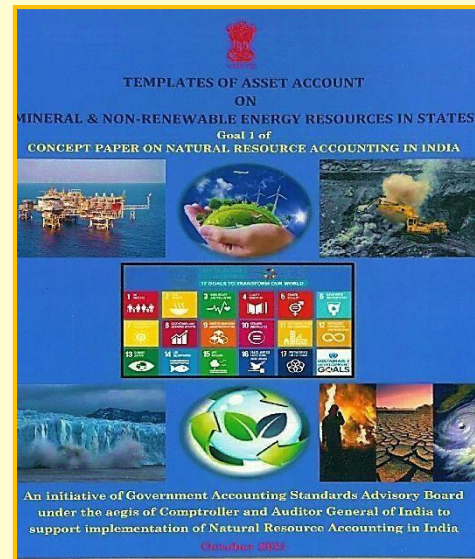
## 2.6 Evolution of the final templates

The templates of Asset Accounts on Mineral and 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 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 n 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 tables for capturing the basic asset accounts (table 1), asset accounts on physical flows (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), and collection under district mineral foundation (table 5).

## **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 on and progress on 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 Center (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.



### **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 presentations to the States. Seven virtual meetings were held in August – September 2021 covering 28 States. The views/suggestions emanating out of these meetings were taken into consideration in updating/modifying the templates.

After release of the templates, monthly virtual meetings were held with all the 30 States/UT in which the project was being run from October 2021 till March 2022 or such time the Asset Accounts were finalised in the States.



## CHAPTER 3: INITIATIVES IN THE STATE

### 3.1 Formation of State NRA Cell

The NRA Cell was formed in the State with the members nominated from the Departments of (i) Finance (ii) Geology & Mining (iii) Water Resources (iv) Land Records (v) Economic and Statistical department (vi) Housing and Environment (vii) Office of the Principal Accountant General (Accounts & Entitlement), Chhattisgarh (viii) Office of the Principal Accountant General (Audit), Chhattisgarh. Nomination from Forest Department is yet to be received. The details of the members of NRA Cell are mentioned in **Annexure -1**.

Since, Minerals and Energy resources were first identified for preparation of Asset Accounts in the process of conceptualization of Natural Resource Accounting of the Country, a meeting with the officials of Directorate of Geology and Mining (DGM) with the NRA Cell nominated members of both the Principal Accountants General office was held on 25 October 2021. In the meeting the need for data for compiling the Asset Accounts along with the limitations and challenges to be faced by MRD was shared. The minutes of the meeting is depicted in **Annexure-2**

### 3.2 Follow up, trainings and capacity building

The Concept Paper (July 2020) and the templates of Asset Account on Mineral and Energy Resources (October 2020) in States were circulated to the State Government for their reference. An introductory meeting was held between the members of NRA Cell of Audit and Accounts Office with the officials of Directorate, Geology and Mining (DGM) on 25 October 2021 to acquaint them with the different Tables of Asset Accounts envisaged in the Concept paper and the requirement/sources of the data for filling the information in Asset Accounts. The modalities for arriving at the Opening reserve for the year 2020-21 was also discussed in detail. Further, in order to acquaint with the necessity and handhold them in preparation of Asset Account, the officials of Mineral Resources Department were invited to attend the monthly meetings conducted by GASAB, where they could share their views and constraints faced by them in providing the required data/information.

The officials of DGM were proactive in resolving the issues that arose during the process of preparation of Asset Accounts which in turn facilitated in preparing a correct and true Asset Accounts as per the Guidelines/SOPs issued by GASAB.



## CHAPTER 4: MINERAL PROFILE OF STATE AND SHORTLISTING OF RESOURCES

### 4.1 Mineral profile of Chhattisgarh

The State of Chhattisgarh is endowed with huge minerals resources such as Coal, Iron-ore, Bauxite, Limestone, Tin and Dolomite. The production of Coal, Iron-ore and Bauxite accounted for 22.12 *per cent*, 18 *per cent* and 3.51 *per cent* of total production of the country in 2020-21. It ranks first in terms of Coal production and second after Odisha in terms of iron-ore production in the country. It is also a leading producer of dolomite in the country. The State is also boasted of huge reserves of non-metallic minerals such as Limestone and Dolomite<sup>1</sup> accounting for five *per cent* and 11 *per cent* of the total reserves of the country.

Other rare mineral resources such as Tin ore (Cassiterite) and Diamond (Kimberlite) are also found in the State. Tin concentrates nearly accounts for 100 *per cent* of the all India production. The mineral resources available in different districts are mentioned in **Table 4.1** below:

**Table 4.1: Details of mineral reserves available in various districts of the Chhattisgarh State**

Sl. No.	Mineral	District
<b>Major minerals</b>		
1.	Bauxite	Balrampur-Ramanujganj, Jashpur, Kabirdham, Kanker, Kondagaon and Surguja
2.	Coal	Balrampur-Ramanujganj, Korea, Korba, Raigarh, Surajpur and Surguja,
3.	Diamond	Gariaband
4.	Gold	Balodabazar-Bhatapara
5.	Graphite	Balrampur-Ramanujganj
6.	Iron Ore	Balod, Dantewada, Kanker, Narayanpur and Rajnandgaon
7.	Limestone	Balodabazar-Bhatapara, Bastar, Bemetara, Bilaspur, Durg, Janjgir-Champa, Kabirdham, Raigarh and Raipur
8.	Moulding Sand	Durg
9.	Running Moulding Sand	Rajnandgaon
10.	Tin Ore and Tin Metal	Dantewada and Sukma

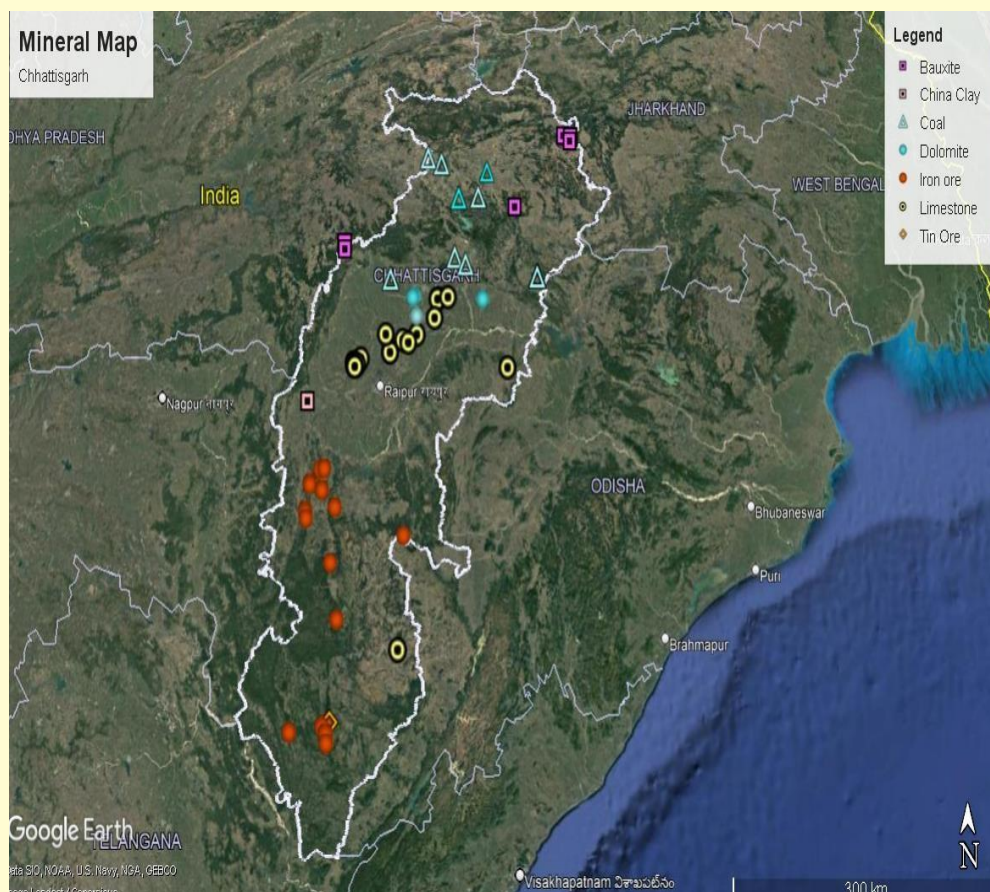
<sup>1</sup> Limestone with more than 10 *per cent* Magnesium

