



# GUIDELINES/STANDARD OPERATING PROCEDURES FOR PREPARATION OF ASSET ACCOUNTS ON MINERAL AND ENERGY RESOURCES IN STATES



*An initiative of*  
**Government Accounting Standards  
Advisory Board, CAG of India**

**June 2022**



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## PREVIOUS DOCUMENTS

- **CONCEPT PAPER ON NATURAL RESOURCE ACCOUNTING ISSUED IN JULY 2020**
- **TEMPLATES OF ASSET ACCOUNT ON MINERAL AND NON-RENEWABLE ENERGY RESOURCES ISSUED IN OCTOBER 2021**

*For further information on endeavour of GASAB on implementing Natural Resource Accounting, please visit website of GASAB at [www.gasab.gov.in](http://www.gasab.gov.in) - Natural Resource Accounting*

**Guidelines prepared by:**

**Team NRA, GASAB Headquarters, Office of the CAG of India.**



## FOREWORD

Government of India became signatory (25th September 2016) to the United Nations General Assembly resolution titled, “transforming our world; the 2030 agenda for sustainable development” consisting of 17 goals and 169 associated targets. Hence, it has become our obligation to make efforts to be able to meet our international commitments.

The Concept Paper on NRA in India released by GASAB on 28 July 2020 *inter-alia*, envisaged short, medium and long term goals starting from 2020 and converging with the target date of SDGs, i.e. 2030 in consonance with the four stage implementation strategy suggested by the System of Economic and Environmental Accounting – Central Framework. The first such goal is preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources in all the States with the aim to gradually moving towards the national level.

Subsequently, GASAB has issued the templates of Asset Accounts on Mineral and Non-Renewable Energy Resources in October 2021. These templates have gone through wider consultation processes with the stakeholders, before and after their release by the Consultative Committee set up by GASAB consisting of representatives of stakeholder ministries in Government of India like MoMines, MoEFCC, MoSPI, MoPNG, MNRE, specialist agencies like Indian Bureau of Mines, ICAI, ICAI, TERI, NRSC among others and five State Governments and Accountants General in these five States (Gujarat, Karnataka, Meghalaya, Jharkhand and Uttarakhand) and eminent environmentalist and retired bureaucrat Shri Mukul Sanwal, IAS 1971.

The Accountants General Offices in States along with the State Government Departments collaborated to prepare the first draft of Asset Accounts in the States for the year 2020-21. Further works to compile the Asset Accounts for 2021-22 is also underway.

In order to ensure that the work is carried on unhindered in the States with continuous generation and flow of information/data from the district units through the Directorates to the Accountants General Offices periodically, preparation of a set of Guidelines/SOPs were felt necessary guiding the States to develop systems and processes and watch their compliance closely. Consequent upon the national declaration at COP-26, the necessity of gathering information/data on reducing the carbon emissions and generation of renewable energy resources to continuously monitor the progresses towards the international commitment also became a necessity. Accordingly, GASAB has prepared these Guidelines/SOPs amalgamating the non-renewable as well as renewable resources which has been continuously run through the Consultative Committee and also the State Governments as these evolved between December 2021 and March 2022. We are grateful to the esteemed

members of the Consultative Committee for their expert opinion and comments/suggestions which has been immensely helpful in finalizing the document within such a short time.

Besides the dataflow, the Guidelines/SOPs also suggest several recommendations for end-to-end mapping of supply and use of resources which is expected to help the States in mopping up due revenues from exploitation of resources and plugging the leakage and wastage of invaluable natural resources aiding in better resource management and sustainability for the future generations.

I am sure, the State Governments under active coordination with the State Accountants General would implement these Guidelines/SOPs in a timely manner to ensure that information/data which were painstakingly collected and collated by the State Governments as well as the State Accountants General becomes a regular phenomenon easing the process of building the Asset Accounts through periodic flow of inputs from the year 2022-23.

I take this opportunity to convey our deep gratitude to the members of Consultative Committee for their constant support and encouragement, and the Officers of the concerned Departments in the State Governments and nonetheless the concerned Officers and staff of the Accountants General Offices for their tireless hard work turning this nationally important project into a reality. Lastly, I would like to put on record my appreciation to Shri Sudipta N Biswas, Sr. Administrative Officer for his extra-ordinary work and consistent effort in building the edifice of NRA to ensure comprehensive coverage of all areas to make this nationally important project a success. Special commendation is due to him for painstaking efforts in preparing these guidelines/SoPs laying down the roadmap for periodic dataflow and for designing the structure of end-to-end mapping of supply and use for better management of mineral and energy resources in the States.



**(Ram Mohan Johri)**

Addl Dy Comptroller and Auditor General,  
Government Accounting Standards Advisory Board

NEW DELHI  
DATED: 15-June-2022

## MESSAGE

Resources determine the economy of an area as well as environmental and social consequences of their utilization by society. By definition, the stocks of non-renewable resources, such as metals, coal, and sand can only be diminished by use. With judicious utilization of these resources a country can sustain the resources for future generations.

Management of revenues from natural resource extraction is based on assumptions about the abundance and value of these resources. The Asset Accounts are a significant step in measuring natural resource use for the benefit of society. Adoption of GIS technology and the suggestion of Big Data Analysis for example, will be transformational as the growing urbanization and infrastructure needs of a \$10 trillion economy require expanded use, better ways of valuation and new forms of governance.

Nevertheless, existing approaches to measuring the value of extractive resources are seriously flawed. This paper proposes two avenues for improving them. It explains how a multidimensional approach to measuring resource wealth can be used to identify the policy challenges that a country might face as it sets out its strategy for managing extractive revenues. It also provides a rethinking of the valuation of extractive wealth by integrating environmental considerations. Extractive activities can at times incur a great loss of (renewable) opportunity income, either directly or indirectly, because of their environmental impact. By analysing a range of examples from across the globe, this paper extracts key lessons on the true value of extractives and why it matters for policy makers, civil society, and international donors today.

The path-breaking effort of measuring flows across levels of government, sectors and areas will also give new direction to public discussion and academic research suited to national needs.

This initiative will go a long way in shaping the future we want.



**(Mukul Sanwal)**  
IAS 1971 (retd)

NEW DELHI  
DATED: 15 June 2022

## ABOUT SHRI MUKUL SANWAL

- Appointed to the IAS in 1971.
- First head of the Pollution Control Division in the GoI.
- Represented India at the Earth Summit at Rio-de-Janeiro in 1992 and was a lead negotiator for the Climate Change treaty, Agenda 21 and co-chaired negotiations leading to the Rio Declaration.
- Joined the United Nations in 1993 as policy advisor to the Executive Director of UNEP and later to the Executive Secretary of the Climate Secretariat and was among the group of scientists who contributed to the award of the Nobel Peace Prize for 2007 to the IPCC.
- Associated with drafting of the National Action Plan on Climate Change and is currently co-chair of the Expert Committee on Strategic Knowledge on Climate Change of the Ministry of Science and Technology.
- Visiting professor at the University of Massachusetts, Amherst, USA and Tsinghua University, Beijing, China.
- His Book – The World’s Search for Sustainable Development – A Perspective from the global south’ was published by Cambridge University Press.





**Officers of GASAB and members of Consultative Committee during the second meeting held in June 2022**



**Shri Mukul Sanwal, IAS (1971) delivering key-note address**



**Shri K Srinivasan, Deputy CAG & Chairperson, GASAB during the inaugural speech**



**Shri Ram Mohan Johri, Addl Deputy CAG, GASAB making the presentation of GASAB**



**Participants included senior Officers of GOI, State Governments and Accountants General Offices**



## **1. Preparation of Asset Accounts on Mineral and Non-Renewable Energy Resources – a recap**

The templates of Asset Accounts on Mineral and Non-Renewable Energy Resources have been circulated through a book in October 2021. There were three tables, namely Basic asset account on Mineral & Non-Renewable Energy Resources (Table 1), Asset Accounts on Mineral & Non-Renewable Energy Resources along with sustainability of resources (Table 2), Subsidiary Asset Accounts linking detailed physical flows in respect of Mineral & Non-Renewable Energy Resources with the valuation of resources (Table 3).

**1.1** The basic Asset Accounts as in Table 1 intends to capture the following details:

- Opening stock of the Asset
- Growth, discovery in stock
- Upward reappraisals/reclassifications
- Total addition of stock
- Reductions on extractions, normal losses, catastrophic losses
- Downward reappraisal, reclassification
- Revaluation of stock

**1.2** The table 2 intends to capture the following in respect of distinct classes of resources namely major minerals, fossil fuels, minor minerals and others:

- Names and grades of resources
- Opening stock, additions, reductions (Government sector, Private sector and other extractions), total extractions, closing stock
- Sustainability of resources in years

**1.3** The table 3 of the subsidiary asset accounts intends to capture the physical flow in volume, revenue receivable and average market value. The table also intends to capture the production loss, exports, reduction due to mining activities not approved by the departments on which separate tables have been designed in these guidelines.

