

# 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**

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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**

**NRA team in GASAB Hq in CAG's Office with support of the Consultative Committee members, State Governments, and the Accountants General Offices in the States.**



## **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 are 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:

- Classification and sub-classification 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.

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

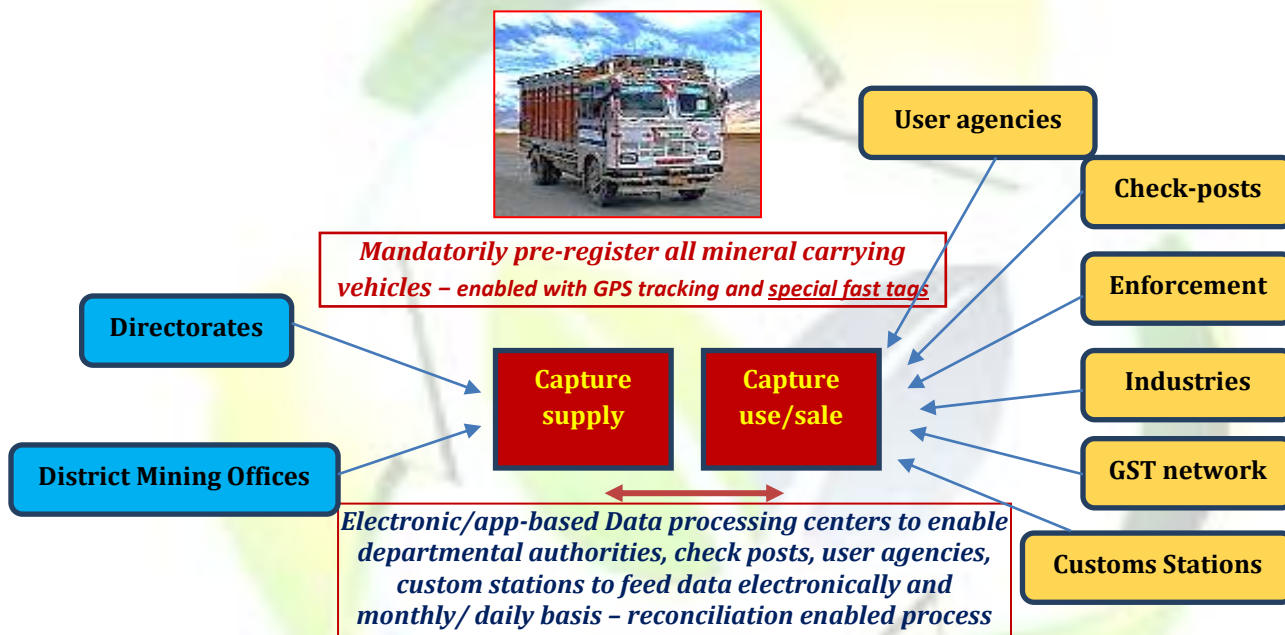
Chapter VI of the book on templates provides detailed guidelines on preparation of the tables 1 to 3 like the data to be captured, data sources, necessary checks and the need for proper disclosure on methodologies adopted in preparing the tables.

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.

## 2 Continuing the process through a monthly 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 administrating 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