<b>Minor minerals</b>		
11.	China clay	Rajnandgaon
12.	Clay (Mitti)	Balod, Balodabazar-Bhatapara, Balrampur-Ramanujganj, Bemetara, Bilaspur, Dhamtari, Durg, Gariaband, Janjgir, Jashpur, Korba, Korea Mahasamund, Mungeli, Raigarh, Raipur, Rajnandgaon, Surajpur and Surguja
13.	Corundum	Bijapur and Sukma
14.	Dolerite	Gariaband
15.	Dolomite	Balodabazar-Bhatapara, Bemetara, Bilaspur, Janjgir-Champa, Mungeli and Raigarh
16.	Fireclay	Korba and Raigarh
17.	Flag Stone (Farshi Patthar)	Balod, Balodabazar-Bhatapara, Bastar Gariaband, Mahasamund, Raipur and Rajnandgaon
18.	Granite	Gariaband, Kanker, Kondagaon Mahasamund and Rajnandgaon
19.	Limestone (LD)	Balod, Balodabazaar-Bhatapara, Balrampur-Ramanujganj, Bastar, Bemetara, Bilaspur, Durg, Janjgir-Champa, Kabirdham Korba, Mahasamund, Mungeli, Raigarh, Raipur, Rajnandgaon and Surguja
20.	Quartz	Bilaspur, Jashpur, Mahasamund, Raigarh and Rajnandgaon
21.	Quartzite	Durg, Mahasamund and Raigarh
22.	Quartzite -Silica	Rajnandgaon
23.	Soapstone	Kanker
24.	Stone	Balrampur-Ramanujganj, Bastar, Bemetara, Bijapur Bilaspur, Dantewada, Dhamtari, Gariaband, Jashpur, Kanker, Korba, Korea, Mahasamund, Mungeli, Raigarh, Rajnandgaon, Sukma, Surajpur and Surguja
25.	White clay	Rajnandgaon

*Minerals included in the Asset Accounts*

Differential Global Positioning System (DGPS) coordinates for 22 mines of Iron ore, 18 mines of Limestone and three mines of Bauxite allotted after 2015 have been provided by DGM. Further coordinates for three mines of Bauxite, 11 mines of Coal, four mines of Dolomite, one mine each of Limestone, China Clay, Tin and Iron ore have been collected from other sources.

As the Department could not provide mineral map of the State, mineral map was attempted by plotting the DGPS coordinates provided by the Department and presented below:



## 4.2 Strategic importance of minerals for the State

Chhattisgarh State Mineral Policy 2013 aims to harness the State's mineral wealth potential and achieve the target of doubling the contributions of minerals to the State Domestic Product (GSDP). The specific objectives of the Policy are to ensure:

- Sustainable development and use of State's mineral wealth.
- Encouragement of value addition
- Creation of conducive business environment to attract private investment (domestic and international) in the sector.
- Simplification of procedures and complete transparency in decision making.

The State ranks first in the production of coal and second in production of iron-ore in the Country. Major production of iron ore comes from two Public Sector Undertakings (PSUs)- Steel Authority of India Limited (SAIL) and National Mineral Development Corporation (NMDC) whereas coal is produced largely by South Eastern Coalfields Limited (SECL), a subsidiary of Coal India Limited. Other mega players are Chhattisgarh Mineral Development Corporation (CMDC), M/s Jindal Steel, Rajasthan Rajya Vidyut Utpadan Nigam Ltd. etc.

As already stated that the mining receipts accounts for 18.45 per cent of the total receipts of the State. Thus, the mining industries plays the

important part in the economy of the State.

#### **4.3 Mining process followed in the State**

**Major Mineral:** The Mining Lease for major mineral block is granted as per Mineral Auction Rules, 2015 and the amendment thereof by e- auction methodology. Directorate of Geology and Mining (DGM) initiate the process of mineral block if the mineral contents in such area has been established in accordance with the provisions of the Minerals (Evidence of Mineral Contents) Rules, 2015. The Notice Inviting Tender (NIT) is issued by DGM on MSTC portal (The platform provider for e- auction of the state) after receiving approval from Mineral Resources Department (MRD).

The Highest Bidder is identified by DGM after two phase e-auction process and is forwarded to MRD for being declared as Preferred Bidder. The Preferred Bidder is then directed to deposit the first instalment being twenty *per cent* of Upfront payment to be considered as Successful Bidder and after submission of upfront payment Letter of Intent (LoI) is issued by MRD. Successful Bidder has to submit second instalment being twenty *per cent* of Upfront payment along with performance security as specified in Tender Document and submit Draft Mining Plan within six months from being declared as Successful Bidder satisfying such other conditions as may be specified by the State Government with the prior approval of the Central Government.

The successful bidder shall sign the Mine Development and Production Agreement with the State Government upon obtaining all consents, approvals, permits, no-objections and the like as may be required under applicable laws for commencement of mining operations. The successful bidder shall pay the third instalment being sixty *per cent* of the upfront payment subsequent to execution of the Mine Development and Production Agreement, and upon such payment the State Government shall grant a Mining Lease to the successful bidder. The Mining Lease Deed shall be executed by the State Government within thirty days of the date of completion of the conditions specified in sub-rule (5) and shall be subject to the provisions of the Act and the rules made there under.

**Minor mineral:** The competent authority of the District initiates to identify, demarcate and notify such area for e-auction of mines and forward the proposal to DGM, Chhattisgarh through the concerned District Collector. The NIT is issued by the DGM on Government portal (eproc.cgstate.gov.in) after receiving sanction of the Secretary, Mineral Resources Department. The highest bidder is identified by DGM after the second round of e-auction and is forwarded to the Secretary, Mineral Resources for being declared as the preferred bidder and to direct them



to deposit the security. Thereafter the Letter of Intent (LoI) is issued to the preferred bidder. After the conditions as mentioned in the LoI are fulfilled, the sanction order of Composite License<sup>2</sup> is issued by the Government for a period of two years. During this period the bidder has to submit the prospecting report for applying for quarry lease. Subsequently, the Government approves the quarry lease.

#### 4.4 Contribution of mineral resources in the revenues of the State

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

**Table 4.2: Trend of receipts from Non-ferrous mining and metallurgical *vis a vis* total receipts of the State for the year 2016-17 to 2020-21**

(₹ in crore)

Particulars	2016-17	2017-18	2018-19	2019-20	2020-21
<b>Non-ferrous mining and metallurgical industries</b>	4,141.47	4,911.44	6,110.24	6,195.73	5,538.49
<b>Total receipts (tax and non-tax)</b>	24,614.46	26,235.10	29,130.27	30,051.61	30,026.15
<b>Per cent of receipts to total receipts of the State</b>	16.83	18.72	20.98	20.62	18.45

Mineral revenue accounts for 18.45 *per cent* of total receipts of the State during 2020-21. The receipts from the non-ferrous mining and metallurgical industries for the period 2017-18 to 2019-20 increased by 18.59, 24.41 and 1.40 *per cent* respectively and during 2020-21 it decreased sharply by 10.61 *per cent* in comparison to previous year 2019-20. Mineral receipts primarily include royalties<sup>3</sup>, dead rent<sup>4</sup>, surface rent<sup>5</sup> fees etc. Other receipts includes receipts of District Mineral Foundation Trust (DMFT) and National Mineral Exploration Trust (NMET). DMFT is utilized for identifying and taking measures for rehabilitating and mitigating the adversities caused to people affected in

<sup>2</sup> Composite license means prospecting license cum mining license

<sup>3</sup> The amount due to be paid for the mineral extraction from the mines and quarry areas to the Government.

<sup>4</sup> Dead rent is the amount payable to Government in case the lease/quarry holder for the lease period is non liable to pay royalty due to non-extraction of mineral resources. Dead rent is not payable for the first year of lease. The lessee had to pay either royalty or dead rent but not both.

<sup>5</sup> Rent paid as part of use of land for mining purpose.

near around mining areas. Whereas NMET is used for reconnaissance and prospecting for exploration of mineral resources.

During the period 2010-21, receipts from non-ferrous mining and metallurgical industries increased to 33.73 *per cent* in comparison to 2016-17.

#### **4.5 Short-listing of resources for this study**

This being the first year of preparation of the Asset Account, eight major minerals out of ten and six Minor minerals out of fifteen has been included in the report (Kindly refer **Table 4.1**). The Asset Account has been prepared from the monthly returns submitted mine wise by the lease holder to DGM along with other information like addition of reserve, DMF, DGPS Coordinates, district wise mineral availability etc. provided by the DGM. Major minerals like Gold and Diamond are not included in the report as the proved reserve was not estimated and these mines were not allocated for mining. Information on Tin, Fireclay and Soapstone has been collected from the respective District Mining Office. The minor minerals included in the Asset Account are those major minerals notified as minor minerals by the GoI notification of 10<sup>th</sup> February 2015 and preferred by State Government. Other minor minerals such as Low grade limestone, Dimensional stone, Flag stone, Stone (Boulder, *Gitti*, dressed stone), ordinary sand, *bajri*, *moorum*, clay for making bricks etc. have been left out from the Asset Accounts for the year 2020-21 owing to non-availability of data of opening reserves and other data related to addition and extraction. These minerals will be included in subsequent Asset Accounts in phase wise manner.

