



सत्यमेव जयते

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



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

June 2023



## TABLE OF CONTENTS

Particulars	Reference to para	Page
<b>Table of Content</b>		i-ii
<b>Message from The Accountant General</b>		iii-iv
<b>Executive Summary</b>		v-vi
<b>Disclaimer</b>		vii
<b>CHAPTER-1 INTRODUCTORY</b>		
<b>Natural Resource Accounting - the Concept</b>	1.1	1
<b>CHAPTER-2 IMPLEMENTATION OF NRA IN INDIA – GASAB’S ENDEAVOUR</b>		
<b>About (GASAB) Government Accounting Standards Advisory Board</b>	2.1	5
<b>Concept Paper on NRA in India - released by GASAB</b>	2.2	5
<b>Goal 1 of the action plan envisaged in the Concept Paper</b>	2.3	6
<b>Why - Mineral and Energy Resources</b>	2.4	7
<b>Advantages of consolidating the Asset Accounts on Mineral &amp; Energy Resources</b>	2.5	8
<b>Evolution of the final templates</b>	2.6	10
<b>Additionalities - monitoring the targets committed to COP - 26</b>	2.7	11
<b>Consultative Process</b>	2.8	11
<b>Training and capacity building</b>	2.9	12
<b>Onboarding and handholding the States</b>	2.10	12
<b>CHAPTER -3 INITIATIVES IN THE STATE</b>		
<b>Formation of State NRA Cell</b>	3.1	13
<b>Follow up, trainings and capacity building</b>	3.2	13
<b>Innovations and good practices</b>	3.3	13
<b>CHAPTER-4 MINERAL PROFILE OF STATE AND SHORTLISTING OF RESOURCES</b>		
<b>Mineral profile of Uttar Pradesh</b>	4.1	17
<b>Strategic importance of minerals for the State</b>	4.2	19

<b>Mining process followed in the State</b>	4.3	21
<b>Contribution of mineral resources in the revenues of the State</b>	4.4	23
<b>Short-listing of resources for this study</b>	4.5	26
<b>CHAPTER- 5 ASSET ACCOUNT OF MINERAL AND ENERGY RESOURCES OF Uttar Pradesh</b>		
<b>Scope</b>	5.1.1	27
<b>Objectives</b>	5.1.2	27
<b>Methodology of data collection and compilation of physical flows</b>	5.1.3	28
<b>Methodology of monetization of physical flows</b>	5.1.4	29
<b>Dual stage validation and limited verification of data</b>	5.1.5	29
<b>Challenges and limitations</b>	5.1.6	30
<b>Asset Accounts on Mineral &amp; Energy Resources</b>	5.2	30
<b>Highlights</b>	5.2.1	31
<b>Asset Account - the tables</b>	5.2.2	32
<b>Findings of the study</b>	5.2.3	41
<b>Recommendations</b>	5.2.4	41
<b>CHAPTER-6 FUTURE CONTINUITY PLAN</b>		
<b>Guidelines/SoPs issued by GASAB</b>	6.1	43
<b>Need for mapping the supply and use/sale/export.</b>	6.2	43
<b>Quarterly Reporting Framework.</b>	6.3	44
<b>Recommendations for improving management of mineral and energy resources of the State and optimization of revenue yields therefrom</b>	6.4	44
<b>Annexures - I</b>		47
<b>Annexures - II</b>		49

## **MESSAGE FROM THE ACCOUNTANTS GENERAL**

We are happy to assist the State Government in presenting the report on the Asset Accounts of Mineral and Energy Resources of Uttar Pradesh for 2020-21. The Accountants General of Uttar Pradesh, under the aegis of C&AG of India and GASAB, have initiated the process of preparation of Asset Accounts of Natural Resources in the state of Uttar Pradesh as suggested under the latest Internationally accepted framework System of Economic and Environment Accounting- Central Framework (SEEA-CF).

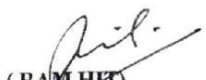
Natural Resources in both form renewable and non - renewable, along with eco system services, are the real wealth of the nation. They contribute towards income generation and reduction of poverty. Abundance of natural resources in the country stimulates the development of the nation, as the industrial growth of a nation largely depends on the development and management of its natural resources. The Preparation of Asset Accounts of Natural Resources of the state of Uttar Pradesh was therefore the need of the hour.


The Asset Account tracks the value of Assets over time. It also addresses the depletion and degradation of natural resources. The Asset Account provides database on the taxable reserves of Natural Resources in the State of Uttar Pradesh. It provides an in-depth view of the Stock of Physical Reserves of the Mineral and Energy Resources of the State of Uttar Pradesh. It is expected that the Asset Account will serve as a valuable tool in the hands of the Government to monitor the use of the Natural Resources and gains from its economic use in a sustainable manner.

Despite certain constraints in such a vast state of Uttar Pradesh first Natural Resources Accounts, one of its kind in the State, has been

prepared through the joint sincere efforts of the two offices of PAG(A&E), U.P. Prayagraj and AG(Audit-II), U.P. Lucknow and respective departments of the State Government. A NRA cell comprising of members from the Department concerned and PAG/AG offices has also been formed for this purpose.

We are confident that in years to come the Asset Accounting will be a robust mechanism in place and also a major stimulating force in forming favorable economic policies for development of the State as well as the Nation as a whole.

  
(RAM HIT)  
PRINCIPAL ACCOUNTANT GENERAL  
(ACCOUNTS AND ENTITLEMENT)- I,  
U.P., PRYAGRAJ

  
(TANYA SINGH)  
ACCOUNTANT GENERAL,(AUDIT-II)  
U.P., LUCKNOW

## **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 & Non-Renewable Energy Resources. Simultaneous to the release of the Concept Paper, pilot studies were initiated (August 2020) in five States, of which, three States namely Goa, Meghalaya and Rajasthan have successfully completed the studies, preparing the model Asset Account on Mineral and Non-renewable Energy Resources in the States.

The final formats of Asset Accounts on Mineral & Energy Resources were released in the shape of a book in October 2021 for implementation in the States. First draft Asset Accounts was targeted for the year 2020-21 to be completed by March 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 bird's 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 Uttar Pradesh commenced with joint efforts of the Accountants General Offices and the State Government. This Report presents the first draft of the Asset Accounts on Mineral and Energy Resources in the State of Uttar Pradesh.

Effective implementation of a system of generating Asset Accounts on Mineral and Energy Resources in the States 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.***

To achieve the above advantages a state NRA cell has been formed which comprises members from the Offices of the Principal Accountant General A&E-I, Accountant General A&E-II, Principal Accountant General (Audit) - I&II and Directorate of Geology and Mining.

The state government has taken initiative for implementing this project by nominating a member for NRA cell and providing various information through their District Mines Officer’s. However, more cooperation is needed from the state government in this regard.

As per guidelines/SoPs issued by GASAB, there is a system of dual stage validation by the state government department and limited verification by ASG office. Verification of supporting documents to test check credibility of the data/figures included in the Asset Accounts.

There are six minerals - Silica Sand, Limestone, Coal, Granite, Pyrophyllite and Diaspore have been shortlisted for purpose of compiling the Asset Accounts on Mineral & Energy Resources 2020-21.

Cases of Illegal mining received from all five sample districts through which ₹ 5.20 crore have been recovered against revenue involve ₹ 8.22 crore.



## **Disclaimers**

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 limited 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.