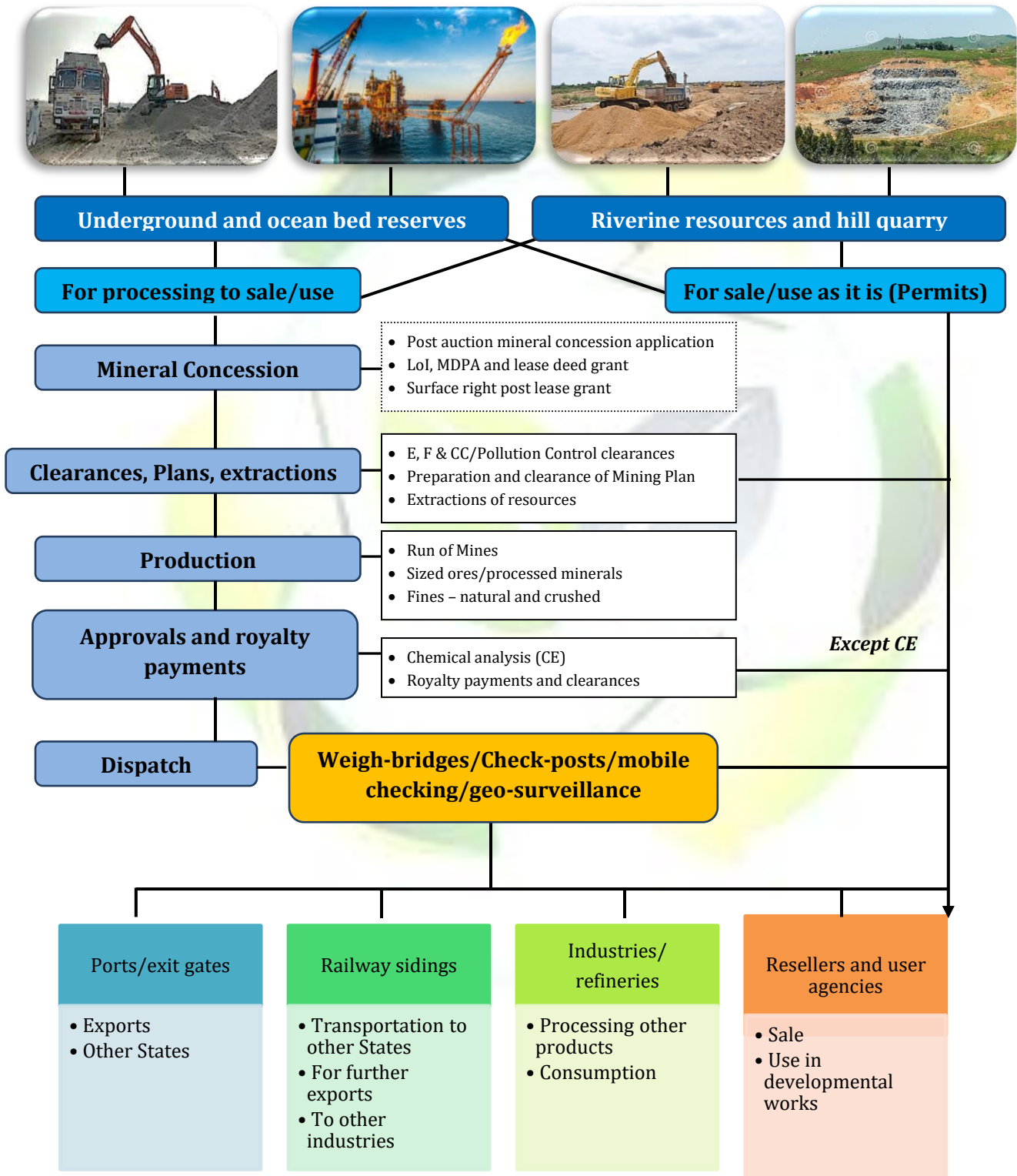
Out of the two aspects of automation envisaged in the book on templates, i.e. capturing the supply/dispatch and the usage/sales of resources, this document aims at discussing the suggested processes or standard operating procedures (SOP) to automate the systems to capture physical flows of resources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