## CHAPTER 5: ASSET ACCOUNT OF MINERAL AND ENERGY RESOURCES OF CHHATTISGARH

### 5.1.1 Scope

The scope of the project is to prepare the Asset Account for the Mineral and Energy resources for the year 2020-21. This involved the work of ascertaining the opening stock of minerals, growth/discovery of the mineral, reduction of minerals due to extraction, arriving at the closing stock of the mineral, ascertaining the market value of the minerals and sustainability of Minerals. Not all major minerals were included in the Asset Accounts as only proved reserves were to be included as per the Guidelines/SOPs issued by GASAB. Thus, seven major minerals viz. Bauxite, Graphite, Iron ore, Limestone, Moulding sand, Tin Ore and Tin Metal were only covered. In addition one fossil fuel- Coal and six minor minerals namely Dolomite, Quartzite, Quartz, Fireclay, China clay and Soap stone as preferred by the State Government were also selected for the project.

### 5.1.2 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 progress towards national commitment made at the COP 26 on increase in generation and usage of renewable energy resources.

### **5.1.3 Methodology of data collection and compilation of physical flows**

Rule 45 (5) of Mineral Conservation and Development Rules, 2017 prescribes for submission of monthly returns in Form F-1<sup>1</sup>, F-2<sup>2</sup> and F- 3<sup>3</sup> by the holder of mining lease to the State Government and Indian Bureau of Mines (IBM). The data for extraction and dispatches of the resources were captured from the monthly returns furnished by the holder of lease. Along with this the data for extraction and dispatches for minor minerals such as Fire Clay, China Clay, Soapstone and Tin ore was collected from the respective DMOs/DDMAs offices. The figure on Addition of reserve, production and dispatch of Minor minerals from 2015-16 to 2020-21 has been provided by the State Government.

Only proved and probable resources as available on 1 April 2015 in the Indian Bureau of Mines (IBM) Yearly Mineral Statistics Book were taken as opening stock in the Asset Accounts. This opening stock was adjusted with the extraction of resources and new stock added during the period 2015-16 to 2019-20 to arrive at the closing stock of reserves for the year 2019-20, which served as the opening stock of the reserves for the year 2020-21. The yearly extraction was compiled from the requisite monthly returns rendered by the individual lease holders to DGM.

### **5.1.4 Methodology of monetization of physical flows**

As per the notes regarding filling up the data for royalty receivables and market value of the resources, the valuation is to be done for opening reserves, reduction and closing reserves as on 31 March 2021. For the purpose of calculation of royalty receivable and market value on reduction of resources, dispatched quantity rather than actual extraction has been taken into consideration. Rates of Royalty have been provided either on *ad valorem* basis or specific rate per tonne/kg basis. Royalty rate prevailing as on 31 March 2021 have been taken into account for valuation of royalty receivable in Table 3 and in case where the royalty

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<sup>1</sup> For all minerals except Copper, Gold, Lead, Pyrite, Tin, Tungsten, Zinc, precious and semi-precious stones

<sup>2</sup> For Copper, Gold, Lead, Pyrite, Tin, Tungsten and Zinc

<sup>3</sup> For precious and semi-precious stones

rates were lower during the year, average of royalty rates was taken, as in the case of Coal. In case of royalty chargeable on *ad valorem* basis i.e. on Sale price or sale value, the Average Sale Price (ASP) of minerals/metals issued by IBM as on 31 March 2021 or sale price issued by State Government have been considered. Wherever sale price of any minerals is not available with IBM or with State Government, rates applicable in nearby States have been taken into consideration. Limitations are there in determining the royalty receivable on Opening, Addition and Closing reserves due to uncertainty of grades/category of ores to be extracted. In such instances average prices of all grades have been considered in valuation.

Similar methodology for valuation of market value of opening, extractions and closing of reserves has been adopted for calculating average market value. The market value of the minor minerals is declared by district offices from time to time. Usually these rates vary from district to district on the basis of availability of minerals in that district, distance from the nearest site etc. In case of various rates prevailing in districts, similar rates appearing in more than one district have been considered for valuation of average market value.

#### **5.1.5 Dual stage validation/limited verification of data**

Since the data was compiled from the initial returns furnished by the lease holders, the need for test check of the data from the departmental field offices was not required. The methodology of the compilation of the data and valuation of the resources were communicated through 'Notes to Accounts' accompanied with the Asset Accounts to DGM during validation.

The communication for validation of facts and figures in the Template associated with the Asset Accounts were made by Mineral Resources Department to the Principal Accountant General (Accounts & Entitlement) office on 29 Sept 2022.

## **5.2 Asset Accounts on Mineral & Energy Resources**

### **5.2.1 Highlights**

The Accounting format as suggested in SEEA (CF) along with the country specific needs as designed by GASAB were adopted for reporting of availability, extraction and addition of resources. Some of the inferences from the Asset Accounts are mentioned below:

- Analysis of the Asset Accounts points the sustainability of the resources ranging from 34 year to 9,000 years. The sustainability of coal, a major source in generation of non-renewable energy is estimated to be 110 years at the present rate of extraction on the available reserve.
- During the year 2020-21 there was addition to stock of Bauxite and Limestone of 10,720 thousand tonnes and 1,25,270 thousand tones respectively.
- Variations between the total royalty receivables on the dispatches of the mineral resources and the receipts under 0853- Non ferrous mining and metallurgical industries as per State Finance Account for the year are ₹ 321.69 crore.
- The share of generation of renewable energy viz-a-viz to total requirement for the year 2020-21 was 5.74 *per cent*.
- Market value of minor minerals like China Clay, Fire Clay and Soapstone have not been declared in any of the districts, despite the availability of reserves.
- There had been shortfall in collection of DMF and NMET amounting to ₹ 235.03 crore and ₹ 13.19 crore respectively.
- During the year 152 cases of illegal mining, transportation and storage<sup>4</sup> were detected by the DMOs/DDMAs and Central Flying Squad.

- Variation of figures of production of Coal, Iron Ore-Lumps, Iron ore-Fines, Tin and Limestone as reported by IBM/CC with the compiled figures was 0.59 per cent, 6.61 per cent, 3.61 per cent, 82.18 per cent and 3.38 per cent respectively.

### 5.2.2 Asset Account-the tables

The Asset Accounts for the year 2020-21 is depicted in Table 1 to 6.

➤ Table 1 intends to capture the basic details of Opening Stock, addition, reduction and Closing Stock of the resources for the year 2020-21. The 'Addition' and 'Reduction' of resources have been further classified under different heads as per the SEEA (CF) framework.

➤ Table 2 is the Asset Accounts on physical flows of Mineral and Energy Resources along with sustainability of resources. This Table is the extension of Table 1 with further segregation of 'Extractions' into Government, Private and other extractions along with the sustainability of the resources taking into factor of current rate of extraction and available resources.

➤ Table 3 is the Subsidiary Asset Accounts linking detailed physical flows in respect of Mineral and Energy Resources with the valuation of resources.

➤ Table 3 A exhibits the details of detected cases of illegal mining of those minerals which have been included in the Asset Accounts.

➤ Table 4 exhibits the analysis of extraction, production and dispatch of resources in terms of raw ores and finished products at mine head.

➤ Table 5 depicts analysis of district mineral foundation money actually received and money realisable as per the actual extractions during the year. As the Department could not provide the DMF realizable, the figure had been worked out from the royalty receivable on production/dispatch of minerals provided by the Department.

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<sup>4</sup> Only those cases were taken into account which were registered during the year 2020-21 and the cases are not subjudice.

➤ Table 6 states the progress in generation and use of renewable energy resources *vis a vis*' the generation of non-renewable/fossil energy.