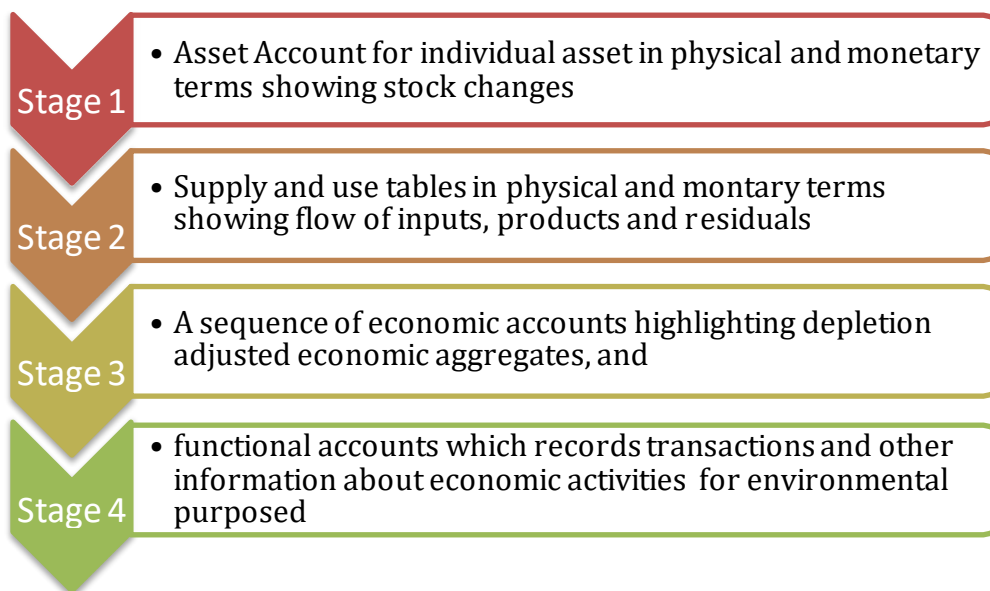
Agenda 21,  
Rio +20, SDGs:  
*Integrate nature  
into decision  
making!!!*

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 issues.



## CHAPTER – 2

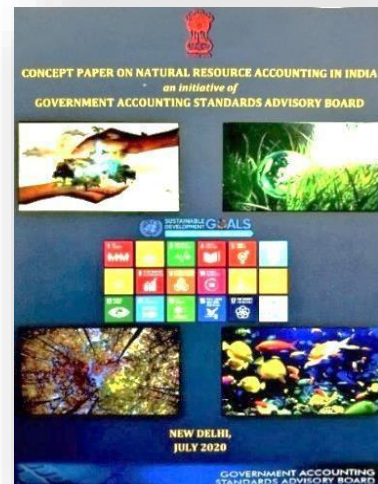
### IMPLEMENTATION OF NRA IN INDIA-GASAB'S ENDEAVOUR

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

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

#### 2.2 Concept Paper on NRA in India – released by GASAB

GASAB has taken the initiative (2019) to develop a framework for implementing NRA on priority as a nationally important project. GASAB came out with a Concept Paper on implementation of NRA in India in July 2020. The Paper, inter-alia, discussed the concept and its inter-relation with the SDGs and Climate Change, international progress on environmental accounting and merger of the concept with economic environmental accounting, progress in other countries. GASAB has suggested a well laid out implementation plan divided into three term goals in consonance with the strategy envisaged by the SEEA – CF.



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

efforts towards helping the causes of environmental accounting in India, climate change, and sustainable development goals.

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
<ol style="list-style-type: none"> <li>1. Preparation of Asset Accounts on Mineral and Energy Resources in States</li> <li>2. Initiation and preparation of disclosure statement on Revenues and expenditure related to natural resources</li> </ol> <p><i>(2019-20 to 2021-22)</i></p>	<ol style="list-style-type: none"> <li>1. Preparation of National Asset Accounts on Mineral and Energy Resources</li> <li>2. Preparation of Asset Accounts in respect of other four resources namely water, land and forestry &amp; wildlife resources in the States</li> <li>3. Preparation of supply and use tables in physical and monetary terms showing flow of natural resource inputs, products and residuals</li> </ol> <p><i>(2022-23 to 2024-25)</i></p>	<ol style="list-style-type: none"> <li>1. Preparation of the economic accounts highlighting depletion adjusted economic aggregates; and</li> <li>2. Preparation of functional accounts recording transactions and other information about economic activities undertaken for environmental purposes.</li> </ol> <p><i>(2025-26 Onwards)</i></p>

### 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:



**SEEA – CF prescribes seven resources**

- Mineral and Energy Resources
- Land and soil Resources
- Timber Resources
- Aquatic Resources
- Other Biological Resources (except timber and aquatic), and Water Resources

5 Major Resources considered – in line with prescriptions of Green National Accounts – A Framework

**Mineral and Energy**

**Water**

**Forestry & Wildlife**

**Land**

**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**



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 the resource availability of each State.

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

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

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

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

**Sustainability of minerals in years** – When analysed with revenues, has the potential to point towards revenue streams for future and will also enable 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.

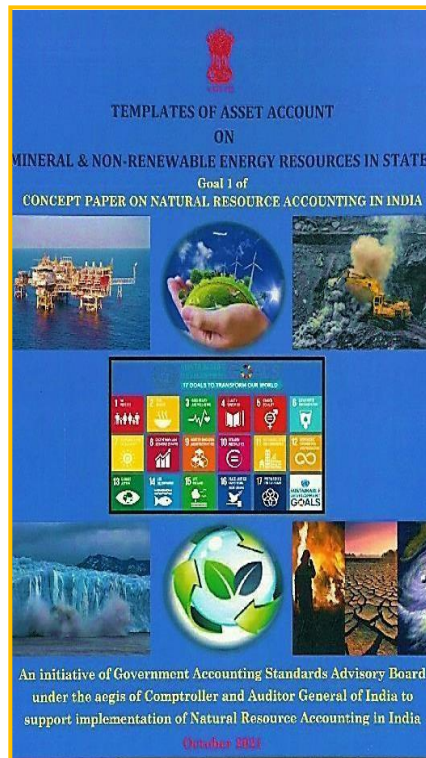
Thus, to sum up, Asset Accounts-once compiled, would bring out State-wise mineral repository along with other inputs like actual stock of resources, usage pattern, their values - aiding in evidence- based policy framing and most importantly sustainability of resources for future generations.

## 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 on Mineral and Energy Resources in States in October 2021.

The formats were constantly updated with inputs and experiences gained through their implementation in the States from October 2021 through March 2022. The final formats included six 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), Collection under District Mineral Foundation (Table 4) and Progress in Generation and use of Energy Resources (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 progress on generation of new and renewable energy have been envisaged as Tables 5.

## **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. Besides, State specific workshops were also held in several States like Gujarat, Jharkhand, Karnataka, Punjab etc States.

## **2.10 Onboarding and handholding the States**

In order to take the States on board as one of the most vital stakeholders in the implementation process, the highest echelons in the States were demi-officially informed (September 2021) by the Deputy CAG & Chairperson, GASAB about the endeavour of GASAB and vision of the project which was followed up with virtual 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 for the State of Uttar Pradesh was constituted with representatives from the Office of the Accountant General (A & E) - I & II, Uttar Pradesh, Office of the Accountant General (Audit) - I & II, Uttar Pradesh as well as officials from various departments of Government of Uttar Pradesh. The list of the representatives of the NRA Cell is provided in *Annexure I*.

**3.2 Follow up, trainings and capacity building**

Sincere and continuous efforts are being made to sensitize State Government to adopt innovation and Good Practices. Positive and decisive outcome on the issue is awaited from the end of the State Government.

**3.3 Innovations and good practices**

The quest to integrate all mining activities by harnessing technology into an end-to end solution for mineral management was the inspiration behind MINE MITRA. It's an innovative & ambitious initiative of the Directorate of Geology and Mining in the area of E-Governance.

To provide common gateway or a unified platform for all citizen-centric mining services, marking a step forward to a cleaner and greener mining ecosystem. The attempt to integrate all mining processes into an end-to-end solution for mineral management.