### **1.4 Guidelines for preparation of the Asset Accounts for 2020-21 and opening balances**

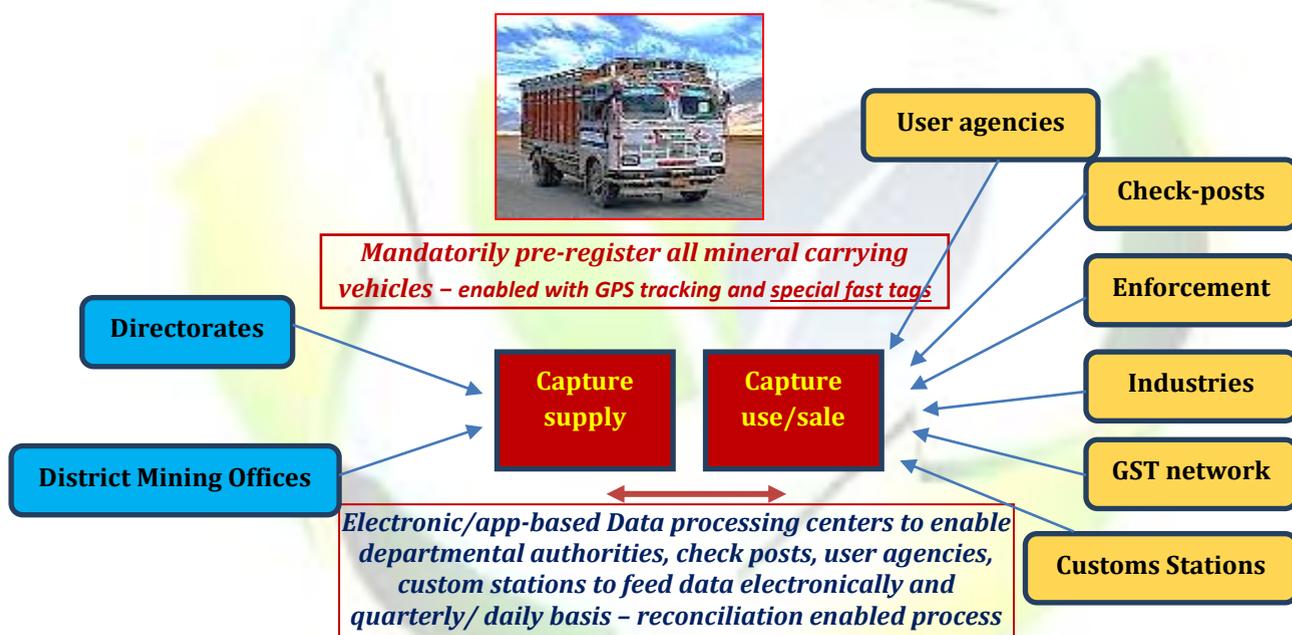
Chapter VI of the book on templates provides detailed guidelines on preparation of the tables 1 to 3 like the data to be captured, data sources, necessary checks and the need for proper disclosure on methodologies adopted in preparing the tables.

## Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States

Also, in view of the probability that the State Governments may not readily have the stock position of each of the resources, a methodology for working out the opening balances was designed using the national mineral inventory of Indian Bureau of Mines and the actual extractions recorded by the Departments over the years. These are discussed in Para 6.3 of Chapter VI of the book on templates.

### 2. Continuing the process through a quarterly reporting mechanism

Chapter VII of the book discusses the need for automating the systems and processes for capturing the supply/dispatch of resources allowed by the administrative departments and also the use/sale of resources as per the following diagram.



#### 2.1 Automating the system of inputs on supply/dispatch of resources

Out of the two aspects of automation envisaged in the book on templates, i.e., capturing the supply/dispatch and the usage/sales of resources, this document aims at discussing the suggested processes or standard operating procedures (SOP) to automate the systems of capturing the physical flows of resources permitted by the Departments concerned in either way, manually or electronically.

#### 2.2 Flow chart of system of mining

The operational structure of the mining mostly followed in the country is depicted through the following diagram.

*Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States*

**Source of mineral and non-renewable renewable resources**



**Underground and ocean bed reserves**      **Riverine resources and hill quarry**

**For processing to sale/use**      **For sale/use as it is (Permits)**

**Mineral Concession**

- Post auction mineral concession application
- LoI, MDPA and lease deed grant
- Surface right post lease grant

**Clearances, Plans, extractions**

- E, F & CC/Pollution Control clearances
- Preparation and clearance of Mining Plan
- Extractions of resources

**Production**

- Run of Mines
- Sized ores/processed minerals
- Fines – natural and crushed

**Approvals and royalty payments**

- Chemical analysis (CE)
- Royalty payments and clearances

*Except CE*

**Dispatch**

**Weighbridges/Check-posts/mobile checking/geo-surveillance**

**Ports/exit gates**

- Exports
- Other States

**Railway sidings**

- Transportation to other States
- For further exports
- To other industries

**Industries/refineries**

- Processing other products
- Consumption

**Resellers and user agencies**

- Sale
- Use in developmental works

## ***Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States***



The diagram depicts the modalities of exploitation of minerals, their processing and further transportation to the industries for consumption, usage sites, ports and railway sidings for export/transportation across the States.

The process, responsibility centers, controls and risks are discussed in detail in the

succeeding paragraphs.

### **2.3 The processes**

**Exploration of resources:** The ministries in the Government of India with the help of their agencies and the State Governments carry out exploration of mineral and non-renewable energy resources and categorises them in three distinct categories, namely proved, probable and possible reserves. Reserves which have 90 *per cent* or above likelihood of commercial extraction are categorized as proved reserves. Proved reserves are established using geological and engineering data gathered through seismic testing and exploratory drilling. Reserves having commercial extraction potential less than 90 *per cent* but more than 50 *per cent* are classified as probable reserves while those having odds of commercial extraction less than 50 *per cent* and more than 10 *per cent* are classified as possible resources. These categorizations are presently under review.

Other resources like riverine resources involve scientific and well-defined system of estimation of accumulation during a period based on which mining plans are required to be prepared and extractions are proposed over the plan period for prior approval of the GoI.

**Auction system and permit system:** Depending upon the feasibility and other factors, resources are placed for exploitation through auction or permit system. In auction, a reserve price is set up based on the historic value and other ancillary and inter-related factors. Generally, the highest bid equal or more than the reserve price is accepted or settlement of the mines. In permit system, State Governments are empowered to allow extraction of resources on permit basis on prior collection of royalties, rents and other revenues.

## ***Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States***

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**Production of resources:** The raw or crude resources exploited are processed by the lease holders themselves or through outsourced agencies and dispatched from the mine area as processed minerals for own consumption or sale.

**Revenue realisation:** The Mines and Minerals (Development and Regulation) Act, 1957 as amended from time to time prescribes that mineral shall be transported on or after prior payment of royalty and other dues of the Government. Accordingly, royalties, *ad-valorem* prices and other Government dues are prepaid based on the resources permitted/auctioned for extraction.

As per the systems in place, lease holders are required to prepay the dues before permits for exploitation and dispatch are issued. Each such permit should be accompanied by a proof of advance payment of revenue.

### **2.4 Responsibility centers**

**Ministries in GoI/State Government Departments:** The concerned ministries, their agencies namely Indian Bureau of Mines, Directorate of Hydrocarbons etc, the State Government Departments like the Geology and Mining, Petroleum, Environment & Forests (in some States) are entrusted with control and monitoring of the mining and other allied activities in the country.

**District mining and other departmental offices** exercises powers under the concerned State Government departments to ensure control and monitoring of the mining activities, production/dispatch, proper remittances of Government dues, movement of resources based on valid permits and submit consolidated reports/returns on physical flows to their concerned State departments. The district offices are also responsible for submitting monthly accounts on revenues collected during the month to the Accountants General Offices and their State authorities.

**Accountants General Offices in States:** The Accountants General Offices compile the revenues of the State under mining and allied activities under various pre-defined heads of account like mining and metallurgical industries, coal and lignite, petroleum etc and the Finance Accounts of the States are generated. Revenues received under mining and allied activities are non-tax receipts of the State Governments.

### **2.5 Controls**

The Mines and Minerals (Development and Regulations) Act, Mineral Concession Rules and other ancillary Rules of GoI and State Governments provide the following control mechanisms:

## ***Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States***

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### **Prior to commencement of mining :**

- *Clearances to be obtained from the concerned departments like the Ministry of Environment, Forest and Climate Change, Ministry of Mines, Indian Bureau of Mines and Central/State Pollution Control Board and other statutory authorities.*
- *Mining Plans to be prepared with geo-spatial data and clear identification of the proposed mining area and assessment of produces along with detailed plans for periodic extractions planned.*
- *Other requirements as per the letter of intent inter-alia including the proof of previous experience, credibility, financial stability, security deposits, necessary declarations etc.*
- *Registration of carriage vehicles to enable monitoring of transportation of processes minerals.*

### **During mining operations :**

- *Mining Officers to keep continued watch and monitoring of the mining operations including total mineral extracted, adherence to scientific mining techniques.*
- *Chemical examination of processed minerals to ascertain the quality and grades of minerals.*
- *Prior payment of royalty and other dues.*
- *Issuance of permits for transportation of minerals on prior payment of Government dues. System for preventing misuse of permits like printing on security papers, barcoding etc.*

### **Post mining :**

- *Control and monitoring on production of processed minerals.*
- *Continued monitoring of processed minerals till their destination to prevent unauthorised mining/utilisation.*
- *Scientific treatment of the mines area.*
- *Continuous reporting to the authorities including the State, Central Governments and also the Indian Bureau of Mines on extraction, production and dispatch of minerals.*

### **Other controls:**

- *Geo-fencing of mines and other areas to ensure control on mining activities.*
- *GPS enabled vehicle tracking.*
- *Cadastral surveys by the Indian Bureau of Mines on unauthorised mining. Raising of red flags in their websites for alerting the States for necessary action.*

## ***Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States***

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- *Weighbridges, enforcement teams, check posts, other surveillance mechanisms.*

### **2.6 Risks involved**

Due to human resource crunch, State Governments are not able to man each and every mine area and track the movement of minerals across and out of the State. This has resulted in a scenario where the extractions and the productions in the lease area are at times left to the discretion of the lease holders/mine owners without any checks. Thus, despite the best effort, a percentage of extractions throughout the country are outside the ambit of departmental monitoring.