**Table 1: Basic asset account on Mineral & Energy Resources**

Mineral	Bauxite (000 tonnes)	Iron Ore (000 tonnes)	Lime Stone (000 tonnes)	Tin Ore (tonnes )	Tin Metal (tonne s)	Moul ding sand (ton nes)	Graphit e (tonnes )	Coal (Million tonnes)	Dolomite (000 tonnes)	Quartzit e (000 tonnes)	Quart z (000 tonne s)	Fire Clay (000 tonnes )	China Clay (000 tonnes )	Soap stone (000 tonnes)
Opening stock of environ- mental asset	28827.21	1236564.07	2535854.25	4405.00	154.20	NE	6111.00	17522.23	87205.04	3693.06	1780	360.04	127.56	30
Discoveries of new stock	10720.00	0.00	125270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total addition of stock	10720.00	0.00	125270.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Reduction of stock														
Extractions	752.10	35269.38	39012.59	3.00	0.00	0.00	0.00	157.48	1347.88	0.02	0.01	0.04	0.20	0.00
Total reduction in stock	752.10	35269.38	39012.59	3.00	0.00	0.00	0.00	157.48	1347.88	0.02	0.01	0.04	0.20	0.00
Closing stock of environ- mental assets	38795.11	1201294.69	2622111.66	4402.00	154.20	NA	6111.00	17364.75	85857.16	3693.04	1779.99	360.00	127.36	30.00

*Note: The opening and closing stock are derived figures and their presence beneath the ground or otherwise is only an estimation but the extractions are based on actuals as reported by the State governments.*

**Table 2: Asset Accounts on physical flows of Mineral and Energy Resources alongwith sustainability of resources**

Classification	Sub-classification (may vary from State to State)/UNF C Code	Opening stock of proved reserves	Addition of stock	Reduction in stock				Closing stock of proved reserves	Sustainability of resources in years
				Extracted by /for		Other extraction	Total extraction		
				Govt Sector	Private Sector				
(in tonnes/cum as the case may be)									
<b>Major Minerals</b>	Bauxite (000 tonnes)	28827.21	10720.00	69.23	682.87	0.00	752.10	38795.11	51.58
	Iron Ore (000 tonnes)	1236564.07	0.00	31691.27 <sup>5</sup>	3578.11	0.00	35269.38	1201294.69	34.06
	Lime Stone (000 tonnes)	2535854.25	125270.00	0.00	39012.30	0.29	39012.59	2622111.66	67.21
	Tin Ore (tonnes)	4405.00	0.00	0.00	3.00	0.00	3.00	4402.00	1467.33
	Tin Metal (tonnes)	154.20	0.00	0.00	0.00	0.00	0.00	154.20	NA
	Moulding sand (tonnes)	Not Estimated	0.00	0.00	0.00	0.00	0.00	NE	NE
	Graphite (tonnes)	6111.00	0.00	0.00	0.00	0.00	0.00	6111.00	NA

<sup>5</sup> Includes 1090.02 thousand tonnes of export

<b>Fossil Fuel</b>	Coal (Million tonnes)	17522.23	0.00	157.05	0.43	0.00	157.48	17364.75	110.27
<b>Minor minerals</b>	Dolomite (000 tonnes)	87205.04	0.00	0.00	1346.39	1.49	1347.88	85857.16	63.70
	Quartzite (000 tonnes)	3693.06	0.00	0.00	0.00	0.02	0.02	3693.04	NA
	Quartz-silica sand (000 tonnes)	1780.00	0.00	0.00	0.00	0.01	0.01	1779.99	NA
	Fire Clay (000 tonnes)	360.04	0.00	0.00	0.04	0.00	0.04	360.00	9000.00
	China Clay (000 tonnes)	127.56	0.00	0.00	0.20	0.00	0.20	127.36	636.80
	Soapstone (000 tonnes)	30.00	0.00	0.00	0.00	0.00	0.00	30.00	NA

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

Particulars	Classification/ Sub-classification of minerals (as per the priorities of the State Governments)/ UNFC Code	Valuation of resources (in Crore)								
		Physical unit (in tonnes/ cum) extracted showing Govt, Private and other sector			Revenue receivable (in crore) showing Govt, Private and other sector			Total Revenue receivable	Average Market value (as ascertained from the IBM or State Statistical Department)	
					₹ in crore					
		Government	Private	Others	Government	Private	Others			
Opening stock/ availability of resources at the beginning of the year	Bauxite (000 tonnes)	28827.21			656.74			656.74	7005.36	
	Iron Ore (000 tonnes)	1236564.07			80236.93			80236.93	534916.60	
	Lime Stone (000 tonnes)	2535854.25			20286.83			20286.83	103716.44	
	Tin Ore (tonnes)	4405.00			32.94			32.94	439.14	
	Tin Metal (tonnes)	154.20			1.15			1.15	15.37	
	Moulding sand (tonnes)	Not Estimated			0.00			0.00	0.00	
	Graphite (tonnes)	6111.00			0.07			0.07	0.60	
	Coal (Million tonnes)	17522.23			308846.83			308846.83	2206048.76	
	Dolomite (000 tonnes)	87205.04			784.85			784.85	3139.38	

	Quartzite (000 tonnes)		3693.06		51.70		51.70		166.19	
	Quartz-silica sand (000 tonnes)		1780.00		16.02		16.02		71.20	
	Fire Clay (000 tonnes)		360.04		1.08		1.08		7.20	
	China Clay (000 tonnes)		127.56		0.77		0.77		5.10	
	Soapstone (000 tonnes)		30.00		0.45		0.45		2.25	
<b>Addition during the year</b>										
Growth in Stock										
Discoveries of new stock	Bauxite (000 tonnes)		10720.00							
	Lime Stone (000 tonnes)		125270.00							
<b>Total Addition</b>	Bauxite (000 tonnes)		10720.00							
	Lime Stone (000 tonnes)		125270.00							
<b>Actual reduction during the year</b>										
Extractions as reported by the State Government Department of Geology and Mining, Petroleum,	Bauxite (000 tonnes)	40 to 45%	37.51	253.71	0.00	1.17	5.85	0.00	7.02	66.89
		45 to 50%	0.00	429.17	0.00	0.00	9.90	0.00	9.90	110.17
	Iron Ore (000 tonnes)	Lumps Below 55%	15.40	145.65	0.00	0.31	2.38	0.00	2.69	23.74

*Natural Resource Account of Chhattisgarh for the year 2020-21*

Environment and Forest (on recovery of royalty, cess, fees, NPV etc) #	Lumps 55-58%	8.48	277.61	0.00	0.52	16.90	0.00	17.42	123.87
	Lumps 58-60%	0.00	86.61	0.00	0.00	8.44	0.00	8.44	38.39
	Lumps 60-62%	299.15	138.10	0.00	25.03	12.01	0.00	37.04	244.91
	Lumps 62-65%	2136.53	59.20	0.00	180.44	5.14	0.00	185.58	1231.36
	Lumps 65% and above	8680.40	0.61	0.00	880.50	0.07	0.00	880.57	6122.71
	Fines Below 55%	13.02	704.01	0.00	0.23	13.04	0.00	13.27	84.11
	Fines 55-58%	26.92	556.79	0.00	1.36	50.28	0.00	51.64	197.47
	Fines 58-60%	123.39	609.33	0.00	6.70	34.85	0.00	41.55	283.35
	Fines 60-62%	2998.85	530.07	0.00	159.76	34.41	0.00	194.17	1523.08
	Fines 62-65%	11017.14	0.00	0.00	808.02	0.00	0.00	808.02	5618.74
	Fines 65% and above	6218.76	628.14	0.00	449.01	52.54	0.00	501.55	3815.09
Lime Stone (000 tonnes)	0.00	39012.30	0.00	0.00	312.10	0.00	312.10	1595.60	

	Tin Ore (tonnes)	0.00	3.00	0.00	0.00	0.02	0.00	0.02	0.30
Coal (Million tonnes)	G-3	1.64	0.00	0.00	72.31	0.00	0.00	72.31	516.47
	G-4	0.07	0.00	0.00	0.00	0.00	0.00	0.00	20.76
	G-5	1.92	0.00	0.00	30.11	0.00	0.00	30.11	525.72
	G-6	0.89	0.00	0.00	11.93	0.00	0.00	11.93	215.24
	G-7	2.52	0.00	0.00	120.39	0.00	0.00	120.39	534.27
	G-8	2.10	0.00	0.00	34.98	2.20	0.00	37.18	339.07
	G-9	1.49	0.20	0.00	28.95	3.81	0.00	32.76	213.04
	G-10	2.32	0.05	0.00	27.05	0.90	0.00	27.95	269.00
	G-11	110.63	0.00	0.00	1472.24	0.00	0.00	1472.24	11670.98
	G-12	16.96	0.12	0.00	236.91	2.76	0.00	239.67	1672.15
	G-13	5.47	0.00	0.00	64.34	0.00	0.00	64.34	494.02
	G-14	0.65	0.00	0.00	20.29	0.00	0.00	20.29	53.99
	G-15	8.10	0.00	0.00	61.40	0.00	0.00	61.40	529.84
	G-16	2.08	0.00	0.00	15.77	0.00	0.00	15.77	116.26
	G-12 and 13	0.00	0.06	0.00	0.00	0.96	0.00	0.96	5.88
SCII	0.22	0.00	0.00	6.74	0.00	0.00	6.74	36.62	
	Dolomite (000 tonnes)	0.00	1346.39	0.00	0.00	13.03	0.00	13.03	48.47
	Fire Clay (000 tonnes)	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00
	China Clay (000 tonnes)	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.01