This innovative, technology-driven initiative came into existence after detailed discussions and brainstorming sessions with all key stakeholders to achieve the below listed objectives.

- Create a user-friendly, accessible and responsive platform for the common-man, Lessee and Stockiest.
- Providing accessibility and affordability of minerals to the average public.
- Implement ease of doing business & transactions.
- Encouraging all stakeholders to adapt with digital era and increasing efficiency in functioning.

- Enable price control and parity in the market by providing equal opportunity to upcoming entrepreneurs as well.
- Ensure transparency in mining eco-system by onboarding of key stakeholders.
- Create a transparent and standardized legal regime that is applicable uniformly to every lessee & transporters operating in the state.
- Generate greater revenue for the government.

MINE MITRA encompasses all online mining services for citizens, Integrated Mining Surveillance System, e-commerce platform for minerals to encourage transparent mining practices & curb illegal mining & transportation through real-time data monitoring & mechanism creating a standardized legal regime applicable uniformly to concessionaires operating across the state & promote scientific mining, marking a step forward towards cleaner & greener mining ecosystem.

All mining services are made online to bring in transparency, simplify the process & provide ease of doing business in the state of Uttar Pradesh. It scrutinizes online all the applications related to license, permit & lease namely *krishi bhumi*, *niji bhumi*, stock license, mineral retailer registration, building/development project, mining plan, vehicle registration & deed execution and thereafter accepts, rejects, or marks them to the respective authority. MINE MITRA aligns administration & public both with speedy and modern practices right from DSR to DEED.

This component has further following subcomponents:

### **1 Online Citizen/Farmer e-Services**

#### **\*Online License**

- Stock license (initiated in-Jul-2020)

For issuing license to the Stockiest for storing more than 100 cubic meters of mineral.

#### **Online Permit**

- *Krishi bhumi* (initiated in-JUL-2020)

For disposal of mineral deposits on agricultural land.

- *Niji bhumi* (initiated in-JUL-2020) Permission for disposal of



sand/morrum

- Ordinary Earth (initiated in-JUL-2020)  
For issuing permits for mining of ordinary earth at site.
- Building/ Development Projects (initiated in-JUL-2020) in commercial projects for the disposal of minerals found as by product during excavation.

#### **Online Lease**

- Online LOI (initiated in-JUL-2020)  
Upon completion of auction, the successful bidder (Proponent) can apply for online issuance of LOI subject to payment of security and royalty.
- Deed execution (initiated in-JUL-2020)  
Upon receive of environmental clearance, project proponent can apply online for deed execution for the stipulated period.

#### **Online Registration**

- Mineral Retailer Registration (initiated in-JUL-2020)  
Mineral retailer for sale up to 100 m<sup>3</sup> have the facility of online self- registration so, promote small business to run without red tape.
- Registration for mining of ordinary soil of farmer's *Niji bhumi*. (initiated in-JUL-2020)  
Self-registration facility for farmer for extraction & non-commercial use of ordinary earth

#### **Others**

- Approval of mining plan (initiated in-JUL-2020) Mine-Mitra provides the facility of online processing of mining plan thereby avoiding the tedious process and save the time.

#### **Enforcements for prevention of illegal mining and transportation**

To prevent and control illegal mining in the State of UP the State Government has framed Uttar Pradesh Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2018 under section 23 C of Mines and Minerals (Development and Regulation) Act 1957 which

has been implemented from 20th December 2018. As per the Rules, if anyone is found to have contravened above Rule then the District Officer will recover penalty up to ₹ 5,00,000 (five lakh) and the price of such mineral including royalty. On failure to deposit the said amount of penalty the same shall be deducted by the District Officer from the security money deposited against the concern stock license and also approved a high- tech plan, which would include installation of CCTVs at barriers, to check illegal mining in the state. Mining Department had approved the proposal to install CCTVs at barriers in districts, give android phone to the officers, software for tracking vehicles. The government has asked the officials concerned to conduct raids at the areas where illegal mining was taking place.

<b>ENFORCEMENTS FOR PREVENTION OF DIFFERENT CASES</b>		
<b>Illegal Storage</b>	<b>Illegal Transportation</b>	<b>Illegal Mining</b>

- Prevention of cases related to illegal mining, transportation and storage is undertaken by the Flying Squad and all District Offices.
- Flying Squad (FS) conducts surprise checking and inspection of mineral bearing area and also performs road checking to prevent illegal mining, transportation and storage.
- Special flying squad teams have been formed by Directorate from time to time. If required, teams are formed including the officer from different district offices/circle offices for conducting raid. Raids are conducted according to the information received regarding illegal mining activities through letters, E-mails, Geo-mine application, by control room complaints or in person.
- Detailed investigation report is submitted along with the necessary evidences to the authorized officer for further Necessary action according to the section of UP miner mineral (concession) rules 2021, MMDR act 1957, Uttar Pradesh Minerals (Prevention of Illegal Mining, Transportation and Storage) Rules 2018 and the section of IPC.

## CHAPTER - 4

### MINERAL PROFILE OF STATE AND SHORTLISTING OF RESOURCES

#### 4.1 Mineral profile of Uttar Pradesh

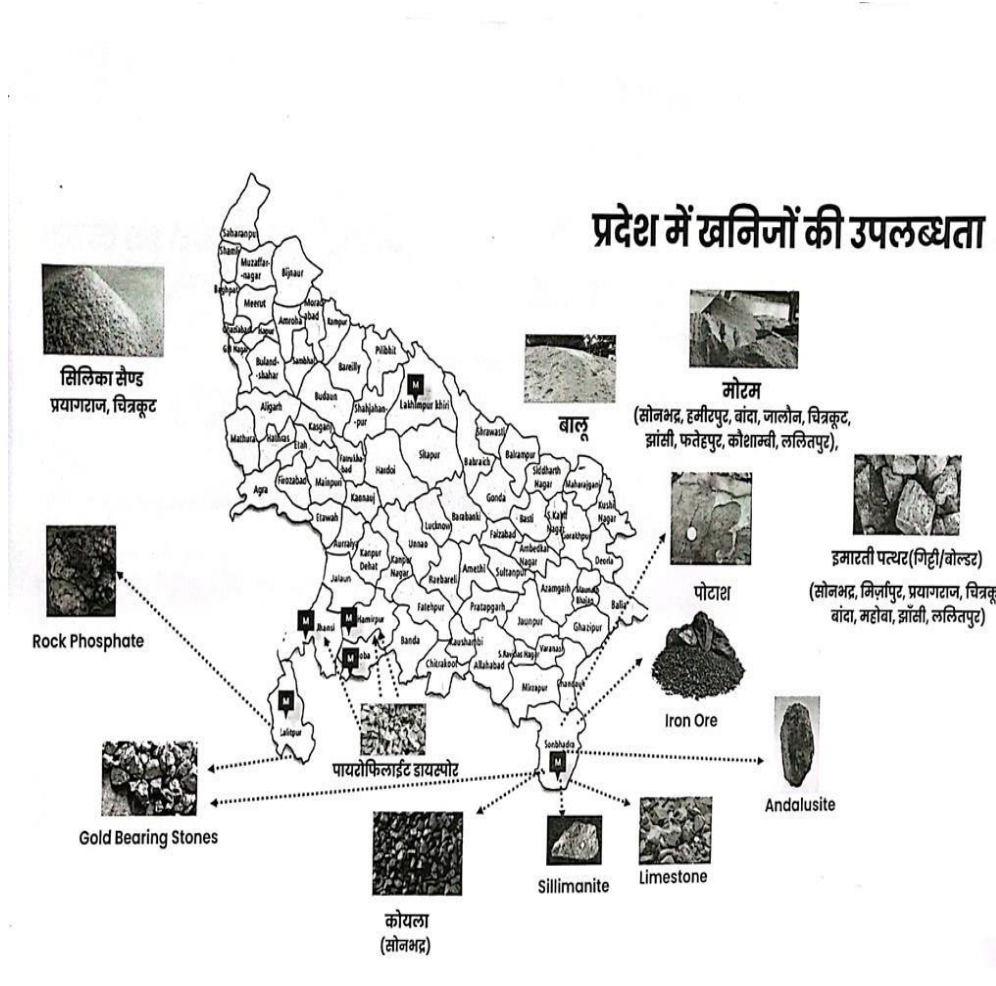
Minerals are one of the most important natural resources of a country and play a crucial role in its economic development. Geological set up of Uttar Pradesh favours igneous, sedimentary and metamorphic minerals deposits. Bundelkhand Gneissic Complex (BGC) is the main source of Igneous and Metamorphic minerals. The State U.P. is the principal holder of some economic minerals like Andalusite and Diaspore. Important major minerals occurring in the state are Rock Phosphate, Coal, Andalusite, Cement grade Limestone, Potash, Sillimanite, Iron ore. Important minor minerals occurring in the state are High grade Silica sand, China Clay, Dimensional Stone (Granite & Sandstone), Brick Clay, Dolomite, stone ballast, sand etc.