**Physical flows:** The reports generated on extractions/productions and presented by the State Governments and also the Central Government are essentially those which to the best of the abilities and knowledge of the authorities have been allowed to be mined or voluntarily disclosed by the lessees. Hence, there is a risk that not all the extractions/productions are correctly depicted in the reports/returns which calls for reconciliation with the records of district mining offices and other detections by the enforcement authorities.

Royalties are payable on finished products and thus, optimization of outputs from the mineral ores and proper controls on the operations is a pre-requisite. There is no system of monitoring the extractions vis-à-vis the productions. This is envisaged to be one of the aspects of the formats of Asset Accounts under implementation in the States.

Risks are also involved in usage of duplicate permits by the lessees. Some States have introduced permits on security papers with Qr coding, cancellation of permits after each usage, geo-tracking of carriages etc to prevent multiple usage of same permits.

Other risks involve continued mining after expiry of lease period, mining unauthorisedly without any valid permit/authorisation. Indian Bureau of Mines have developed a system of raising State-wise red flags in their websites through geo-intervention with the assistance of National Remote Sensing Center. States are required to follow up these flags to logical conclusion and ascertain of unauthorised mining activities to bring them to book and also make good the loss to the exchequer.

**Royalty and other dues calculation:** Royalties and other levies vary between grades of same kind of resources and again there could be revision of rates coupled with cases of ad-valorem levies requiring continuous watch. In view of the scenario stated above where it is not possible by the State Government departments with

## ***Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States***

their existing staff to man all mines area, there could be instances of short recovery of dues.

In view of the above, Chapter VII of the book on templates have gone a step further designing a system for capturing the usage and sale of resources from a number of sources like the consuming industries, domestic and international check posts, enforcement departments and so on for enabling the State Government departments to activate more stringent control and monitoring of mining activities for better resource management and optimizing revenue realisation. Guidelines and suggestive recommendations are included at para 8 of this document.

**Thus, this document is intended to suggest the guidelines and SoPs for ensuring the system of capturing the physical flows of resources at the source, i.e. the district mining/petroleum/forest office levels and continuously building up the Asset Accounts at the directorates as well as the Accountants General Offices through manual or electronic data processing, the cross verification mechanism, monitoring the progress of generation of renewable energy resources and carbon emissions and geo-spatial mineral and energy resources mapping with reference to Asset Accounts.**

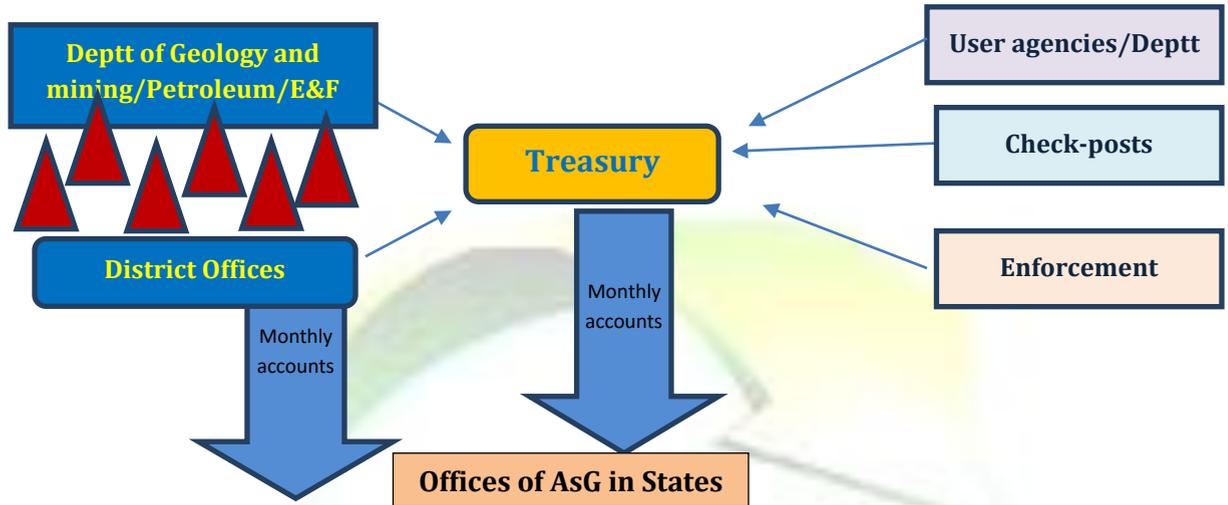
### **3. Capturing the physical flows**

In view of the fact that Asset Accounting process for Mineral and Non-Renewable Energy Resources is to be a continuous process now onwards, a need is felt for instituting systems and processes 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 departments and subsequently detected by various agencies could be collected from different sources while finalizing the Asset Accounts.

#### **3.1 The revenue realisation and reporting mechanism**

As discussed under para 'revenue realisation' under Para 2.3, there is a seamless system of reporting the receipts remitted to the State Government under different heads of mining and allied activities to the Accountants General Offices which compiles them into the total receipts of the States. The system is depicted through the block diagram below.

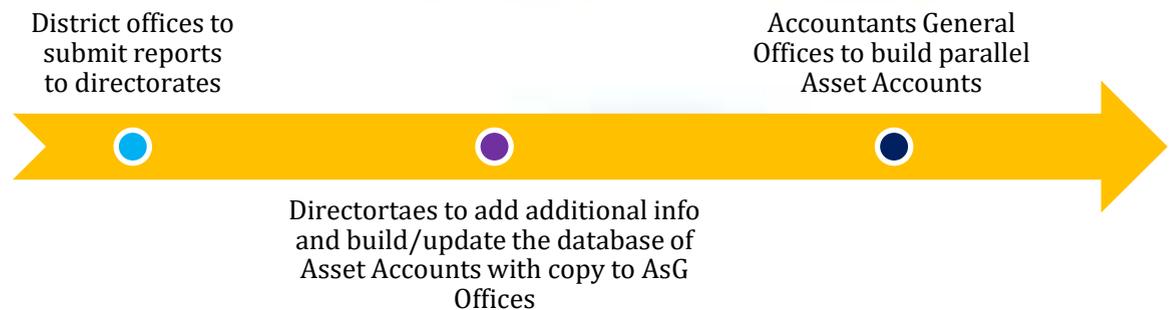
*Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States*



In view of the above, capturing the physical volume of Mineral & Non-Renewable Energy Resources besides the revenues in their reporting framework of district offices/Directorate of Geology and Mining/Petroleum/Environment and Forests is possible.

**3.2 Need for system of continuous dataflow**

The pilot studies conducted in different States and the experience gained in the States while preparing the Asset Accounts for the year 2020-21 – currently underway, points towards the necessity of laying down a definite workflow automation process to continuously capture and generate data from the ground zero, i.e., the districts eliminating time consumed in data collection and consolidation processes in future. The directorates can add further information which are available at their end thus making the data sets more robust and inclusive. Block diagram shows the envisaged processes.



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The teams working on preparing the Asset Accounts can work on more effective validation mechanisms and value addition to the processes for bringing out more trustworthy and informative data sets. These are discussed in the succeeding paragraphs.

### **3.3 Information flow from districts**

As the district mining/petroleum/forest Officers are the most important layers of control and monitoring on resource extractions, data compilers and generators, the following information, resource-wise and mine-wise, may be compiled by the district offices and channelized quarterly to the directorates:

- Name of resource/mine – showing separately major minerals, fossil fuels, minor minerals and other resources (as the case may be) including their grades wherever available
- GPS co-ordinates of the mine area
- Whether the mine area is geo-fenced. If not, target for completion of geo-fencing
- Proved reserve as on 1-4-2022
- Name of lease holder, their Aadhaar and PAN numbers
- Periodicity of lease
- Quantity allowed for extraction (gross)
- Qty extracted till previous month (with detailed grades of minerals, subject to availability)
- OB of extracted resources/finished products for the current month (with detailed grades of minerals, subject to availability)
- Quantity extracted during the month (with detailed grades of minerals, if available)
- Grade-wise quantity dispatched during the month – showing separately Government sector, Private sector, others usage, exports
- ✓ ***For this, suitable mechanism needs to be evolved at the district level for monitoring dispatch/usage of resources for various sectors like Government, Private, Export etc need to be installed, if not in place***
- Revenue remitted on account of resource extraction/dispatch – to be verified/reconciled with the treasury figures supported with schedule of receipts
- Variations/percentage variations
- Closing stock of extracted resources/processed minerals (with detailed grades of minerals, wherever available)
- Amounts collected under district mineral foundations and other such trusts and their utilisation (if available)

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- Comments (if any) including detailed information on detection of illegal mining in the area
- **Certification**
- ✓ That all resources/mining areas including dormant mines are covered in the report
- ✓ Data has been verified with the records of the district office
- ✓ Data is reconciled with that of the lease holder's records
- ✓ Resources have been extracted/dispatched after prior payment of requisite royalties and other Government dues
- ✓ The receipts mentioned in this report tallies with that reported through the quarterly accounts and verified/reconciled with the schedule of receipts

**States which have electronic system of data processing can make suitable amends in the e-permit system for embedding the above processes into the systems including the AsG Offices as beneficiaries of data. States which have manual system of data processing can introduce suitable reports/returns on the above data flow. These data may be compiled by the month after every quarter and submitted by the district Offices to the directorates and the directorates may submit the same to the AsG Offices.**

### **3.4 Additional inputs from the directorates**

Upon receipt of the information from the districts, the directorates may add information like additions, new discoveries, upward and downward reappraisals, reclassifications (if any), information on illegal mining which are available with these authorities. The directorates may consolidate the information, district-wise, into a State-wise data base and share with the Accountants General Offices for building up parallel database, quarterly. The NRA Cell can work on these datasets, carry out necessary validations, cross-verifications etc for finalizing the Asset Accounts for the year.