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<i>Revenue related to exploitation of resources out of total revenue included in Statement 14 of State Finance Accounts/ Statement 8 of Union Finance Accounts pertaining to four major heads</i>						4976.36	
Production loss	Bauxite (000 tonnes)	31.72					
	Iron Ore (000 tonnes)	-4.79					
Exports	Iron Ore (000 tonnes)	1090.02					
Reduction due to mining activities not approved by Departments	Iron Ore (000 tonnes)	0.0037		0.00		0.00	0.00
	Lime Stone (000 tonnes)	0.2912		0.00		0.00	0.01
	Coal (Million tonnes)	0.0017		0.03		0.03	0.22
	Dolomite (000 tonnes)	1.4907		0.01		0.01	0.05
	Quartzite (000 tonnes)	0.0180		0.00		0.00	0.00
	Quartz-silica sand (000 tonnes)	0.0150		0.00		0.00	0.00
Total reduction	Bauxite (000 tonnes)	752.10		16.92		16.92	177.06
	Iron Ore (000 tonnes)	35269.38		2741.94		2741.94	19306.82
	Lime Stone (000 tonnes)	39012.59		312.10		312.10	1595.61
	Tin Ore (tonnes)	3.00		0.02		0.02	0.30
	Coal (Million tonnes)	157.48		2214.07		2214.07	17213.31



	Dolomite (000 tonnes)	1347.88	13.04	13.04	48.52
	Quartzite (000 tonnes)	0.02	0.00	0.00	0.00
	Quartz-silica sand (000 tonnes)	0.01	0.00	0.00	0.00
	Fire Clay (000 tonnes)	0.04	0.00	0.00	0.00
	China Clay (000 tonnes)	0.20	0.00	0.00	0.01
Closing stock	Bauxite (000 tonnes)	38795.12	883.83	883.83	9427.68
	Iron Ore (000 tonnes)	1201294.69	77948.41	77948.41	519659.66
	Lime Stone (000 tonnes)	2622111.66	20976.89	20976.89	107244.37
	Tin Ore (tonnes)	4402.00	32.91	32.91	438.84
	Tin Metal (tonnes)	154.20	1.15	1.15	15.37
	Moulding sand (tonnes)	NE	0.00	0.00	0.00
	Graphite (tonnes)	6111.00	0.07	0.07	0.60
	Coal (Million tonnes)	17364.75	306070.91	306070.91	2186220.77
	Dolomite (000 tonnes)	85857.16	772.71	772.71	3090.86
	Quartzite (000 tonnes)	3693.04	51.70	51.70	166.19

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	Quartz-silica sand (000 tonnes)	1779.99	16.02	16.02	71.20
	Fire Clay (000 tonnes)	360.00	1.08	1.08	7.20
	China Clay (000 tonnes)	127.36	0.76	0.76	5.09
	Soapstone (000 tonnes)	30.00	0.45	0.45	2.25



***Major minerals***



***Fossil fuels***



***Minor minerals***

Table 3 A: Table showing information on illegal mining

Name of the district	Authority which detected the offence(Deptt./ Police/ Enforcement / Others)	Detection of illegal mining by the departmental authorities on which Challans issued and offence report registered					
		Name of minerals	No. of cases	Physical quantity/ Volume (in tonne)	Revenue involved (in ₹)	Amount recovered (in ₹)	Provisions under which compounding done
<b>Illegal Mining</b>							
Raigarh	District Offices	Dolomite	1	1.65	148.50	92500.00	
<b>Illegal Storage</b>							
Raigarh	District Offices	Dolomite	7	673.299	60596.91	841048.00	
<b>Illegal Transportation</b>							
Balodabazar -Bhatapara	District Offices	Coal	2	67.79	11996.12	127282.00	
Bastar	District Offices	Iron Ore	1	3.7	2400.82	29677.00	
Bilaspur	District Offices	Coal	21	562.505	99540.88	3587462.00	
	District Offices	Dolomite	15	438.9	39501.00	434860.00	
Durg	District Offices	Dolomite	1	25.00	2250.00	34000.00	
	District Offices	Limestone	18	291.2	23296.00	467332.00	
Janjgir-Champa	District Offices	Dolomite	7	93.25	8392.50	150200.00	
	District Offices	Quartz	1	6.00	540.00	9320.00	
Korba	District Offices	Coal	8	115.66	20467.19	418790.00	
Korea	District Offices	Coal	4	24.00	4247.04	171752.00	
Mungeli	District Offices	Coal	9	229.02	40527.38	814132.00	
Raigarh	District Offices	Coal	16	247.34	43769.29	523569.00	

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	District Offices	Dolomite	27	213.84	19245.60	571176.00	
	District Offices	Quartz	2	9.00	810.00	16800.00	
	District Offices	Quartzite	2	18.00	2520.00	51500.00	
<b>Raipur</b>	District Offices	Coal	1	18.9	3344.54	58207.00	
<b>Rajnandgaon</b>	District Offices	Coal	1	19.43	3438.33	69301.00	
	District Offices	Dolomite	2	44.8	4032.00	60202.00	
<b>Surajpur</b>	District Offices	Coal	4	56.57	10010.63	2024968.00	
<b>Surguja</b>	District Offices	Coal	2	407.86	72174.91	219125.00	
<b>Total</b>			<b>152</b>	<b>2892.765</b>	<b>473249.64</b>	<b>10773203.00</b>	

**Table 4: Tables showing analysis of extraction, production and dispatch of resources**

Name of resource (s) with detailed grades	Name of the Minerals with grades	Opening stock at the beginning of the year (tonnes)		Extractions during the year	Productions during the year	Production loss/variatioins between extraction and production		Dispatch during the year	Closing stock at the end of the year		
		Raw/ ores	Finished products			In volume	In per cent		Raw/ ores	Finished products	
		Physical units					Physical units				
Bauxite (tonnes)	40 to 45%	0.00	47235.49	752103.85	291216.22	31722.63	4.22%	325655.90	0.00	12685.24	
	45 to 50%		0.00		429165.00			411372.09		18089.26	
	Refractory		1255.00		0.00			0.00		1255.00	
	Chemical		1261.00		0.00			0.00		1261.00	
Iron Ore (tonnes)	Lumps Below 55%	2320853.08	0.00	35269383.18	161054.71	-4787.24	-0.01%	121720.11	1621567.78	0.00	
	Lumps 55-58%		0.00		286092.26			268175.34		0.00	
	Lumps 58-60%		0.00		86607.85			126884.03		0.00	
	Lumps 60-62%		0.00		437253.82			440877.58		0.00	
	Lumps 62-65%		0.00		2195725.99			2206961.55		0.00	
	Lumps 65% and above		0.00		8681004.84			8323355.50		0.00	
	Fines Below		0.00		717032.58			753747.99		0.00	

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	55%								
	Fines 55-58%		0.00		583715.64			1017556.52	0.00
	Fines 58-60%		0.00		732726.64			716265.86	0.00
	Fines 60-62%		0.00		3528918.33			2999241.18	0.00
	Fines 62-65%		0.00		11017136.36			10562350.36	0.00
	Fines 65% and above		0.00		6846901.40			6000891.69	0.00

Note: Out of 14 minerals covered, Bauxite and Iron ore involved mine head processing.