There are twenty Six minerals in the State as per records of the Mining Policy 2017 and other document (Directorate of Geology & Mining UTTAR PRADESH Lucknow.) These are as follow:

Name of mineral as per State Government			
Sl. No.	Name of the mineral	Sl. No.	Name of the mineral
<b>Major minerals</b>			
1	Coal	9	Limestone
2	Iron ore	10	Calcite
3	Sillimanite	11	Andalusite
4	Gold	12	Copper
5	Bauxite		
6	Palatinum Group of elements		
7	Potash		
8	Rock Phosphate		
<b>Minor minerals</b>			
1	Silica sand	9	Sand Morrum
2	Clay	10	Sand stone Block, Patiya, khanda Boldar
3	Granite Dimensional stone	11	River Bed Sand, Morrum, Bajri, Boldar

4	Granite, khanda Boldar	12	Chaina Clay
5	Dolomite	13	Quartz
6	Dolo stone Gitte	14	Marble
7	Pyrophyllite and Diaspore		
8	Ordinary Sand		

The State Government, Department of Mining & Geology is in the process of preparation of a mineral map in the State with geo tagging. However, a simple mineral map is depicted below:



Source:-Directorate of Geology & Mining, Government of Uttar Pradesh.

Out of 26 minerals listed at para 4.1 the proved reserves and their district of occurrence are given below:

District wise Major Minerals Occurrences in Uttar Pradesh		
Sr. No	Mineral Name	District Name
1	Rock Phosphate (Phosphorite)	Lalitpur
2	Platinum Group of Elements (PGE)	Lalitpur
3	Potash	Sonbhadr, Chitrkoot
4	Gold	Lalitpur & Sonbhadra
5	Andalusite	Sonbhadra
6	Silimanite	Sonbhadra
7	Coal	Sonbhadra
8	Lime stone	Sonbhadra
9	Iron Ore	Lalitpur & Sonbhadra

District wise Minor Minerals Occurrences in Uttar Pradesh		
Sr. No	Mineral Name	District Name
1	Silica Sand	Prayagraj & Chitrakoot
2	Pyrophyllite & Diaspore	Lalitpur,
3	China Clay	Chitrakoot
4	Sandstone	Lalitpur, Mirzapur,
5	Morum	Jhansi, Hamirpur, Chitrakoot, Jalaun, orai,
6	Sand	Bhadohi, Chandauli, Ghazipur, Bahraich, Sravasti, Gonda, Barabanki, siddharth Nagar, Gorakhpur, Deoria, Lakhimpur Kheri, Unnao, Bulandsahr
7	River Bed Sand Morrum Bajari in mix state	Saharanpur, Bijnor, Rampur, Shamli
8	Granite Khanda Bolder	Lalitpur, Jhansi, Mahoba, Chitrkoot
9	Dolostone Gitti	Sonbhadra

Out of these minerals occurring in the State as listed in paragraph 4.1, Silica Sand, Limestone, Coal, Granite, Pyrophyllite and Diaspore have been shortlisted for purpose of compiling the Asset Accounts on Mineral & Energy Resources 2020-21

#### 4.2 Strategic importance of minerals for the State

Minerals are one of the most important natural resources of a country and play a crucial role in its economic development. These are the industries based on the discovered minerals by DGM UP.

### Socio- economic importance of Major Minerals in Uttar Pradesh

Mineral Name	Mineral based Industry	(Socio- Economic Importance)
Rock Phosphate (Phosphorite)	Fertilizers Industry, Chemical Industry	Rock Phosphate is a fertilizer mineral and mostly used in agriculture.
Iron Ore	Steel Industry	Iron ore is the source of primary iron for the world's iron and steel industries. It is therefore essential for the production of steel, which in turn is essential to maintain a strong industrial base.
Platinum Group of Elements (PGE)	Precious metals	Use in jewellery and as an investment commodity, the major applications of PGE is industrial.
Potash	Fertilizers Industry, Chemical Industry	Potash is a fertilizer mineral and mostly used in agriculture
Gold	Jewellery, Ornamentation & Precious metals	Gold mining is one of the most destructive industries in the world. It can displace communities, contaminate drinking water, hurt workers, and destroy pristine environments. Gold is a major financial asset for countries and central banks. It is also used by the banks as a way to hedge against loans made to their government and as an indicator of economic health.
Andalusite	Refractory Industry	Andalusite is used as a refractory in furnaces, kilns and other industrial processes.
Sillimanite	Refractory Industry	Sillimanite minerals are mainly utilised in the production of mullet or high-alumina refractories.
Coal	Thermal Power Plant Industry	Coal is the primary and main fuel of thermal power plant. Mostly demand of electricity fulfilled by Thermal power plant.
Limestone	Cement Industry	Limestone is a source of lime (calcium oxide), which is used in steel manufacturing, mining, paper production, water treatment and purification, and plastic production. Lime also has major applications in the manufacture of glass and in agriculture

### Socio- economic importance of Minor Minerals in Uttar Pradesh

Mineral Name	Mineral based Industry	(Socio- Economic Importance )
Silica Sand	Glass Industry	Silica is used in the manufacturing of Calcium Silicate Bricks; Powdered Silica is an essential component in the making or glazing of ceramic products such as wall tiles, floor tiles, tableware, sanitary ware, and other decor products. Silica serves as the structural strength for the ceramic frames. The main useful property of silica sand in the Oil industry is its hardness.
Pyrophyllite & Diaspore	Crockery & Pottery Industry	Pyrophyllite is very suitable as filler and is thus used in the paper, plastic, paint, insecticide, and pharmaceutical industries. Diaspore is used chiefly for making high-alumina refractory bricks. It is also used as filler in Plastic Industry and in jewellery as a gemstone.
China Clay	Crockery & Pottery Industry	It is used in the making of paper, rubber, paint, and many other products.
Sandstone	Building dimensional stone Industry	Sandstone was a popular building material from ancient times. It is relatively soft, making it easy to carve. It has been widely used around the world in constructing temples, homes, and other buildings. It has also been used for artistic purposes to create ornamental fountains and statues.
		Some sandstone are resistant to weathering, yet are easy to work. This makes sandstone a common building and paving material including in asphalt concrete. Because of the hardness of individual grains, uniformity of grain size and friability of their structure, some types of sandstone are excellent materials from which to make grindstones, for sharpening blades and other implements.
Sand	Building Materials	Sand is used in everything from cement and concrete to plastering, roofing, grouting and paint. It's even used to help defend buildings from flooding when it's in sandbags
Morrum	Building Materials	It is used for filling work in case of road construction and in an embankment.