### **3.5 Authentication of data flow**

As the datasets submitted from the district offices and the directorates would form the basic Asset Accounts, it is imperative that the data would have to be authentic. Besides the certifications that are mandated above, the following may also form part of the datasets:

- Copies of the monthly accounts showing total receipts during the month.
- Supporting proof of information/figures as provided in the quarterly report/returns (as under Para 3.3 above)
- Copies of schedule of receipts (monthly – for three months).

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*Provided that for certain basic information like name of mine/resources, name of lease holder, proved reserves etc, supporting document may be furnished only once, for each year.*

### **3.6 Validations**

The annual Asset Accounts, once finalised, can take the same route of dual stage validation by the State Government Departments and the audit office before being published, physically and electronically.



**Continued validation and hand holding:** Though validations have been envisaged annually by the audit offices after the first level of State Government Department level validation, continuous validation is envisioned by the audit offices as below:

- During regular annual audits of district offices and directorates, audit may examine the system of data processing for the quarterly reports/returns, correctness of the reports/returns vis-à-vis the documents/data available in these offices.
- The system of corroborating the quarterly reports/returns with supporting documents/information and verifications in regular audit would reduce the burden of annual validation. Thus, annual validation by audit offices is envisaged as a sample check of the districts selected through sampling methodology.
- Validations by the State Government Departments would essentially hinge upon the records available with them, both digitally and physically.
- A checklist could be used to ensure that the reports/returns are correct with the following inputs (illustrative and not exhaustive):
  - That all economically and socially important minerals and non-renewable energy resources as agreed by the NRA Cell to form the Account has been covered, and a definite plan is in place to cover the remaining minerals,

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- That all the mine areas under the district, whether active or dormant, have been included,
- That the total extractions allowed shown in the reports/returns tallies with the records available in the districts/directorates,
- That total extractions carried out during the period and those produced/dispatched are corroborated with records/documents, photocopies of which are supplied along with the quarterly reports/returns,
- An assurance from the lease holders that the figures mentioned in the extraction, production and dispatch are true and fair picture of the actual figures and that no excess extraction, production and dispatch has taken place to the best of their knowledge,
- That the closing stock of extracted resources and the processed minerals are actually those available at the mine/production site.

### **4. Capturing the monetary values**

While capturing the physical flows quarterly along with the receipts will build up the basic datasets, the revenue receivable from each types of resources-gradewise where available, total revenue receivable and the average market value as in columns 4 – 6 of Table 3 are envisaged to be worked out annually, after the end of the financial year to which the Account relates. Detailed guidelines for monetising the physical flows on two pronged methodologies, i.e., revenue receivable and average market/sales price are provided under notes to Table 3 of the book on templates.

As regards the average sale value of minor minerals which are apparently not regulated and monitored by the Indian Bureau of Mines, the Departments of Statistics or the Departments managing the resources in the States have a mechanism for capturing the details. If this is not being followed in any State, a system of capturing the average sale price of minor minerals ought to be put in place for regular data capture and sharing.

*The analysis of royalties and average market values is intended to highlight the gap between the revenues received by the States and prices at which the produces are sold in the market. The States can use the analysis to review royalty rates at periodic intervals in the best interest of revenues of the State.*

**Mapping the revenues of Asset Accounts with the revenues depicted in the State Finance Accounts -** Presently, the major heads 0803 (coal and lignite) and 0853 (Non-ferrous mining and metallurgical industries) capture the revenues from

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mining and allied activities in the States. All types of receipts, like royalties, fees, rents, penalties are consolidated under these heads. In order to have segregation of receipts under the above heads, Accountants General of the States are coordinating with the State Governments on the advice of GASAB for opening of sub-heads/detailed heads to enable the financial statements to capture the receipts, under royalties, fees, rents, penalties etc. This system, once stabilized, will enable one-on-one mapping of the physical flows of resources, revenues realised as depicted in the Asset Accounts with those captured for preparing the Finance Accounts.

### **5. Working out the balances**

Detailed guidelines on working out the opening balance as on 1 April 2020 has been provided under para 6.3 of the book on templates. To further the process, the following guidelines are provided:

*As the opening and closing stock are derived figures and their presence beneath the ground or otherwise is only an estimation - how close it may be, the same would need to be emphatically mentioned in the tables that while opening and closing stock are estimated, the extractions are based on actuals as reported by the State governments.*

#### **Major minerals**

The national mineral inventory released by the Indian Bureau of Mines as on 1 April 2020 is expected to be brought out by mid- 2022. Upon the release, the closing stock of 31 March 2021 being worked out as a part of the endeavour to prepare the first draft Asset Accounts on Mineral and Non-Renewable Energy Resources would need to be reconciled in consultation with the State Government Departments and the figures of opening balance of April 2021 may be worked out and adopted. The table 1 contains scope for upward and downward adjustments in stock which will be used to revise the opening balances for 2021-22.

#### **Minor minerals**

Minor minerals covered by the national mineral inventory would be worked out following the above principles. For other minerals not covered by the IBM, balances could be worked out with the help of mining plans required to be prepared by states as per the Minor Mineral Concession Rules for each of the resources before seeking approvals of the Government of India. For other resources for which mining plans are not prepared, the State NRA Cell may plan and work out the methodologies for working out the balances in consultation with the concerned State Government Departments. However, till these are worked out and settles down, suitable

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disclosure may be incorporated in the Asset Accounts regarding unavailability of balances.

### **Riverine resources**

The riverine resources generally follow accumulation and depletion mechanism. Hence, stock concept may not apply to these resources. These resources would, therefore, need to be tabulated separately. The extant Rules and guidelines call for working out the accumulation figures while working out the mining plans by the State authorities for seeking approval on yearly extractions. These figures, after consultation with the State authorities, could be used to project availability of resources during the year against which the actual extractions would be weighed. Also, the actual extractions can be analysed against the mining plans which projects the extractable volume as proposed by the States. Suggestive formats for capturing physical flows and monetary values of riverine resources are at Table 2A and 2B.

As extraction of resources can take place in a number of sites along the course of the river depending on accessibility of resources and has been seeing an increasing trend responding to urbanisation, geo-tagging and fencing of these mining areas needs to be encouraged through additional maps and for better administrative control and monitoring.

### **6. Uniform depiction of grades of resources**

There are different grades of resources, mainly the major minerals some of which attract different rates of royalties. Thus, there is a need to reckon and include all such major grades of resources in the Asset Accounts. Besides depiction of the resources with their grades enabling detailed calculation of royalty and market values, this would lead to information on availability of various types and sub-types of resources across the country. Some instances of major minerals and their grades are as mentioned below:

Iron Ore	Limestone	Manganese Ore	Marble
Below 55 % FE	Cement	Below 25 % Mn	White colour
55% to below 58% FE	LD, SMS and BF	25% to below 35% Mn	Off colour
58% to below 60% FE	Chemical	35% to below 46% Mn	
60% to below 62% FE		46% Mn and above	
62 & to below 65% FE			
Above 65% FE			

Note: Grades as maintained by IBM

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States may adopt these broad grades of minerals in addition to any other resources for which grades of minerals may be needed to be included in consultation with the State Governments. However, the grades of minerals may be classified in the lines as listed by the IBM some of which are illustrated above.

*The grades of stock of minerals were not being ascertained during explorations done hitherto. With the technological progress, gradually these are being captured in cases of new explorations. Thus, for the opening and closing stock, the overall reserve would be mentioned while the gradation would be applied to productions and dispatch. With the passage of time, it would be the endeavour to incorporate the grades of the stock of reserves in the quarterly reports/returns once these are available.*

### **7. The targeted tables of Asset Accounts – updated with additional inputs issued after release of the book on templates**

The formats of Asset Accounts on Mineral and Non-Renewable Resources were last issued in October 2021 through the book on templates which is under use in the States. Subsequently, number of advisories have been issued leading to increase in numbers of tables. Besides, tables have been introduced for monitoring the progresses on generation of renewable energy resources and carbon emissions. Also, necessary modifications have been included at various places based on the deliberations during the 2<sup>nd</sup> Consultative Committee meeting held in June 2022.

Based on the above, the updated formats of Asset Accounts are depicted as follows.