**Table 5- Tables showing analysis of District Mineral Foundation (DMF)**

Name of Mine/Mineral/ District	Volume of minerals on which DMF was realisable	Rate at which DMF realisable	Total DMF realisable	Total DMF realised	Variations, if any	
					₹ in crore	
Bauxite (000 tonnes)	720.38	30%	5.08	3.83	1.25	24.61
Iron Ore (000 tonnes)	35274.17	30%	822.58	572.43	250.15	30.41
Lime Stone (Major) (000 tonnes)	39012.30	30%	93.63	101.75	-8.12	-8.67
Tin Ore (tonnes)	3.00	30%	0.01	0.00	0.01	100
Coal (Million tonnes)	157.48	30%	664.21	673.36	-9.15	-1.38
Dolomite (000 tonnes)	1346.39	30%	3.91	2.84	1.07	27.37
Quartz-silica sand (000 tonnes)	0.00	30%	0.00	0.18	-0.18	
Fire Clay (000 tonnes)	0.04	30%	0.00	0.00	0.00	
China Clay (000 tonnes)	0.20	30%	0.00	0.00	0.00	
<b>Total</b>			<b>1589.42</b>	<b>1354.39</b>	<b>235.03</b>	

**Tables showing analysis of NMET**

Name of Mine/Mineral/ District	Volume of minerals on which NMET was realisable	Rate at which NMET realisable	Total NMET realisable	Total NMET realised	Variations, if any	In percentage
Bauxite (000 tonnes)	720.38	2%	0.34	0.24	0.10	29.41
Iron Ore (000 tonnes)	35274.17	2%	54.84	38.28	16.56	30.20
Lime Stone (Major) (000 tonnes)	39012.30	2%	6.24	6.60	-0.36	-5.77
Coal (Million tonnes)	157.49	2%	44.28	47.39	-3.11	-7.02
<b>Total</b>			<b>105.70</b>	<b>92.51</b>	<b>13.19</b>	

**Table 6 Progress in generation and use of renewable energy resources**

Sector	Energy requirement by sector during the year (in MWH)	Total energy requirement in the State (in MWH)	Generation/additional generation of energy during the year ( in MWH)						Percentage share of non-renewable and renewable energy resources vis-à-vis total requirement		Energy surplus or deficit including total MWH/ GWH of deficit/ surplus power
			Non-renewable (N/R) energy/Fossil fuel sources	Renewable energy					Non Renewable energy	Renewable energy	
				Solar	Wind	Hydel	Others including Biomass, Waste to Energy, Geothermal etc	Total			
Industries	9289529.84	33784130.62	109553840	375660	0.00	212100	1352140	1939900	324.28	5.74	77709609.38
Domestic	6447419.94										
Agriculture	5902811.39										
Commercial	1419933.23										
Traction and Railways	908452.04										
Others	560844.18										
Captive Consumption	9255140.00										
<b>Total</b>	<b>33784130.62</b>	<b>33784130.62</b>	<b>109553840</b>	<b>375660</b>	<b>0.00</b>	<b>212100</b>	<b>1352140</b>	<b>1939900</b>	<b>324.28</b>	<b>5.74</b>	<b>77709609.38</b>

Note: Chhattisgarh is a energy surplus state.



### 5.2.3 Findings of the study

Preparation of Asset Accounts involves compilation of extraction/production of minerals mine wise, application of prevailing royalty rates and sale price to ascertain the royalty receivables and market value of each mineral, cases of illegal mining or extraction not authorized by Department, DMF/NMET payable etc. We noticed, complete automation of the entire mining activities through **khanijonline.cgstate.gov.in** is yet to be achieved, absence of reconciling departmental figures with Indian Bureau of Mines (IBM)/Coal Controller (CC) figures to ensure that the Departmental data is true and complete, determination of market rates purely on the basis of royalty rates rather than some other methodology which take into account of market forces, variation between royalty/DMF/NMET receivables against actual realised as per the dispatched quantity of minerals, efficacy of deterrence/enforcement measures to curb illegal mining activities and safeguard State's exchequer etc. These are mentioned below:

#### 5.2.3.1 Automation of mining activities

An online system **khanijonline.cgstate.gov.in** is functioning in the State for generation of permits and transit pass, payment of all statutory fees/royalties, verification at the check posts etc. had been made mandatory from January 2017 for major minerals. However, all the lessees could not be onboarded owing to poor connectivity resulting in manual system of issuance of permit/transit pass/payment is being operated parallel with the online system. This partially defeated the purpose of the online mechanism.

Minor minerals had been kept out of the purview of compulsorily registering in the **Khanijonline** system. The Department needs to prepare a road map detailing the timeline for inclusion of all the mineral lease holder in Khanijonline system, so that the manual process of issue of permits, transit pass, verification at checkpost and usage can be done away with and effective checks on mining activities of minor minerals can be ensured.

#### 5.2.3.2 Reconciliation of Indian Bureau of Mines/Coal Controller figures with the compiled figures

In order to have greater assurance of compilation of Asset Accounts, the member of NRA Cell cross verified the data compiled from the monthly returns furnished by the lease holder to DGM Office with the Indian Bureau of Mines data. The IBM data comprises the production (grades) and dispatch of major minerals except Coal<sup>6</sup> mine wise from the year

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<sup>6</sup> Coal Controller, Ministry of Coal is the agency for regulating the mining activities of Coal

2015-16 to 2020-21. Information on ROM (Run of Mine) production, wherever there is distinction between raw ore and finished product of any minerals, had not been provided in the IBM data. Similarly, for reconciliation of production of coal, Coal Directory for the year 2020-21 released by Coal Controller (CC), Ministry of Coal, Government of India was referred.

The comparison for the production of Bauxite and Iron ore will be not worthwhile as the ROM data has been considered instead of graded (finished) product for the year 2015-16 to 2019-20 for arriving the Opening Reserve for the year 2020-21. On reconciliation of data for the year 2015-16 to 2019-20, it was noticed that details of 39 mines were either not available with the Department or the requisite monthly returns had not been furnished by the lease holder to the State Department. Difference in production of Coal as stated in Coal Directory with the compiled production for the year between 2015-16 and 2019-20 stood around 18 million tonnes. For the year 2020-21 for which this Asset Accounts relates, analysis of IBM /CC data for four major minerals and one fossil fuel shows variation in production and dispatch figures in respect of 57 mines as mentioned below:

**Table 5.1: Variation of Production/Dispatch figure between IBM/CC and departmental figure**

Minerals	Production (in tonnes)			Despatch (in tonnes)		
	IBM/CC	Compiled	Variation	IBM/CC	Compiled	Variation
Coal	143410000	142479449.20	-930550.80	131253000	130167979.65	-1085020.35
Bauxite	715296	720381.22	+5085.22	735712	737028.02	1315.99
Iron ore	26048738.73	24333825.99	-1714912.74	25193062.70	23279236.59	-1913826.11
Limestone	17064832.30	15698805.25	-1366027.05	16481827.64	15249951.01	-1231876.63

*(Figures includes those mines in which there is difference between production and dispatch figure of IBM/Coal Controller and departmental)*

Thus, it could be seen that except Bauxite, the variation between IBM/CC and compiled figures for Coal, Iron Ore-Lumps, Iron Ore-Fines, Tin and Limestone was 0.59 per cent, 6.61 per cent, 3.61 per cent, 82.18 per cent and 3.38 per cent respectively.

Further analysis shows that out of the 57 mines in which there is variation between production and dispatch figure of IBM/Coal Controller and compiled figure was observed, in 11 mines the monthly returns were not furnished to the Department and thus could not be included in the Asset Accounts whereas in 24 mines<sup>7</sup> the production figure of IBM and figure of compiled data shows the considerable<sup>8</sup> differences.

### 5.2.3.3 Market value of minor minerals

Each District Offices releases the market value of minerals from time to time. Analysis of the market value of the minor minerals, it was noticed that the market value ranged between two to five times of royalty rates of that mineral. Since, the prevailing royalty rates of minor minerals was effective from 24 March 2018, the market value of most of the minor minerals remains constant for 2018-19, 2019-20 and 2020-21. This clearly indicates that market value of the minor minerals is not determined as per market factors but on the basis of multiples of royalty rate which largely remained constant for last three years.

Market value of minerals like China Clay, Fire Clay and Soapstone have not been declared in any of the districts, though their reserves are available in the State. The Sale Value of these minerals should be immediately issued by the State Government in the interest of revenue of the State. Further, Rule 71 of Chhattisgarh Minor Minerals Rules, 2015 provides for realisation of penalty for unauthorized excavation and transportation of minor minerals. Market Value and royalty of the minor minerals so confiscated determines the quantum of levy of penalty. Absence of any Sale Price will lead to arbitrary fixation of market value of minerals at the time of levying penalty<sup>9</sup> for illegal mining/transportation of minerals (During the year 2020-21 no cases of illegal mining/transportation of these minerals were detected by Department).

### 5.2.3.4 Assessment of reserves of minor minerals

There is absence of methodology for assessment of minor mineral resources of the State due to which all the minor minerals could not be included in the Asset Accounts for 2020-21. Opening balance of minor minerals except for those reclassified from major minerals after February 2015 was required to be determined for their inclusion in the Asset Accounts of future years in phased manner.