#### 4.3 Mining process followed in the State

Under the Mines & Minerals Development & Regulation (MMDR) Act 1957, no person shall undertake mining operations in any area except

in accordance with the terms of a mining lease.

Mineral exploration in the State has been conducted based on the types of minerals and area which need to be explored by the State Government with the approval of the State Geological Programming Board and by the Geological Survey of India (NER) Region after getting approval from the Central Geological Programming Board. Further the State Government has the power with prior approval from the Central Government to grant the prospecting License and mining leases on any mineral in the State in any particular area to private individual/companies as per rule and regulation laid down under MMDR Act 1957 and Rules framed thereunder.

**Exploration and auction process for Mineral:**

***(a) Exploration process for Major Mineral:-***

The major mineral exploration is scheduled as per *United Nations Framework Classification (UNFC) for energy and mineral resources*. The UNFC consists of a three dimensional system with the following three axes: Geological Assessment, Feasibility Assessment and Economic viability. Mineral exploration is the process of searching for evidence of any mineralization hosted in the surrounding rocks. Geological mapping in the field, geophysical surveys, geochemical sampling and drilling are examples of the methods we use in exploration to find new mineral deposits. Exploration is the process of searching for deposits of minerals, coal, etc. Information gathered during exploration is used to assess the location, size and quality of the deposit to determine if it can be recovered in an economically feasible way. The purpose of mineral exploration is to identify ore bodies and promising deposits to get an overview of the available mineral resources.

***(b) Auction process for Major Mineral:-***

The e-auction of major minerals in Uttar Pradesh as per rules of MMDR Act 1957, Mineral Auction rules 2015 and as per guidelines issued by Indian Bureau of Mines, Nagpur, Ministry of Mines, Government of India.



**Auction process for Minor Mineral**

- Advertisement of Areas through
- Completion of E tender cum E auction/ E tender /E auction of advertised areas
- Verification of details and document
- Issuance of LOI in favor of highest bidder in auction
- Deposition Amount Mentioned in LOI
- Online Mining plan submission and approval
- Application for Environment Clearance and approval
- Demarcation of specified lease area
- Deposition of other payment stamp duty, DMF, TCS etc and requisition for lease deed execution
- Lease Deed execution by concerned DM

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

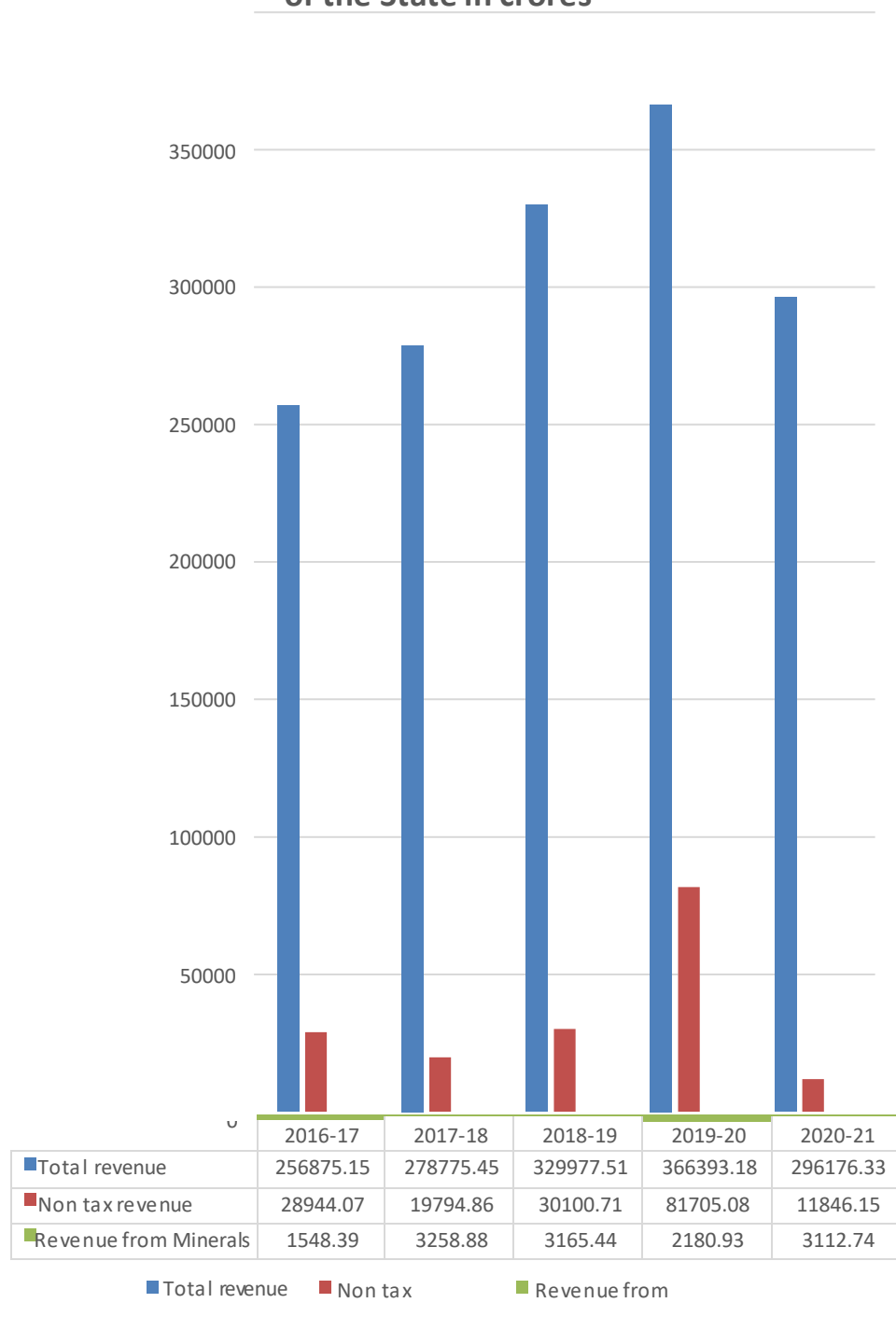
The total revenue realized from mineral extraction in the State of Uttar Pradesh for the year 2020-21 was ₹ 3112.74 crore. Of this, the major contribution for the state exchequer came from Coal, Granite, Ordinary Sand, Morrums, Limestone etc. Receipt yields from extraction of mineral resources for five preceding years are exhibited below:

Financial Year	Total Revenue	Non-Tax Revenue	Revenue from Minerals	% Share of mineral revenue	
				In respect to Total Revenue	In respect to Non-Tax Revenue
₹ in crore					
2016 - 2017	256875.15	28944.07	1548.39	0.60	5.35
2017 - 2018	278775.45	19794.86	3258.88	1.17	16.46
2018 - 2019	329977.51	30100.71	3165.44	0.96	10.52
2019 - 2020	366393.18	81705.08	2180.93	0.60	2.67
2020 - 2021	296176.33	11846.15	3112.74	1.05	26.28

***For the year 2020-21***

Revenue realization from mineral extraction for the year 2017-18 was ₹ 3258.89 crore while there is a decreasing trend in the year 2018-19 & 2019-20 with the figures ₹ 3165.44 crore and ₹ 2180.93 crore respectively. However the revenues registered as increasing trend during 2020-21 and stand as ₹ 3112.74 Cr during 2020-21.

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



Source:-Finance accounts vol. II of Uttar Pradesh.