**Table 1**  
**Basic asset account on Mineral & Non-Renewable Energy Resources**

<b>Particulars</b>	<b>Names of resources (for illustration only)</b>			
	<b>Coal</b>	<b>Crude oil</b>	<b>Natural Gas</b>	<b>Iron Ore</b>
<b>Opening stock of environmental asset</b>				
Growth in stock				
Discoveries of new stock				
Upward reappraisals	Only in cases of adjustment during reconciliation of stock			
Reclassifications				
Total addition of stock				
<b>Reduction of stock</b>				
Extractions				
Normal loss of stock				
Catastrophic losses				
Downward reappraisals	Only in cases of adjustment during reconciliation of stock			
Reclassification				
Total reduction in stock				
Valuation/Revaluation of the stock* (revenue receivable/actual market price) – as in table 3				
<b>Closing stock of environmental assets</b>				

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\* Only applicable for asset accounts in monetary terms.

Information/data in Table 3 may be filled in first and the resultant consolidated data may be inserted in Tables 1 and 2 appropriately.

**Table 2**

**Asset Accounts on physical flows of Mineral and Non-Renewable Energy Resources along with sustainability of resources**

Classification	Name of minerals with grades (wherever available)	Opening stock of proved reserves	Addition to stock, if any	Reduction in stock			Closing stock of proved reserves	Sustainability of resources in years (closing stock vis-à-vis total extractions)	
				Extracted by/for		Other extractions			Total extraction
				Govt Sector	Private Sector				
(in tonnes/cum - as the case may be)									
Major Minerals									
Fossil fuel									
Minor minerals									
Other resources, if any									

Information compiled in Table 3 may come in this table in consolidated form.

**Table 2A**

**Suggestive formats for capturing riverine resources - physical flows**

Classification	Name of resources (illustrative only) with grades (wherever available)	Available reserves at the beginning of the year (as per mining plans)	Accumulation during the year	Reduction in stock			Extraction planned in mining plans during the year (if available)	Remaining reserves at the end of the year (if ascertainable)	
				Extracted by/for		Other extraction including exports			Total extraction
				Govt Sector	Private Sector				
(in tonnes/cum - as the case may be)									
Riverine resources	Sand								
	boulder								
	Shingle								
	Others								

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**Table 2B**

**Suggestive formats for capturing riverine resources - Valuations**

Classification	Name of resources (illustrative only) with grades (wherever available)	Physical unit extracted showing Govt, Private and other sector as in table 2A	Valuation of resources		
			Revenue receivable	Total revenue receivable	Average Market value
			₹ in crore		
Riverine resources	Sand				
	boulder				
	Shingle				
	Others				

**Table 3**

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

Particulars	Name of minerals - with grades (wherever available)	Physical unit (in tonnes/ cum) extracted showing Govt, Private and other sector	Valuation of resources (to be worked out only for the extractions during the year)		
			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		
Opening stock/availability of resources at the beginning of the year					
<b>Additions during the year:</b> Growth in Stock Discoveries of new stock Reclassifications <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					

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Forest (on recovery of royalty, cess, fees, NPV etc) #								
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 <sup>1</sup>								
Other extractions, not taxed (if any)								
Normal reduction in stock Catastrophic losses including natural and manmade disasters Downward reappraisals Reclassifications								
<b>Total reduction:</b>								
<b>Extractions permitted during the year</b>								
<b>Closing stock</b>								

**Note:** The clarificatory notes below tables 1 to 3 in the book of templates may kindly be consulted and adopted suitably for preparing these tables.

For working out the tentative value of closing stock of each of the resources, the average of revenue and market value could be used to assign the tentative value of closing stock of resources.

**Table 3A**

**Table showing information on illegal mining  
(Please show case-wise details)**

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/volume	Revenue involved	Amount recovered	Provisions under which compounding done

**In addition to the illegal mining detection and offence reports lodged by the Departments concerned, if there are cases of detection of illegal mining by the AsG**

<sup>1</sup> Petroleum, non-ferrous mining and metallurgical industries, coal and lignite heads of receipts

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offices through use of satellite data with the assistance of NRSC or other agencies, the same may be brought out separately.

**Table 4**

**Table showing analysis of extraction, production and dispatch of resources**

Name of minerals with grades (wherever available)	Opening stock at the beginning of the year		Extraction during the year (raw ores)	Production during the year (processed ores)	Production loss/variation between extraction and production		Dispatch during the year (processed ores)	Mode of dispatch	Closing stock at the end of the year	
	Raw/ores	Processed ores			In volume	In percent			Raw/ores	Processed ores
	Physical units					Physical units		Physical units		

Cases of major variations between the departmental figures and figures reported to IBM have been observed in a number of States. In such cases noticed during preparation of Asset Accounts for 2021-22 onwards, both the information as provided by the concerned Departmental units of the State Government and also those appearing in the reports of IBM may be inserted in subsequent two rows in the above table and variations pointed out. The variations may be further examined in detail for one mineral/one month (in which highest variation noticed) to ascertain the reasons for variation. The findings may be incorporated in the report with the recommendation that the lessees, the State Governments and the IBM could reconcile the variations in cases of other minerals and remaining months.

**Table 5**

**Table showing analysis of district mineral foundation/National Mineral Foundation**

Name of District	Volume of mineral extractions on which DMF/NMF was realisable (in cum/cft as the case may be)	Rate at which DMF/NMF realisable	Total DMF/NMF realisable	Total DMF/NMF realised	Variations, if any	
					In ₹	Percentage

Thus, States may use the aforesaid formats as targeted tables for preparing the Asset Accounts for 2021-22 and also for laying down the quarterly data-

**flow mechanisms from the districts to the directorates and the Accountants General Offices for the years 2022-23 onwards.**

## **8. Capturing the usage - the sales/consumption/transport - the cross-verification mechanism to prevent misuse of resources and optimize revenue yields**

Revenue yields from exploitation of minerals and energy resources consist of substantial part of State's receipt and largely help the entities to fund the welfare and other planned activities of the States. Hence, it is imperative that a robust framework is put in place to ensure zero tolerance on resource and revenue pilferage.

Ministry of Mines, Government of India has taken initiative to curb illegal mining through amendment of the Mines and Minerals (Development and Regulation) Act in 2015 which *inter-alia* enhanced the penalties under section 21(1)&(2) from twenty five thousand rupees to five lakh rupees per hectare and the term of imprisonment increased to five years. Provisions for establishing special courts in respective States have been introduced under section 30(B) and (C) for providing speedy trial of the offences. However, as per information on setting up of special courts in exercise of powers conferred by the amended Act, no special court has been set up in any State<sup>2</sup>.

As per the amended Act, 21 States have framed Rules under Section 23C of the Act to curb illegal mining. Also, 22 States have set up task forces at State and District level to control illegal mining. Further, States are required to submit quarterly reports on illegal mining to the Indian Bureau of Mines.

Apart from the above legislative changes, the Ministry has also developed a Mining Surveillance System (MSS) to use space technology and curbing illegal mining activity in the country. The Ministry has advised the States to develop similar system for minor minerals. The MSS generates triggers which are sent to the State Governments for action against the offenders.

While the Ministry and the States have already endeavoured various controls and punitive measures, yet a 360-degree profiling of the minerals exploited, and their actual consumption/use/sale is yet to be put in place in any State.

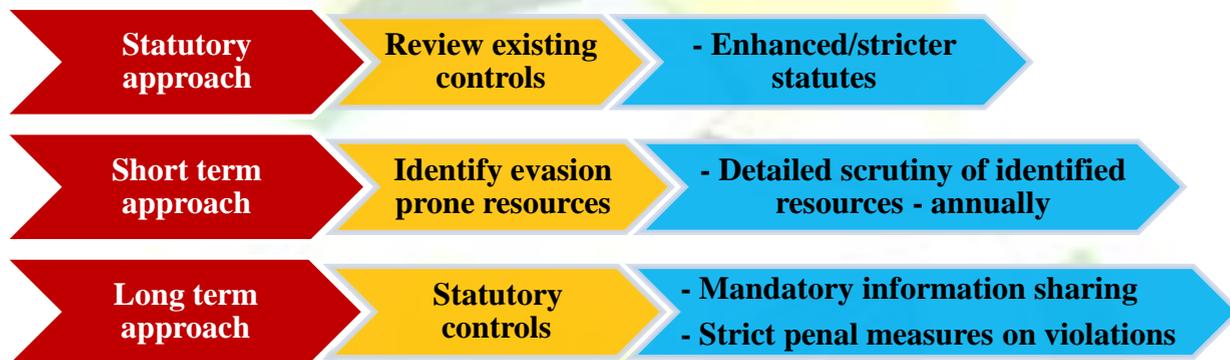
The Concept Paper on NRA prepared by GASAB has discussed illegal mining as a major constraint towards effective management of resources. Consequently,

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<sup>2</sup> Note on illegal mining - Ministry of Mines website (as on 9 June 2022)

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Chapter VII of the book on templates has projected a suggestive mechanism for enhancing the control measures for optimizing monitoring on resource sale/use/consumption for better resource management and revenue yields. As the overall mechanism for 360-degree profiling may involve resource and time constraints, a phased approach is envisaged for capturing the information as detailed below. These are in addition to complying with the requirements and suggestions of Ministry of Mines as discussed above.