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Minerals	IBM/CC figure higher than Compiled figure		IBM/CC figure lower than Compiled figure		Difference	
	Mines	Variation in production	Mines	Variation in production	Mines	Variation in production
Coal	05	-118550.80	-	-	05	-118550.80
Bauxite	02	-415.00	02	5500.15	04	5085.15
Iron ore	04	-2096897.27	01	382171.00	05	-1714726.27
Limestone	05	-1262459.45	05	151991.71	10	-1110467.74

8 Variation in IBM/CC and Compiled figure having value greater than one tonne

Since IBM still publishes the reserves of the minor minerals which were earlier classified under major minerals prior to February 2015, the NRA Cell could depict the available reserves of these minerals in Asset Accounts. For other minor minerals, Mineral Resources Department had to take a stand for determining the available reserves so that these minerals can be included in the Asset Accounts from the year 2021-22 onwards.

To materialise the inclusion of all other remaining minor minerals, which were not included in the Asset Accounts for the year 2020-21, the NRA Cell has suggested a way out in which all the quarry lease holder who had been licensed for quarrying activities or whose lease had been extended after 2015<sup>10</sup>, will provide the copy of quarry plans mentioning the quantity permitted to extract during lease period. Consequence to amendment in Chhattisgarh Minor Mineral Rules, 2015 different scenarios can emerge. Different scenarios and the treatment in Asset Accounts are mentioned below:

**Table 5.2: Methodology for working out the Opening Stock of minor minerals**

Status of the Quarry lease	Quarry sites	Requirements as per the new amendments	Treatment in Asset Accounts
Quarry lease which exist prior to 2015 and whose lease period is automatically extended as per amendment in the Rule	Existing Quarry Site	The lease holder had to provide the Quarry Plan for remaining period	The quantity mentioned in such fresh Quarry lease deed will be construed as 'New additions'
New Quarry lease in the existing site or renewal of the existing lease	Existing Quarry Site	Fresh Quarry Plan had to be submitted	The quantity mentioned in such fresh Quarry lease deed will be construed as 'New additions'
New Quarry lease in the new Quarry site, where the mining operations has not been carried out previously	New Quarry Site	Fresh Quarry Plan had to be submitted	The quantity mentioned in such fresh Quarry lease deed will be construed as 'New discoveries'

<sup>9</sup> Rules provide for levy of penalty equivalent to market value of mineral so extracted or transported and such fine which may extend to double the market value of mineral so extracted or transported, but in no case it shall be less than five thousand rupees or ten times of royalty of minerals so extracted whichever is higher.

<sup>10</sup> Chhattisgarh Minor Mineral Rules, 1996 had been amended in 2015 where each quarry lease holder had to mandatorily provide a Copy of the Quarry Plan prepared by the Recognised Qualified Person (RQP) and get approved from the Department before commencing mining operations.

The quantity mentioned in the Quarry Plan will be considered as the available resources of that quarry site. The available resources will be adjusted with the actual extractions to derive the Closing Stock at the year end. The whole process mentioned above will be repeated for each year till 2020-21 to arrive at the opening stock of the reserves for 2021-22.

The formal acceptance of the aforementioned methodology is still awaited from the Department.

#### **5.2.3.5 Shortfall in collection of District Mineral Fund (DMF) and National Mineral Exploration Trust (NMET)**

Rule 2 of Mines and Minerals (Contribution to District Mineral Foundation) Rules 2015, provides that every holder of a mining lease or a prospecting cum mining lease shall in addition to the royalty, pay to the DMF amount at the rate of 10<sup>18</sup> per cent/30<sup>19</sup> per cent (the rates had been unified at the rate of 30 per cent after 25.06.2021) of the royalty paid. The fund should be utilised for the interest and benefit of persons, and areas affected by mining related operations in such manner as may be prescribed by the State Government. It was observed that as against realisable DMF amount of ₹ 1589.42 crore, the Department realized ₹1354.39 crore resulting in shortfall in collection of DMF of ₹ 235.03 crore.

Similarly, Section 9C of MMDR Act, 1957 prescribes for realisation of NMET at the rate of two per cent of the royalty amount from the holder of a mining lease or prospecting cum mining lease of major minerals. These amount should be used for the purpose of regional and detail exploration. It was observed as against realisable NMET amount of ₹ 105.70 crore the Department realized ₹ 92.51 crore resulting in shortfall of ₹13.19 crore.

Since the monetization of revenue receivable and market value is based upon the actual extraction of the reserves and the amount of DMF and NMET is realised at the time of advance payment of royalty, it is inevitable that there will be variation between DMF/NMET realisable and amount actually realised.

#### **5.2.3.6 Preventive/Enforcement measures for curbing illegal mining**

During the year 2020-21, 7,138<sup>20</sup> cases of illegal mining, transportation and storage<sup>21</sup> were detected by the DMOs/DDMAs and Central Flying Squad.

Harnessing the technological advancement in tracking the mining activities

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<sup>11</sup> 0.6 per cent of London Metal Exchange (LME) price- ₹ 159507 per tonne on the Alumina content (0.006 x ₹ 159507x 0.529 (alumina content) x 0.45 (Average of available grades)

through Geo-tagging and Geo-fencing of mines will further enhance the capability in curbing the illegal activities and will prevent revenue leakages. As intimated by the Department, Geo-tagging and Geo-fencing of the mines is still to be undertaken.

Since, the State is endowed with huge natural resources, the State Government should take steps to geo-tag and geo-fence each of the mines in the interest of safeguarding revenue.

### **5.2.3.7 Royalty realizable and royalty realised**

One of the necessity of the preparation of Asset Accounts is to exhibit the availability of the reserves and to link the revenue leakage by comparing the revenue realizable on the quantum of production for each reserves/minerals *vis a vis*' the revenue actually realized. However, there is no broader classification of mining receipts from each of the reserves/minerals as per the present classification of Head wise Accounts.

Also, the royalty and other dues such as DMF/NMET, Environment and Infrastructure Cess, Tax Collection at Source (TCS) are realized in advance at the time of issue of Pit pass from the lease holder. These advance royalties are adjusted against the dispatch of the minerals from the lease/mined area.

Thus, due to limitation of the above factor an one on one analysis of royalty realizable and royalty realized is not possible at present and the figures of royalty realizable for each minerals and the consolidated receipts under the Major Head 0853-Mining and Non-metallurgical receipts as per the Finance Accounts is for indicative purpose.

For closer monitoring of the mineral wise revenue receivable, separate Detail and Sub-detail Heads may be opened in the State Budget.

### **5.2.4 Recommendations**

Measures should be taken to onboard all the mining and quarry lease holders in **khanijonline.cgstate.gov.in** system to have effective control on mining/quarry activities in the State. The State Government may prepare a roadmap for inclusion of all the mining lease holders in *Khanij Online* System so that the manual process can be done away with and a robust

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<sup>12</sup>  $0.529$  (alumina content)  $\times$  ₹  $159507$   $\times$   $6.4$  per cent (Conversion factor as per GoI notification dated 20.09.2019)  $\times$   $0.45$  (Average of all grades)

<sup>13</sup> Rate of royalty – 15% of the average of all the Average Sales Price of all grades of Lumps and Fines (₹  $4325.83$ ) published in IBM yearly book

<sup>14</sup> Average of all the Average Sales Price of all grades of Lumps and Fines as published in IBM yearly book- ₹  $4325.83$

<sup>15</sup> Average Sale Price of Cement grade as published in IBM Yearly Book

<sup>16</sup>  $7.5$  per cent of London Metal Exchange (LME) price- ₹  $1993815$  per tonne on the Tin content ( $7.5$  per cent  $\times$  ₹  $1993815$   $\times$   $0.500$  (Tin content))

<sup>17</sup> LME price- ₹  $1993815$   $\times$   $0.50$  (Tin content)

<sup>18</sup> Prospecting license –mining license granted on or after 12 January 2015.

<sup>19</sup> Prospecting license –mining license granted prior to 12 January 2015.

mechanism for effective checks on mineral activities can be ensured.

- A system of regular issue of market value of all the minerals by the District Offices may be ensured. Further, the market rates should be determined taking into account of the market trends and other factors affecting the price.
- Methodology for ascertaining the availability of minor minerals(except Dolomite) reserves in the State should be taken up and communicated to State NRA Cell so that all the available minerals can be included in the Asset Accounts.
- Separate Detail and Sub-detail heads may be opened in the State budget to capture Mineral wise information on royalties, penalties, consultancy charges, application fees, dead rent, surface rent etc.
- Since, the receipts from mining activities constitute a substantial portion of the State Government's revenue, it is recommended that the State Government may undertake geo-tagging and geo-fencing of all mine area within a fixed time frame to ensure effective monitoring of mining activities and also maximizing the revenue.
- As per Rule 45 of Mineral Conservation and Development Rules (MCDR), same set of monthly/annual report should be submitted to IBM and State Government. Wrong reporting/delayed reporting attracts penalty of ₹ 10,000 per day. Regular submission of monthly/annual reports by lessee to the State Government along with the IBM needs to be ensured for mitigating the gaps between both sets of data.
- For minor minerals, offline/online reporting in the lines of format developed by IBM for major minerals/ formats developed by Odisha could be adopted for better monitoring and control.