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

This being the first year, not all the resources could be possible to be included in the report. Whereas the robustness and inclusivity of the data collection mechanism and the comprehensiveness of the data-sets featured in the first Report has been given priority and thus, the coverage on resources have been limited to those against which complete and reliable data was available. There are six minerals - Silica Sand, Limestone, Coal, Granite, Pyrophyllite and Diaspore have been shortlisted for purpose of compiling the Asset Accounts on Mineral & Energy Resources 2020-21. Due to unavailability of data at Directorate level all remaining minerals data will be collected from all District mining offices for preparing the asset accounts of future years in phased manner. For Preparing the Asset accounts in future meeting have been organised with DGM to establish a mechanism of Quarterly reporting framework.

## CHAPTER 5

### ASSET ACCOUNT OF MINERAL AND ENERGY RESOURCES OF UTTAR PRADESH

#### 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. Preparation of Assets Account is the most essential component of Natural Resource Accounting. The Asset Accounts of Mineral and Energy Resources of Uttar Pradesh for the year 2020-21 has been prepared to depict the stock reserves, stock flows and revenue generated from production of minerals of the State. The Asset Accounts cover two major mineral and four minor minerals mined in Uttar Pradesh during 2020-21.

**Sample selection:** Two major minerals (Limestone and Coal) and four minor minerals (Silica Sand, Granite, Pyrophyllite and Diaspore) were selected for study. The selection was done based on availability of resource across the state. Five out of 75 districts were selected for field visit and analysis of data. The district selection was done based on availability of the selected mineral resources.

Government has introduced major reforms include enactment of the Mines and Mineral Development & Regulations (Amendment) Act, 2015, which made the process of allocation of mineral concessions completely transparent by introducing public auctions with active participation of the State Governments. In the federal set up, States are owners of mineral wealth in their respective territories.

#### 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 progresses 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**

- The Asset Accounts of State of Uttar Pradesh for the year 2020-21 were prepared from the information obtained from various District Mines Officers (DMO's).
- Information on illegal mining was obtained from Hamirpur, Lalitpur, Prayagraj, Sonbhadra and Chitrakoot DMO's. However, this data has been received from all chosen five sample districts out of 75 in Uttar Pradesh.
- The data regarding District Mineral Foundation/National Mineral Foundation was obtained from District Mines Officers.
- With an aim to adhere to timelines prescribed by GASAB, for the collection and compilation of data for preparation of Draft Asset Accounts. The data obtained from District Mines offices. The same has been placed in the Draft Asset Account. The Draft Asset Account was forwarded to Geology and Mining department for initial validation on 13- 04-2022 and to Principal Accountant General (Audit-II) on 07-06-2022 for limited verification.

#### **Reserve Estimation by Geology and Mining Department**

The reserve estimation is quantification of economic material present in the ore body with reasonable accuracy. It also involves computation of grade, thickness and different qualitative parameters which are required for commercial exploitation of the ore.

#### **Basic Principle of Ore Reserve Estimation:**

The basic principle of ore reserve estimation is utilizing tonnage formula.

The unit of estimation is tonnes (t) and formula is –

Tonnage (t) = Volume (V) x Specific Gravity (Bulk density)

The above equation can be compared with mass volume formula where–

Mass = Volume x Density

Volume can be calculated as –

Volume (V) = Area (A) x Influence of a third dimension Area (A) is calculated from borehole plan or sections.

Influence is determined based on the method of estimation.

#### **Methods of Ore Reserve Estimation:**

The ore reserve estimation methods can be grouped in three ways-

1. Geometric Method (Conventional Method)
2. Statistical or Geo-statistical Method
3. Computer application or software

#### **Reserve estimation depending on certain parameters:**

- Cut-off grade
- Stopping width
- Weighted average and average grade
- Tonnage factor
- Core recovery
- Thickness
- Strike length/ strike influence
- Dip length/ width influence
- Correlation of lode

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

Mineral-wise extractions, revenues realized there from and production values for the year 2020-21 were provided by District Mines Officers.

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

As per guidelines, there is system of dual stage validation and limited verification of data in preparation of draft Asset Accounts of Minerals and energy resources, first stage by State government and second stage by Audit office for verification of supporting documents to test check credibility of the data/figures included in the Accounts.

In preparation of draft Asset Accounts on Minerals and energy resources, A&E Office assisted the State Government and sent it to Geology and Mining department for initial validation on 13-04-2022 and was also sent to Accountant General (Audit)-II on 07-06-2022 for limited verification of supporting documents to test check credibility of the data/figures included in the Accounts. Asset Accounts were also sent to Geology and Mining department for validation. The validation and limited verification

of data has been completed by both state government and audit office.

### **5.1.6 Challenges and limitations**

The exercise of preparing the first Asset Accounts encountered several challenges, of which key ones are enumerated below:

***Absence of systematic way of data collection*** – Since the State Government is yet to put in place a system of periodic exchange on mining lease/extraction data, collection and compilation of information needed for Tables 1, 2 and 3 was a time taking exercise.

***Absence of centralized system of capturing data on extraction and royalty figures*** – Ideally, a centralized system to capture real time data on quantities extracted, royalty/cess payable, and revenue collected would produce an accurate and real time information database. However, the system (manual or electronic) is yet to be put in place and therefore the verified and updated figures of quantities extracted and revenue collected were not readily available with the concerned Departments.

***Stock of minerals*** – Figures of stock of minerals reported as on the opening date of the year of Asset Accounts maintained by the State Departments was not found up to date, and varied from the data recorded by IBM. Hence, state government figures were adopted.

***Geo-tagging/fencing not yet complete*** – Due to unique land holding system in the State where ownership of land both surface and sub-soil vest with the community/individual, satellite monitoring of all the mineral resources is difficult. Geo-tagging/fencing could be made only in respect of minerals which are under mining lease areas and the concerned Departments are in the process of getting the mining lease areas geo-tagged/fenced. However progress of geo-tagging and geo-fencing is updated in the PM Gati Shakti portal from time to time.

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

Effective implementation of a system of generating Asset Accounts on Mineral and Energy Resources in the States 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.

Consolidating the Asset Accounts will help with an outline of resource bases across the States adding immense value towards the planning for resource exploitation and policy framing for the present as well as sustainability of resources for the future generations.

### **5.2.1 Highlights**

The State was not capturing the entire gamut of mining activities commencing from extraction, grade-wise production and dispatch. This denied the State the advantage of monitoring the revenues paid on grade-wise production, and production loss claimed by the lessees. This bears significance as the royalty is collected on the grade wise minerals produced and dispatched and therefore, more the production loss, more is the revenue leakage. Moreover, cases of irregular claims of production loss also remained undetected due to such system lacunae.

Six minerals - Silica Sand, Limestone, Coal, Granite, Pyrophyllite and Diaspore have been shortlisted for purpose of compiling the Asset Accounts on Mineral & Energy Resources 2020-21.