### **Statutory approach**

The following could be considered by the States as part of enhanced statutory controls over mining activities, extractions/productions/dispatch and revenue yields:

- Initiate and ensure end-to-end geo-fencing of all mining areas for effective monitoring of mining activities
- 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
- 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.
- Similar to Direct Taxes statute, enact 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

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cases of movement/acceptance/consumption of minerals without valid permits/multiple use of permits – should such instances be detected later. Also, enhancing the nature and quantum of penal measures to act as high deterrent on illegal mining activities.

- 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. In the light of resource crunch as evident in the States, switching over to aerial surveillance and rewards mechanism could hold the key to contain misuse of resources and loss to the exchequer.

### **Short term approach**

While the State Government Departments may take some time to process the statutory changes and 360 degrees profiling of extraction and sale/use of minerals, the following could be the short-term measures implemented with immediate effect.

- Identify and list evasion prone minerals/resources
- Select one or more such commodities each year
- Identify all probable contact points to gather information like exit check posts, export points, enforcement wings of departments including Police Department, consuming industries, bulk selling/wholesale points, user agencies, red flags in Indian Bureau of Mines website, assistance of National Remote Sensing Center etc (illustrative and not exhaustive)
- Gather information from the sources and cross verify with the permitted quantity and lease holders
- Prepare case studies on cross verification of selected commodities along with the Asset Accounts – each year – so as to cover all evasion prone minerals in a span of 3 – 4 years. Resource pilferage and loss to State exchequer could be pointed out in these reports.

### **Long term approach**

The short-term approach will continuously attempt to point towards possible vulnerable areas which could be used to build a long-term strategy for 360 degrees profiling of the minerals allowed to be extracted and those actually extracted and sold/consumed. 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:

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

### **9. Monitoring the progress on generation of renewable energy resources and carbon emissions**

The United Nations Climate Change Conference of 2021 or the COP 26 was held in Glasgow, Scotland wherein 197 countries including India participated. This was the first time since the Paris Agreement of COP 21 that expected countries to pledge enhanced commitments towards mitigating climate changes. Major decisions and outcomes of the meet are as follows:

An agreement to re-visit emission reduction plans in 2022 in order to try to keep the 1.5 degrees Centigrade target achievable.

A commitment to limit (phase down) the use of coal.

A commitment to climate finance for developing countries.

More than 140 countries (having 90 *per cent* global greenhouse gas emissions) pledged to reach net-zero-emissions; More than 100 countries pledged to reverse deforestation by 2030; More than 40 countries pledged to move away from coal; and governments of 24 developed countries and a group of major car manufacturers committed to work towards all sales of new cars and vans being zero emission globally by 2040.

#### **Government of India made the following commitments (the *Panchamrit*):**

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.*

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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 above commitments, information on progress on generation of new and renewable energy and carbon emissions are envisaged to be captured annually and depicted in the Asset Accounts in the following formats as Table 6 and 7.

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

Sector	Energy requirement by sector during the year (in MWH/ GWH)	Total energy requirement in the State (in MWH/ GWH)	Generation/additional generation of energy during the year (in MWH/GWH)					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 (NR) energy/Fossil fuel sources (MWH/ GWH)	Renewable energy				N/R	Renewable energy	
				Solar	Wind	Hydel	Others incl Bio Mass, Waste to energy, Geothermal etc			
Industries										
Domestic										
Agriculture										
Commercial										
Traction and Railways										
Others										

**Note: In case of reporting additional generation during the current year, energy generated during the previous year would be the base - appropriate note may be inserted.**

**In case of energy surplus States, information on energy trade of with other States may please be incorporated separately. Similarly, for energy deficit States, how the deficit is fulfilled including the rate at which energy is procured may be stated in detail.**

As per the information provided by the Ministry of Environment, Forest and Climate Change, Government of India, States and Union Territories do not have greenhouse gasses (GHG) inventory, at present. The state level inventorisation methodology is yet to be formalized by MoEFCC. However, India’s national GHG inventory as per Inter-Governmental Panel on Climate Change (IPCC) guidelines is communicated periodically to the United Nations Framework Convention on Climate Change (UNFCCC) through National Communications (NCs) and Biennial Update Reports (BURs). Till such time, a robust state level inventorisation methodology is developed and put in place, the data on GHG inventory of the country would continue to be collected centrally from the Ministry at the time of national compilation of Asset Accounts in the following format.

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**Carbon Emissions (Table 7)**

Source of emission	Carbon emission	Total emission	Per capita emission

**10. Source and flow of data/inputs, periodicity and methodology of data capture/collection**

The above document seeks to streamline the process of data flow/capture for preparing the Asset Accounts on Mineral and Energy Resources and their credibility. Further, the data flow and source of data along with the periodicity of data collection/flow for the tables 1 to 7 including sub-tables as provided above are tabulated below:

Reference to table/data	Source of information	Methodology of data capture/collection	Periodicity of data capture/collection
Table 1 of templates	Tables 2 and 3	Consolidation	Annual
Table 2 – all information except sustainability of resources	District units and directorates	Quarterly flow of data as envisaged in Para 3 above	Quarterly
Sustainability of <b>Proved</b> reserves	Inputs in table 2	Calculation	Annually
Table 3 – all information except revenues, market values, revenue reported in Finance Accounts, exports	District units and directorates	Quarterly flow of data as envisaged in Para 3 above	Quarterly
Revenue receivable	Royalty and other receipts due to Government as notified from time to time	Through requisition/deployment of personnel	Annually
Market values	Major minerals – IBM website Minor minerals – Statistics/administering departments		
Revenues reported through Finance Accounts	Statements of Finance Accounts	Internal document	Annually
Exports	<ul style="list-style-type: none"> <li>• Departments managing resources</li> <li>• Customs department</li> </ul>	Through requisition/deployment of personnel	Annually
Illegal mining	<ul style="list-style-type: none"> <li>• Departments</li> </ul>	<ul style="list-style-type: none"> <li>• Detected by the</li> </ul>	Annual

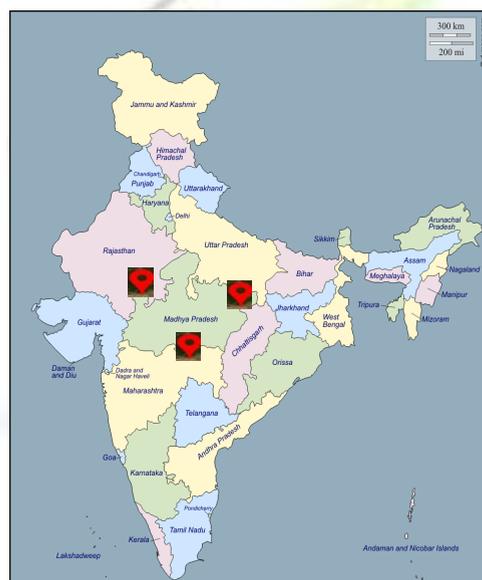
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	<ul style="list-style-type: none"> <li>managing resources</li> <li>Enforcement agencies</li> <li>Police Department</li> </ul>	<ul style="list-style-type: none"> <li>departments/enforcement and Police Department</li> <li>Annual cross verifications carried out by NRA Cell as per para 8 above</li> </ul>	
Cross verification on usage/sale of resources as in Para 8 above	<ul style="list-style-type: none"> <li>All user agencies</li> <li>Enforcement wings</li> <li>Check posts including Customs check posts</li> <li>GST network</li> <li>Consuming industries</li> </ul>	<ul style="list-style-type: none"> <li>As provided in Para 8 – through deployment of personnel and collection of information/data through requisitions</li> </ul>	Annually
Table 6 Progress on renewable energy production	<ul style="list-style-type: none"> <li>E, F &amp; CC Departments</li> <li>New &amp; Renewable Energy Resources Departments</li> <li>Power Department (hydro-electric)</li> </ul>	Do	Do
		However, with the passage of time, quarterly progress could be gathered on production and use of renewable energy resources – in the lines of non-renewable energy resources	
Table 7 Carbon Emission	<ul style="list-style-type: none"> <li>MoEFCC</li> </ul>	Collection of information as provided to UNFCC by MoEFCC	Annual – after closure of the year

For inputs that are not expressly mentioned in the above table, State NRA Cell may decide the data collection methodology in consultation with the State Governments and GASAB headquarters.