<sup>20</sup> Includes 152 cases of those minerals which have been included in the Asset Account and remaining 6,986 cases of those minerals which have not been included in the Asset Account of 2020-21

<sup>21</sup> Only those cases were taken into account which were registered during the year 2020-21 and the cases are not adjudicated.





## CHAPTER 6: FUTURE CONTINUITY PLAN

### 6.1 Guidelines/SoPs issued by GASAB

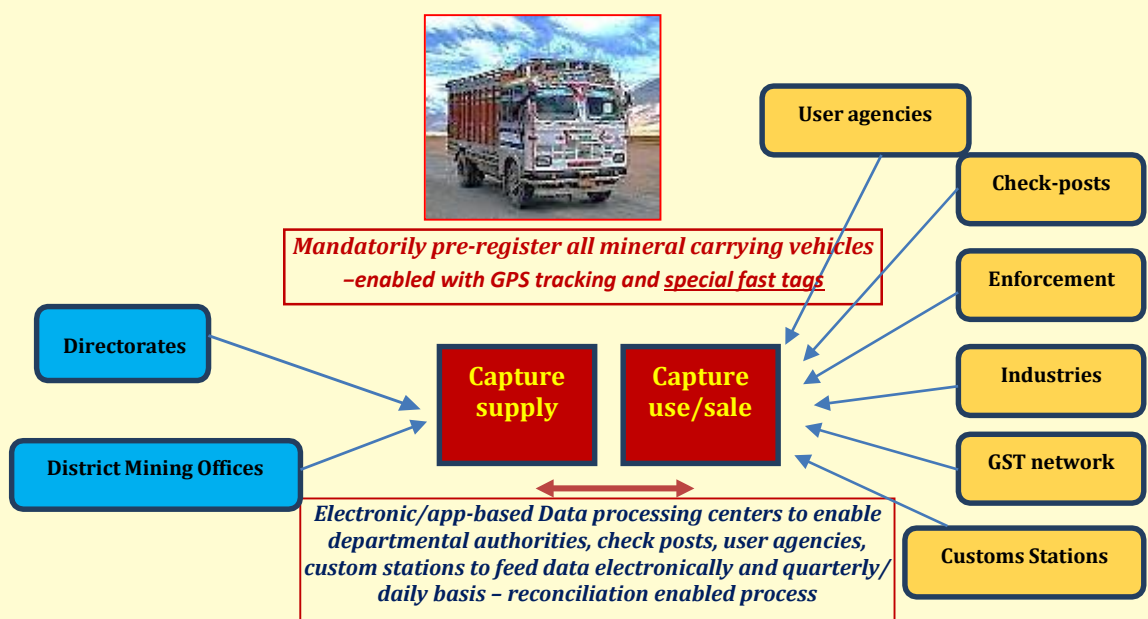
Asset accounting process for Mineral and Energy Resources is to be a continuous process now onwards. Hence, there is a need for instituting systems and procedures for regularly capturing the data on physical flows of resources, while other inputs like addition in stock, average revenues, market prices, extractions not approved by the DGM 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 States. 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



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 minerals and energy resources of the State and optimization of revenue yields therefrom**

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 and 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.



**Annexure-1**

**List and Contact details of State NRA Cell**

Sl. No.	Department/ Office address	Nominee / post	e-mail id
1.	Finance Department, Govt. of Chhattisgarh	Smt. Sheetal Shashwat Verma, Special Secretary, Finance Department, Government of Chhattisgarh	ss.fin-cg@gov.in
2.	Economic and Statistical department	Shri N. Buliwal, Jt. Director, Directorate of Economics and Statistics	nbuliwal.ddp@gmail.com
3.	Directorate, Geology and Mining	Shri C. L. Bada, Statistician, O/o Directorate, Geology and Mining	baracl.dgm@gmail.com
4.	Revenue and Disaster Management department (Land Record)	Smt. Madhu Harsh, Dy. Commissioner, O/o the Commissioner, Land Records	--
5.	Forest	Not received	--
6.	Water Resources department	Shri Virendra Kumar Tiwari, Supdt Engineer (Design), O/o The Engineer-in-Chief, WRD	--
7.	Housing and Environment	Shri Anup Behre, SE (CG Pollution Control Board)	behreanoopkumar@gmail.com
8.	O/o of the Pr. Accountant General (Audit), Chhattisgarh	Sr. DAG (AMG-II)	waliag@cag.gov.in
9.		Shri Nishant Yadvesh, Sr. Audit Officer	yadvesnk.chs.sca@cag.gov.in
10.		Shri Indraneel Prakash, Assistant Audit Officer	indraneelp.chs.au@cag.gov.in
11.		Sr. DAG (Accounts)	dahariyam@cag.gov.in
12.	O/o of the Pr. Accountant General (A & E), Chhattisgarh	Shri H. R. Srinivas, Sr. Accounts Officer	hassanshrinivas65@gmail.com
13.		Shri Pankaj Kumar Tiwari, Assistant Accounts Officer	pankajkumart.chs.ae@cag.gov.in
14.		Shri S P Sunil Kumar, Assistant Accounts Officer	sunilbhilai@rediffmail.com

**Annexure-2**

**Minutes of the meeting held on 25 October 2021**

A meeting was held on 25 October 2021 under the Chairpersonship of Shri M S Dahariya, Sr. Deputy Accountant General (Accounts) (Sr. DAG) in the conference room of AG (A&E) to discuss and ascertain the progress/status in providing the data related to Major and Minor Minerals for preparation of Asset Account on NRA – 2020-21.

At the outset Sr. DAG (Accounts) welcomed the delegates and highlighted the purpose of the meeting and stated that a virtual meeting will be held on 27.10.2021 by RTI, Prayagraj where the progress/status in collection of data related to Major and Minor Minerals for preparation of Asset Account on NRA – 2020-21 will be discussed. A power point presentation was given and issue of providing the required data (Opening balance of Stock as on 01.04.2015 and Addition & Reduction in Stock from 2015-16 to 2020-21 with respect to Major and Minor Minerals both in physical and monetary value) by Department of Geology and Mining for preparation of Asset Account on Minerals and Energy Resources- 2020-21 (as envisaged in short term goal) within the stipulated sub-goals set by GASAB was highlighted. The three sub- goals set by GASAB are:

Sub-goal 1: Target-November 2021 - Collection of information/data on additions and extractions, Monetise extraction

Sub-goal 2: Target of completion by January 2022 - Working out the opening and resultant closing balance

Sub-goal 3: Target of completion by March 2022 - Finalisation of Asset Accounts and validations

It was assured by the Mining Department; Government of Chhattisgarh that data/information related to **Major minerals** will be provided by Mid November 2021. Regarding Coal the information will be collected from SECL and other private companies. The data/information related to **Minor minerals** is not readily available and there does not exist a proper system from where this data can be captured. But it was intimated that data/information will be collected from the Districts.

The delegation of Department of Geology and Mining met Accountant General after the meeting and it was proposed by the department that an official tour will be made to State of Rajasthan to study the procedure adopted for collection/capture of data related to **Minor minerals**. Accountant General has promised all assistance to the Department in this regard.

List of Officer who attended the meeting

Name of the Office	Name of the Officer	Designation
<b>O/o of the Principal Accountant General (A &amp; E),</b>	Shri M S Dahariya	Sr. DAG (Accounts)
	Shri H. R. Srinivas	Sr. Accounts Officer
	Ms. Sunita Kurup	Assistant Accounts Officer

<b>Chhattisgarh</b>	Shri Pankaj Kumar Tiwari	Assistant Accounts Officer
	Shri S P Sunil Kumar	Assistant Accounts Officer
<b>O/o of the Principal Accountant General (Audit), Chhattisgarh</b>	Shri Nishant Yadvesh	Sr. Audit Officer, Coord- II
	Shri Rishikesh Kumar	Assistant Audit Officer, Coord- II
<b>Directorate, Geology and Mining, Govt. of Chhattisgarh</b>	Ms Prachi Awasthi	Dy. Director
	Dr. Sanjay Khare	Dy. Director
	Shri U.K Qureshi	Dy. Director
	Shri B M Akhtar	Dy. Director
	Shri C. L. Bada	Statistician