Cases of Illegal mining received from all five sample districts through which ₹ 5.20 crore have been shown to be recovered against revenue involve ₹ 8.22 crore are included in Table 3A

### **5.2.2 Asset Account - the tables**

The asset accounts consist of six tables as below-

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

**Table 2:** Asset accounts on physical flows

**Table 3:** Subsidiary asset accounts linking physical flows with valuation of resources

**Table 3A:** Information on illegal mining

**Table 5:** (\*Renumbered as Table 4) Collection under District Mineral Foundation

**Table 6:** (\*Renumbered as Table 5) Progress in Generation and use of Energy Resources.

*\* As the format in table 4 of para 2.6 contained not be prepared due to non-availability of breakup of extraction, production and dispatch.*

**Table 1**

Particulars	Name of resources (for illustration only)					
	Coal	Limestone	Silica sand	Pyrophyllite	Diaspore	Granite
	(in Tonnes)					(in M <sup>3</sup> )
Opening stock of environmental asset	121066407.2	37814951.31	16104907	417701.63	468794.91	2146081.30
Growth in stock						
Discoveries of new stock	4891000	0	1318566	0	0	0
Upward reappraisals						
Reclassifications						
Total addition of stock	4891000	0	1318566	0	0	0
Reduction of stock						
Extractions	17015500	2574268.23	378580.9	6051.89	4977.22	15107.44
Normal loss of stock (Normal Reduction in stock)						
Catastrophic losses						
Downward reappraisals						
Reclassifications						
Total reduction in stock	17015500	2574268.23	378580.9	6051.89	4977.22	15107.44

*For the year 2020-21*

Valuation/Revaluation of the stock(revenue receivable/actual market price)- as in table 3 (in crore)	0	0	0	0	0	0
Closing stock of environmental assets	108941907.2	35240683.08	17044892.1	411649.74	463817.69	2130973.86

Table 2

Classification		Major Minerals						Minor Minerals			Reduction in stock			
		Coal (Tonnes)	Limestone (Tonnes)	Minor Minerals			Major Minerals			Extracted by/for		Other extractions	Total extraction	Closing stock of proved reserves
Grade-wise Sub-classification (may vary from State to State)	Opening stock of proved reserves	Coal (Tonnes)	Limestone (Tonnes)	Pyrophyllite (Tonnes)	Granite (M <sup>3</sup> )	Silica Sand (Tonnes)	Coal (Tonnes)	Limestone (Tonnes)	Govt Sector	Private Sector	(in tonnes/cum - as the case may be)			
		121066407	37814951.3	417701.63	2146081.3	16104907	121066407	37814951.3	0	0				
		4891000	0	0	0	1318566	4891000	0	0	0				
		17015500	0	0	0	0	17015500	0	0	0				
		0	2574268.23	6051.89	15107.44	378580.9	0	2574268.23	0	0				
		0	0	0	0	0	0	0	0	0				
		17015500	2574268.23	6051.89	15107.44	378580.9	17015500	2574268.23	0	0				
		108941907.2	35240683.08	411649.74	2130973.86	17044892.1	108941907.2	35240683.08	463817.69	93				
		6	14	68	141	45	6	14	93	14				

Note: Number of mines covered for each of the Mineral is given in Annexure - II

Table 3

Particulars	Grade-wise sub-classification (may vary from State to State)	Physical unit (in tonnes/ cum) extracted showing Govt, Private and other sector	Valuation of Resources		
			Revenue receivable showing Govt, Private and other sector	Total revenue receivable	Average Market value (as ascertained from the IBM or State Statistical Department)
			(₹ in crore)		
<b>Opening stock/ availability of resources at the beginning of the year</b>	Silica sand(Tonnes)	16104907	...	161.05	1197.31
	Limestone(Ton nes)	37814951.31	...	302.52	1782.03
	Coal(Tonnes)	121066407.2	...	2069.15	15613.76
	Granite (m <sup>3</sup> )	2146081.30	...	*	*
	Pyrophyllite(To nnes)	417701.63	...	12.53	51.71
	Diaspore(Tonn es)	468794.91	...	23.44	185.28
<b>Additions during the year:</b>					
Growth in Stock/Discoverie s of new stock/Reclassific ation	Silica sand(Tonnes)	1318566	...	13.18	92.30
	Coal(Tonnes)	4891000	...	65.91	505.73
<b>Total Addition :</b>					
<b>Actual reductions during the year:</b>					
Extractions as reported by the State Government Department of Geology & Mining, Petroleum, Environment and Forest (on recovery of royalty, cess, fees, NPV etc)	Silica sand(Tonnes)	378580.9	...	3.78	27.96

Other extractions, not taxed (if any)					
Normal reduction in stock Catastrophic losses including natural and manmade disasters Downward reappraisals Reclassifications					
<b>Total reduction:</b>	Silica sand(Tonnes)	378580.9	....	3.78	27.96
	Limestone(Tonnes)	2574268.23	....	20.59	121.31
	Coal(Tonnes)	17015500	....	290.4	2195.82
	Granite(Cum)	15107.44	....	6.70	33.52
	Pyrophyllite(Tonnes)	6051.89	....	0.18	0.75
	Diaspore(Tonnes)	4977.22	....	0.25	1.99
<b>Extractions permitted during the year</b>	Coal(Tonnes)	30500000	....	....	....
	Limestone(Tonnes)	3372813	....	....	....
	Silica sand(Tonnes)	1029921	....	....	....
<b>Closing Stok</b>	Silica sand(Tonnes)	17044892.1	....	170.45	1261.65
	Limestone(Tonnes)	35240683.08	....	281.92	1660.72
	Coal(Tonnes)	108941907.2	....	1844.66	13923.67
	Granite(Cum)	2130973.86	....	*	*
	Pyrophyllite(Tonnes)	411649.74	....	12.35	50.95
	Diaspore(Tonnes)	463817.69	....	23.19	183.29

\*Rate of royalty of granite depends on the sale of final product. Hence revenue and average sale price of OB and CB is not ascertainable.

**Table 3A**

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 with grades (if available)	Physical quantity	Revenue involved (in crore)	Amount recovered (in crore)	Provisions under which compounding done
			volume (M <sup>3</sup> )			
Hamirpur	District Administration	Mourram	33756.5	2.44	0.24	Uttar Pradesh Minor Mineral (Concession) Rules-2021 Sub Rules-3, 58 & 72 and Mines and Minerals (Development and Regulation) Act, 1957 sub Rules- 4 & 21
Chitrakoot	Mines Officer	Granite Gitti/ patthar (khanda) Boulder	8352	1.76	0.94	illegal mining & illegal transportation
Lalitpur	Mines Officer	Ordinary Soil	15885	....	....	illegal mining
Prayagraj	Senior Mines Officer	Silica Sand, Sand Stone, Ordinary Sand	Nil	Nil	Nil	-
Sonbhadra	Deptt & Enforcement	Gitti/Morr um	9685.1	4.02	4.02	Uttar Pradesh Minor Mineral (Concession) Rules-1963 Sub Rules-3, 57 & 70
<b>*Royalty of ordinary soil is zero.</b>						



Table 4 (Table 5 renumbered)

Name of District	Volume of mineral extractions on which DMF/NMF was realisable (in cum/cft as the case may be) (In M <sup>3</sup> )	Rate at which DMF/NMF realisable	Total DMF/NMF realisable (in crore)	Total DMF/NMF realised (in crore)	Variations, if any	
					In Crore	Percentage
Chitrakoot	-	10% of the Royalty	8.57	3.92	4.65	54.28
Hamirpur	18435329	10% of the Royalty	48.81	21.42	27.39	56.12
Lalitpur	21750.7731	10% of the Royalty	0.77	0.71	0.06	7.91
Prayagraj	291434	10% of the Royalty	-	1.48	-1.48	-
Sonbhadra	12254873.75	30% for coal and limestone , 10% for other minerals	142.6	129.02	13.58	9.52

Table 5 (Table 6 renumbered)

Sector	Energy requirement by sector during the year (in GWH)						Generation/additional generation of energy during the year (in GWH)				Percentage share of non-renewable and renewable energy resources vis-à-vis total requirement		Energy surplus or deficit including total GWH of deficit/ surplus power			
	Total energy requirement in the State (in GWH)						Non-renewable (N/R) energy/ Fossil fuel sources (in GWH)	Renewable energy								
	Others	Traction and Railways	Commercial	Agriculture	Domestic	Industries		Solar	Wind	Hydel	Others incl Bio Mass, Waste to energy, Geothermal etc	Total		N/R	Renewable energy	
	8668.95	193.05	6076.7	18911.72	43337.63	13168.82	90356.87	91822.66	2320	0	0	5280	7600.5	101.62	8.41	9066.26

Note- These data sets were received in December 2022. Hence not incorporated in the compendium of Asset Accounts prepared by GASAB.