### **11. Geo-tagged/GPS enabled mineral map – a necessary requirement**

GPS tagged/fenced mineral bearing areas and the routes would substantially aid in control and monitoring of mining activities. Wherever GPS tagging/fencing is yet to be completed, the GPS co-ordinates of the mine areas, resource wise, could be collected. However, GPS tagging/fencing needs to be encouraged and monitored as part of the quarterly reporting mechanism. This will enable creation of resource-wise maps including geo-tagging of the actual mine areas by each States with mine indicators as per their GPS co-ordinates. Special emphasis may be laid on minor



minerals and riverine resources as the geo-spatial data in respect of major minerals are captured by the Indian Bureau of Mines at frequent intervals. Data on minor

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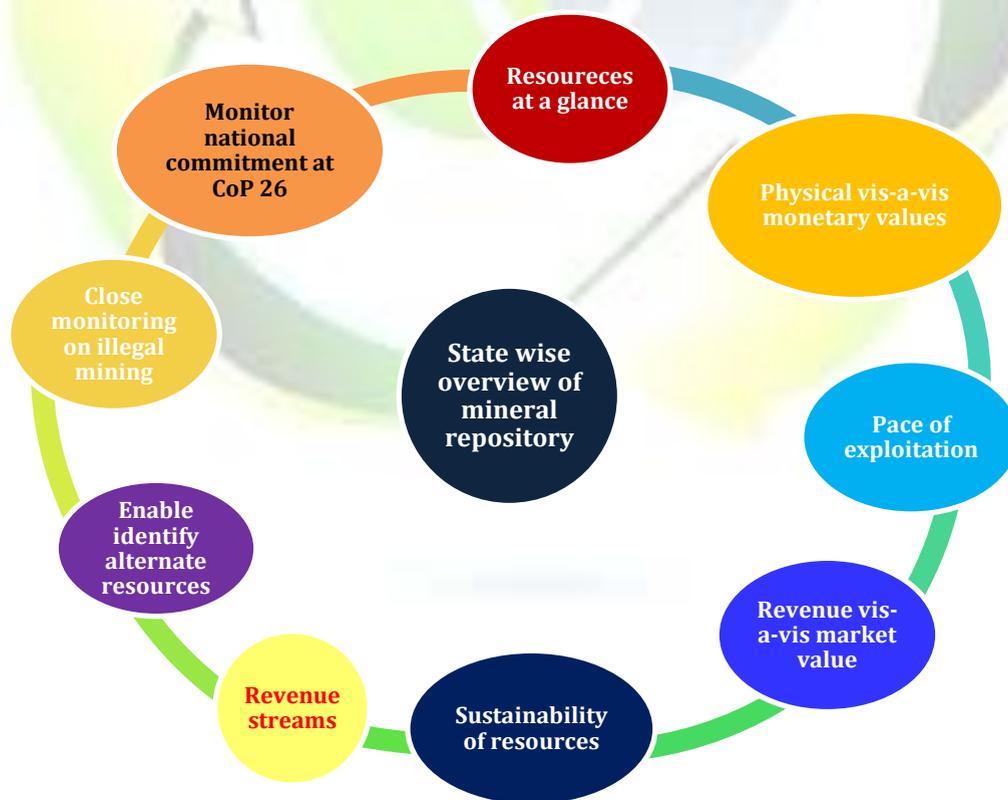
minerals including riverine resources are not available centrally, at the present making it important for the States to have geo-tagging of the mine and extraction areas.

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.

These maps could be consolidated at the national level providing precise data on availability of resources across the country along with their pace of extractions, revenue generations, market values, available stock of resources. 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 – pan India.

### **12. Asset Accounts – outcomes and enabler of big-data analysis**

Consolidation of the data in the shape of Asset Accounts would enable at a glance position of the available resources and their pace of exploitation besides other advantages as depicted through the diagram below:



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Additionally, the datasets, once compiled State-wise, would give way to big-data analysis in States, add impetus to audit on resource extractions, usage vis-à-vis revenue yields for the State exchequer and further enable country-wise consolidation for the National Asset Accounts of mineral and energy resources paving way for better management and sustainability of resources of the country.

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**List of Consultative Committee Members as on 9 June 2022**

**(constituted by GASAB in August 2020 and expanded from time to time)**

Sl. No.	Name of Office/Organization	Name of Officer Nominated
1.	GASAB Secretariat	Sh. R M Johri, Addl. Deputy CAG, GASAB  Sh. S. N. Biswas, Sr. A.O./GASAB NRA
2.	Expert in Environmental Accounting	Sh. Mukul Sanwal, IAS (Retd.), 1971
3.	Government Account Wing in CAG's Office	Sh. Masroor Ahmad Deputy Director
4.	Commercial Wing in CAG's Office	Ms. Kavita Prasad DG/Comml.-I
5.	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur	Sh. Pushkar Kumar Director (Training & Research)
6.	Ministry of Statistics and Programme Implementation (MoSPI)	Sh. Siljo V K, DDG (SSD)
7.	Ministry of Mines and Indian Bureau of Mines	Sh. Sukhdeep Singh, Joint Director, Ministry of Mines
		Dr. A H Ramteke, Director, MMS Division, Chief Mineral Economist, India Bureau of Mines
		Dr. P. K. Jain, Consultant, IBM
8.	Ministry of Environment, Forest and Climate Change (MoEFCC)	Ms. Anshu Singh, DDG(Stats)
9.	Department of Land Resources	Sh. Niraj Kumar, Deputy Secretary,
10.	Ministry of Jal Shakti	Shri Sunil Kumar, Director (BP-1),
11.	The Energy and Resources Institute (TERI)	Sh. Souvik Bhattacharjya Associate Director and Senior Fellow
12.	Ministry of Corporate Affairs	Awaited
13.	Institute of Chartered Accountants	CA. (Dr.) Sanjeev Kumar Singhal,

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	of India (ICAI)	FCA, New Delhi
14.	The Institute of Cost Accountants of India	CMA Neeraj D. Joshi Council Member, ICAI
15.	National Remote Sensing Centre (NRSC), Telangana, Hyderabad	Dr. V. Venkateshwar Rao, Deputy Director, RSAA,
16.	National Institution for Transforming India (NITI)	Awaited
17.	Goods and Services Network (GSTN)	Sh. Vashishtha Chaudhary SVP Services, GSTN
18.	Customs Departments	Awaited
19.	Ministry of Petroleum and Natural Gas	Sh. Chandan Mittal Deputy Controller of Accounts
20.	Ministry of Coal	Awaited
21.	Ministry of New and Renewable Energy	Dr. Prabir Kumar Dash (Scientist-D, Wind Energy Division, MNRE)
22.	Ministry of Power	Awaited
23.	Directorate General of Hydrocarbons	Sh. Sunil Khatri, Deputy General Manager National Data Depository (NDR)
24.	Ecological Society of India	Awaited
<p><b>Apart from the above, there are representatives from five State Governments (Gujarat, Jharkhand, Karnataka, Meghalaya and Uttarakhand) and Officers from the Accountants General (Audit and A&amp;E) of these States.</b></p>		

*\* Detailed list is on the website of GASAB under the link Natural Resource Accounting.*

**Minutes of 2<sup>nd</sup> meeting of the Consultative Committee on NRA**

**3 June 2022**

**Background:** As per the action plans envisaged in the Concept Paper on Natural Resource Accounting (NRA) in India released in July 2020, GASAB Secretariat has brought out a book containing the templates of Asset Accounts on Mineral and Non-Renewable Energy Resources in the States. The books containing the templates were circulated to the State Governments and the State Accountants General Offices in October 2021. The templates were finalised after pilot studies in three States and a virtual meeting of the Consultative Committee in September 2021. The first short term action plan was to prepare the first draft of Asset Accounts in the States for the year 2020-21 by March 2022.

In order to handhold the States in this ambitious exercise besides resolving issues and challenges and addressing the constraints being faced while preparing the first draft of the Asset Accounts, GASAB headquarters has been holding monthly meetings with all the States in which the project is being run since the end of each month from October 2021 onwards. As per the status reported by States as of 30 April 2022, all States except Jharkhand and one UT i.e. J&K have prepared the first draft of Asset Accounts. As per the guidelines issued by GASAB, these Accounts are being run through dual stage validation from the State Governments as well as the Audit Offices.

Additionally, draft guidelines/ Standard Operating Procedures (SoPs) on quarterly data collection methodologies from the district units from April 2022 was prepared and circulated to the State Accountants General Offices for discussion with the State Governments and implementation from April 2022. After detailed deliberation and consultation with the States and the members of the Consultative Committee, the final Guidelines/SoPs have been issued to the States for implementation.

Consequent upon the national declaration at CoP 26 at Glasgow and in view of the importance of monitoring the carbon emissions and generation of renewable energy resources, specific references have been included in the Guidelines/SoPs. A reliable and credible system to capture the information at the State level regularly on these items would immensely help the GoI in consolidating the information and monitor/manage the targets over the years more effectively to meet the international commitments.

To ensure that the State reports capture and present the information uniformly, a structure of report has been prepared by the GASAB Secretariat and circulated on 12 April 2022 to the State Accountants General Offices.

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As there has been substantial progress in preparation of the Asset Accounts, 2<sup>nd</sup> meeting of the Consultative Committee was convened to inform the progresses and also to seek further guidance/comments/suggestions of the eminent members of the august Committee as we continue with our endeavour to implement the action plans envisaged in the Concept Paper, as per the targets.

**Participants :** Shri K Srinivasan, Deputy CAG & Chairperson, GASAB chaired the meeting.

Shri Mukul Sanwal, IAS (Retd) eminent environmentalist was present virtually. Additional Deputy CAG, GASAB Shri Ram Mohan Johri was present. Nominees of stakeholder ministries, academia, state governments and Accountants Generals Offices were present. For further details please visit the link NRA in website of GASAB.

**Mode:** Hybrid – physical and virtual presence

**Proceedings:** At the outset, Shri S N Biswas, Sr Admin Officer while welcoming the dignitaries to the Office of the Comptroller and Auditor General of India briefly introduced the Deputy CAG & Chairperson, Additional Deputy CAG, GASAB and Shri Mukul Sanwal, IAS (1971). Shri Biswas also provided short introduction about constitution of the Consultative Committee, it's members, details about the first meeting and a brief background on the 2<sup>nd</sup> meeting of the Committee.