### 5.2.3 Findings of the study

- The sustainability of stock of coal and limestone ranged between 6 and 14 years. Thus if further exploration is not carried out, these two resources will cease to exist in the state.
- DMOs don't maintain data regarding Opening Stock, actually they only maintain data regarding total dispatch of the stock in a month on which royalty has been paid. The opening stock was worked out by the data from the lease holders.
- During verification it was found that details of some lease holders were not included in asset account due to non-availability of data.
- DMOs don't have detailed bifurcation of production/dispatch. On demand they provided bifurcation by obtaining information from lease holders.
- DMOs don't maintain detailed records of all lease holders.
- As per guidelines/SoP's issued by GASAB only proved reserves of minerals is to be taken in Asset Account but during limited verification it was found that inspite of non-availability of proved reserve in mining plan of pyrophyllite and disapore, extraction is being done in Hamirpur district therefore data of Hamirpur district is excluded from Asset Accounts 2020- 21.
- There is no bifurcation of proved and probable reserve in mining plans of some coal units.
- The percentage of renewable energy vis-à-vis total requirement worked out to 8.41%. This, when seen against the fact that the stock of coal at this pace of extraction will last for only six more years indicates that the state would be wholly dependent on other states for import of coal/power.
- There was short collection of DMF of ₹ 44.20 Crore

### 5.2.4 Recommendations

- There is a need of proper mechanism/system for maintain and flow of data from all lease holders to DMO's, DMO's to Directorate of Geology and Mining.

- **Centralized Database:** The Directorate of Geology and mining may maintain all miners, traders, storage, exporters, end-users need to be created in a mission mode. List of all mines with their GPS Coordinates, flow of data i.e. Opening stock, extractions, Closing Stocks etc could also be captured. The Directorate may consider online reporting mechanism from Lease holders to DMOs and DMOs to Directorate.
- **Capturing of receipts:** To have segregation of receipts under the various heads, separate sub/detailed heads may be opened in consultation with the Accountant General (A & E), to capture the receipts, under royalties, fees, dead rents, and penalties etc. This will enable one-to-one mapping of the physical flows of resources, revenues realized as depicted in the Asset Accounts with those captured in the Finance Accounts.
- The state government may put in a place a robust system of monitoring of DMF realizable and realized for prompt recoveries.

## CHAPTER 6 FUTURE CONTINUITY PLAN

### **6.1 Guidelines/SoPs issued by GASAB**

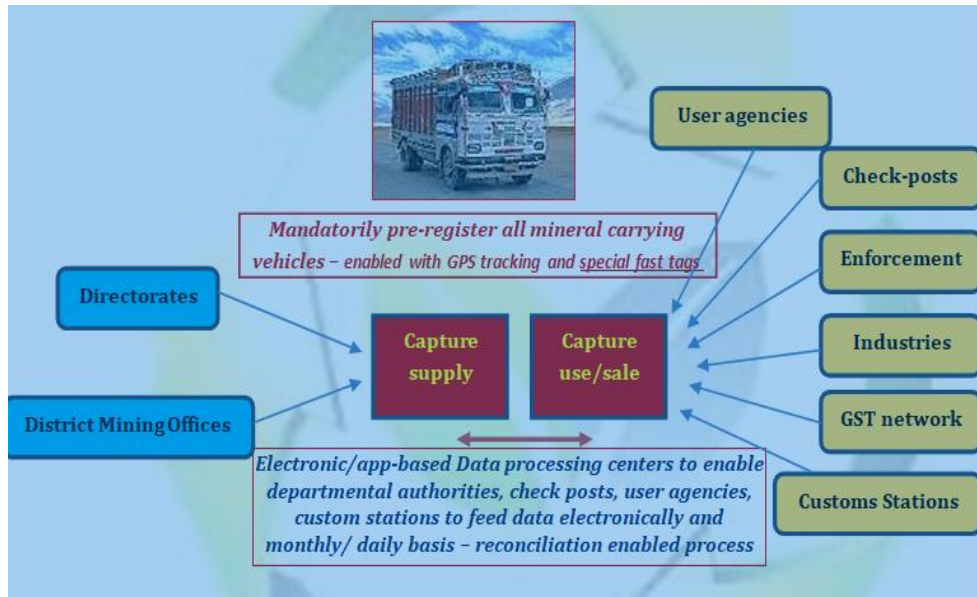
Asset Accounting process for Mineral and Energy Resources is to be a continuous process now onwards. Hence, there is a need for instituting systems and procedures for regularly capturing the data on physical flows of resources, while other inputs like addition in stock, average revenues, market prices,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

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

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

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

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



Source: GASAB

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

### 6.3 Quarterly Reporting Framework.

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

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

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

### 6.4 Recommendations for improving management of mineral and energy resources of the State and optimization of revenue yields therefrom

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

**a) Statutory approach**

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

**b) Other approach:**

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

- Statutory interventions for ensuring strict monitoring on permitted mining activities and deterring illegal mining and their sale/use as discussed under statutory approach.
- Mapping the contact points through which minerals are passed within and outside the State/country, user agencies, consuming industries, wholesale/bulk selling points (getting them registered similar to the practice in Forest Department to register the sawing mills).

- Establishing seamless flow of information from these sources to the Directorates managing the resources on usage and sale of resources and their continuous validation vis-à-vis the e-permit system.
- Installing systems for automated verification mechanisms as above to raise red flags on unauthorised supply/consumption of minerals – issuing notice for further action.

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

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

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

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



Annexure - I

Uttar Pradesh NRA Cell and list of contact details

<i>Sr No</i>	<i>Name of the office</i>	<i>Name of the officer</i>	<i>Designation</i>	<i>Email. Id</i>
1.	AG (A&E)-I Prayagraj UP	T.N.D Dwivedi	Sr. AO	dwivedirtn.up1.ae@cag.gov.in
2.	AG (A&E)-I Prayagraj UP	Sandeep kumar Maurya	AAO	sandeepkm.up1.ae@cag.gov.in
3.	AG (A&E)-I Prayagraj UP	Pawan Kumar Rai	AAO	pawankumarr.up1.ae@cag.gov.in
4.	AG (A&E)-I Prayagraj UP	Praveen Rai	DEO	praveenrai.mp2.ae@cag.gov.in
5.	AG (A&E)-II Prayagraj UP	Sant Ram Verma	AAO	vermasr.up2.ae@cag.gov.in
6.	AG (Audit)-II Lucknow UP	Vivek kumar Srivastava	Sr. AO	vivekks.up2.au@cag.gov.in
7.	AG (Audit)-II Lucknow UP	Shree Nath	AAO	<a href="mailto:shreen.up2.au@cag.gov.in">shreen.up2.au@cag.gov.in</a>
8.	AG (Audit)-II Lucknow UP	Sanjay Kumar	AAO	kumarsanja.up2.sca@cag.gov.in
9.	AG (Audit)-I Prayagraj UP	Ashok Kumar Mishra	Sr. AO	ashokkumarm.up2.au@cag.gov.in

<b>10.</b>	<i>AG (Audit)-I Prayagraj UP</i>	<i>Mahendra Pratap</i>	<i>AAO</i>	<i>mahendrap.up2.au @cag.gov.in</i>
<b>11.</b>	Directorate Geology & mines (Lucknow)	Amit Kaushik	Joint Director	amit.caushik@gmai l.com
<b>12.</b>	Directorate Geology & mines (Lucknow)	Subhash Ranjan	Mines Officer	emm11dataentry@ gmail.com

**Annexure - II**

**Number of Mines covered for each of the Mineral**

Name of Mineral	No. of Mines covered
Silica sand	10
Lime stone	2
Coal	4
Granite Dimensional stone	18
Pyrophyllite	3
Diaspore	3