In his inaugural address, Shri K Srinivasan, Deputy CAG & Chairperson, GASAB said it was heartening to see the subject of climate change is being addressed jointly through the Consultative Committee constituted by GASAB. The importance of assessing the extent of the problem to understand the problem was discussed in the context that there was only one earth and that of late there has been certain inexplicable weather changes attracting attention of the entire world. The Officer continued that in order to mitigate, there is need to monitor and to monitor we need to measure. The need for bringing science to the forefront and ascertain the issues involved with climate change. The Officer emphasized the need to start measuring in order to understand the works in hand and to decide on targets as to by when the country would be able to achieve certain targets and that is where NRA comes in, the Officer mentioned. GASAB's endeavour to switch towards the pressing cause of environmental accounting in addition to its regular work on conventional accounting and their standards was also highlighted. The continuous support and guidance of the members of the Consultative Committee was stressed upon without which preparation of the first draft of Asset Accounts in 27 out of 28 States would not have been possible.

Thereafter, in his key-note address Shri Mukul Sanwal commenced with thanking the CAG's institution for having included him as one of the members in this momentous

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exercise. To start with Shri Sanwal highlighted the timeliness of the whole project of GASAB under the CAG of India due to three reasons. First, preparing us for climate change as equitable sharing of natural resources becomes critical; second, optimum resource use will also be critical in achieving an 'Atmanirbhar' \$ 10 trillion economy and third as an essential element of good governance. The advantageous position of CAG of India as a constitutional authority to bring together sectors, ministries and levels of government that are not responsive to the usual policy initiatives for working together was highlighted. Shri Sanwal also lauded the way the present exercise has been handled and stated it is a tribute to that expectation. The experience gained will be needed as more complex issues are addressed, namely water and electricity flows, supply, demand and leakage. The bureaucrat continued that with the legitimacy, credibility and capacity that the CAG has, expanding into similar areas which are recognized as essential, but no approach has emerged to deal with them, could be considered. While pointing towards the challenges of aggregating the data in a federal state in a new common format, the retired Officer opined that the expertise that the CAG is building in defining new methodologies and implementation strategies will in the coming days be as important, if not more important, than auditing of accounts, and the two will go together.

The meeting continued with a presentation of GASAB by the Additional Deputy CAG, GASAB. The Officer thanked all the Officers for taking out time to attend the meeting physically making it a success. The importance of the continued guidance and support of the Consultative Committee in the overall project especially on preparing Asset Accounts of Mineral and Energy Resources was mentioned. Special reference was made about Shri Mukul Sanwal for sharing his insights and thoughts on the subject. Additional Deputy CAG, while impressing upon the need for measuring the overall resources for their availability and usage stated that only then we would be able to ascertain the gaps and measures needed to mitigate them. The presentation, inter-alia, touched upon the following issues:

- *Need for NRA in helping establishing interrelation between economic and environmental accounting, managing SDGs, attaining international commitments and as an aid to evidence based policy framing*
- *Four-fold strategy coined by the System of Economic and Environmental (Central Framework) in implementing NRA*
- *Involvement of CAG of India in helping the country to implement NRA, work done by GASAB till date and stakeholder consultation process*
- *Resources covered vis-à-vis those suggested by the SEEA (CF)*
- *Key takeaways for the States from the Asset Accounts on Mineral and Energy Resources*

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- *Salient features of the tables incorporated in the Asset Accounts*
- *Training, capacity building and handholding the States in preparing the first draft of Asset Accounts for 2020-21*
- *The future plans – as to what is intended from April 2022,*
- *Monitoring mechanism on the progresses made towards the national declaration at the COP – 26 or the Panchamrits,*
- *Status of preparation of Asset Accounts and works in hand.*

After the presentation of GASAB, the draft Asset Accounts as it stands in six States (Gujarat, Madhya Pradesh, Meghalaya, Odisha, Rajasthan and West Bengal) were also presented before the Consultative Committee. The outline of the presentations contained the following:

- *Mineral maps and list of minerals vis-à-vis those covered*
- *Types of mining activities and major players involved*
- *Coordination between the AsG Offices and the State Governments including formation of NRA Cells in the States, training and capacity building*
- *Challenges faced,*
- *The Asset Accounts in tables 1 to 7 (except carbon emission), findings and disclosures, works underway and good practices in the States.*

### **During and after the presentations, the following were discussed:**

**Indian Bureau of Mines** pointed out that the national mineral inventory is being brought out by August 2022 and that there is a need to review the opening and closing stock as worked out in the Asset Accounts of the States.

On behalf of GASAB, it was informed that while the starting point of the entire exercise as far as the stock of resources is concerned was based on the previous national mineral inventory of 2015 and that all States have been advised to reconcile the stock of minerals once the national mineral inventory for 2020 is brought out by the IBM. This is to ensure that the Asset Accounts in the States and the national mineral inventory go hand-in-hand and there is no major variations between the two.

**NRSC** informed the house that they have initiated a project called Integrated Mission for Sustainable Development in 1992 to cover the natural resources and prepared the natural resources management plan for the country. Subsequently, from 2002 the ISRO started accounting for the natural resources in various periodicity like the land use in every five years and land degradation in 10 years. Regarding mineral and energy resources, NRSC is handholding IBM for technology transfer. The NRSC

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has also developed methodologies for assessing water availability in the entire country along with the Central Water Commission. It was also informed that recently NRSC has come out with accounting of the bio-energy potential from the crop residues.

Deputy CAG and Chairperson, GASAB urged the NRSC representative to kindly share the documents with us and to consider greater collaboration with the NRSC. Additional Deputy CAG appreciated NRSC as one of the vital player on the subject.

ICAI asked about the verifiability of the figures being featured in the Asset Accounts.

**GASAB responded** that in view of very well laid out systems in the Mining departments across the country, the district mining officers have demand collection and balance registers which captures each and every detail of quantity permitted, quantity extracted – revenues generated and quantity remaining to be extracted. Besides, these authorities also generate monthly receipt schedule incorporating the revenues remitted into the state exchequer. To that extent, the entire figures of the Asset Accounts could be verified till the last field formation in the Mining departments in the States. And as regards the stock, it was stated that the same has been worked out based on the best and most trusted datasets of the IBM and that systems have been put in place for their continuous reconciliation with the IBM datasets which are the best set of records available in the country on stock of resources. States of Rajasthan and Odisha agreed to the above.

**Shri Neeraj Joshi of ICAI** suggested that since few decades there is a system of filing of power generation details in xbrl format with the Ministry of Corporate Affairs which could be used for preparation of the tables. This was agreed by all.

Regarding **how to map the revenues of the State vis-à-vis the Asset Accounts**, it was informed that GASAB has written to all the State AsG for coordinating with the State Governments to open sub-heads/object heads below the minor heads to separately capture the figures of royalties, cess, fees, penalties etc so that one on one referencing between the actual receipts from mining activities vis-à-vis the physical flows could be established. It was also informed that the response of the States has so far been encouraging and that this aspect was being followed up for implementation.

Regarding the discussion on the **stock of riverine resources**, it was informed from GASAB that since the riverine resources are in a continuous process of accumulation and depletion, a separate table has been designed to capture these resources. As a system it was informed that the States are required to prepare mining plans wherein

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scientific estimation of stock of resources available and those planned for extraction over the years are to be included for GoI approvals. And the States have been instructed to use these stock estimations in the approved mining plans as base or else continue with only the extractions and revenues with suitable disclosures about non-availability of the stock position.

As regards the **variations between the figures of extractions of resources as per the State Government and the IBM**, it was decided that probably there is need to identify the reason for the variations and that greater reconciliations are needed to be institutionalised in reporting of figures to ensure that both the entities' record go hand in hand. **IBM** mentioned that the figures of extraction, production, dispatch and closing stock are captured and reported based on the statutory returns of the lessees.

IBM also informed that the **next national mineral inventory** covering 46 minerals is being brought out in August 2022.

Comments specific to the discussions:

**CGM, Gujarat** suggested the NRA team of Gujarat to approach Gujarat Urja Vikas Nigam Ltd, Energy and Petroleum Department and GARC for comprehensive data on generation of power from various sources for the Table 6 (revised). Shri H Dharmadarshi, PAG (Audit-II), Gujarat added to the discussion stating that the domestic vis-à-vis industries, solar energy resources which is being largely used in the State of Gujarat etc are all available in greater details with the GUVNL.

Regarding the methodology on ascertaining the mined reserves vis-à-vis the mining bans coming up during presentation of Meghalaya, Deputy CAG desired to know the preparedness to monitor the transportation of the mined reserves. It was informed by GASAB wing that in order to address these concerns pertinent for the States of Meghalaya and Goa in particular where consequent to a mining ban, permission was granted to transport the mined reserves, separate table has been designed to capture mined reserves at the mine site, those transported and closing stock of mined reserve at the mine head. These tables seek to capture the data on mined reserve lying at the mine head yet to be transported and can effectively monitor their transportation and any case of fresh mining.

Before concluding, the Addl Deputy CAG once again conveyed special thanks to all Officers and dignitaries for making it convenient to attend the meeting despite other pressing commitments and for the value additions and engaging discussions which will immensely help in finalizing the Asset Accounts on Mineral and Energy Resources. The Officer made special reference to the target date of 30 June 2022 for completion of the

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State reports on NRA in the prescribed format and urged all the States to make best efforts to adhere to the targeted timeline.

The meeting ended with vote of thanks to the Chair.



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