### 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.



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

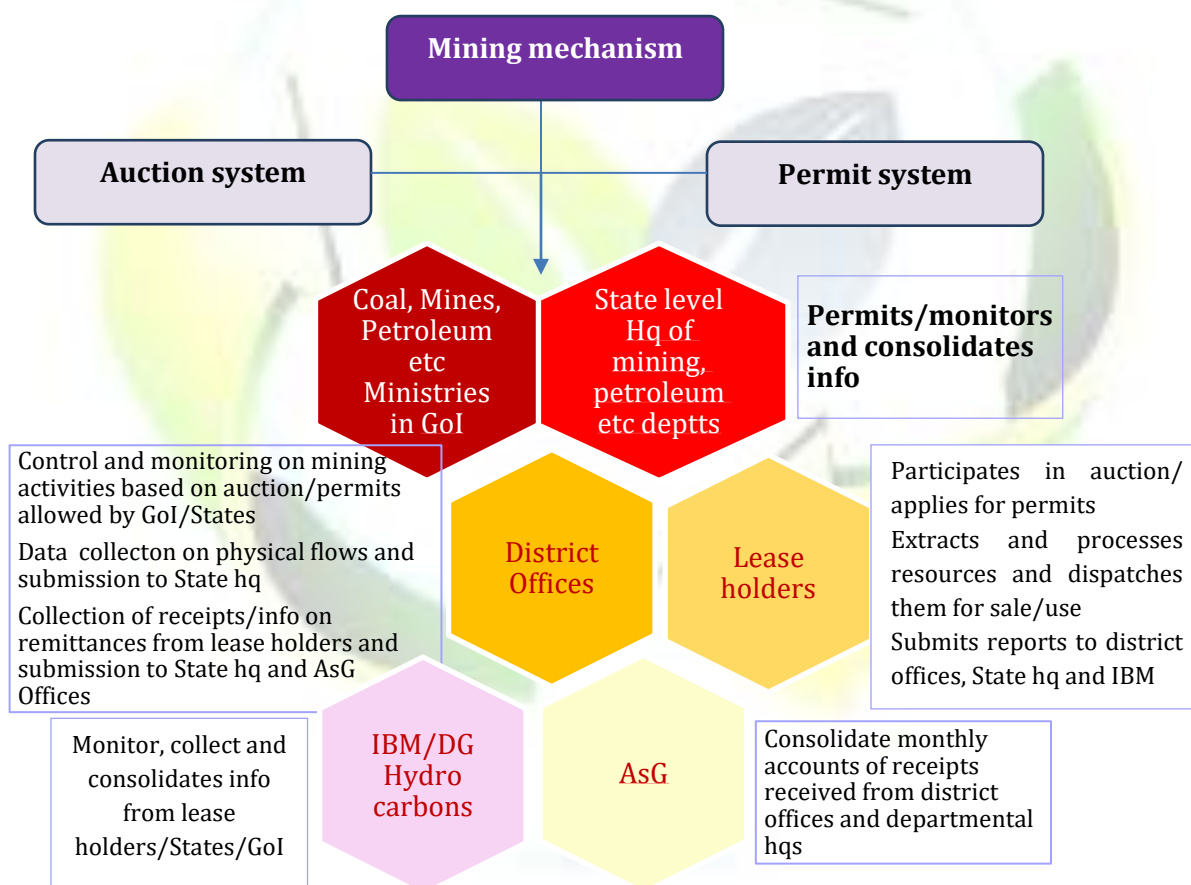


**Guidelines/standard operating procedures for Asset Accounts on Mineral and Energy Resources in States**



The diagram depicts the modalities of exploitation of underground minerals, their processing and further transportation to the industries for consumption, usage sites, ports and railway sidings for export/transportation across the States. The control mechanism and responsibility centers on mining operations and data

repositories are depicted through the following diagram.



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 carries 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.

Other resources like riverine resources involve scientific and well defined system of estimation of accumulation during a period based on which mining plans are prepared and extractions are planned over the plan period.

**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.

**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 finished products for own consumption or sale.

**Revenue realisations:** 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 payment of advance 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 &

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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 of finished products, proper remittances of Government dues, movement of resources based on valid permits and submits 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:

### **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 minerals and finished products.*

### **During mining operations :**

- *Mining Officers to keep continued watch and monitoring of the mining operations including total mineral extractions, adherence to scientific mining techniques.*
- *Chemical examination of finished products to ascertain the quality and grade 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,*

**Post mining :**

- *Control and monitoring on production of finished products from mineral ores.*
- *Continued monitoring of finished products 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 and production 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.*
- *Weigh-bridges, enforcement teams, check posts, other surveillance mechanisms*

**2.6 Risks involved**

Due to human resource crunch, it is not possible for the State Governments 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 without any checks and balances. 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.

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 and productions and the gap in-between by the Indian Bureau of Mines. This is envisaged to be one of the aspects of the formats of Asset Accounts under implementation in the States.

Risks also involved in usage of duplicate permits by the lessees. Some States have introduced permits on security papers with qr coding, 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 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 sales 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 on this initiative will be circulated shortly.

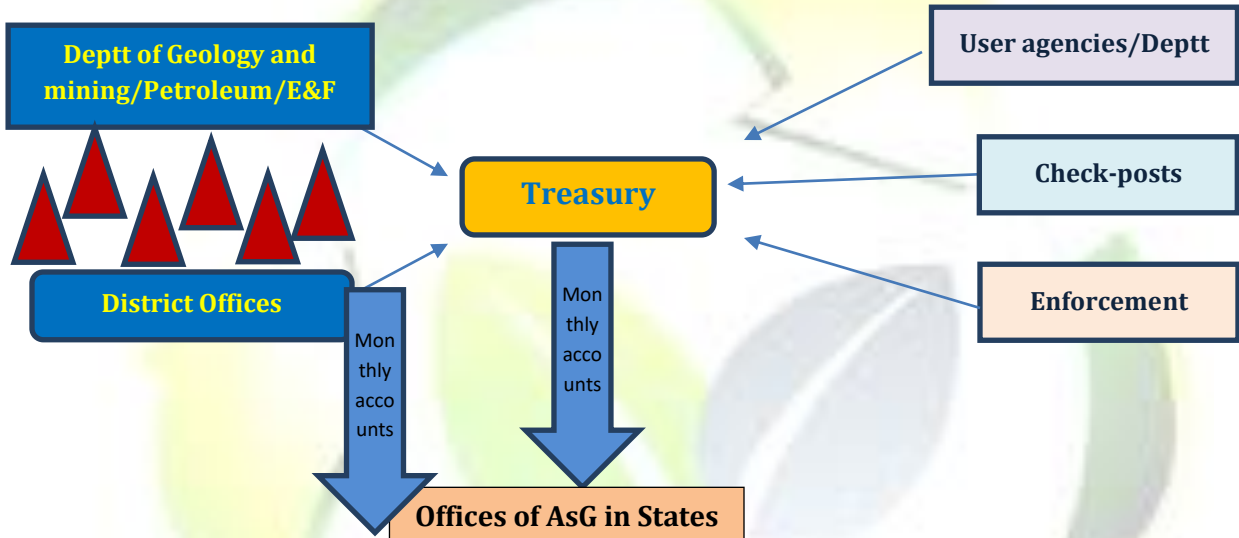
**This document is intended to suggest the guidelines of standard operation procedures (SoP) for automating the system of capturing the physical flows of resources at the source, i.e. the district mining/petroleum/forest office levels and continuously building up the Asset Accounts at the directorates as well as the Accountants General Offices, the cross verification mechanism, monitoring the carbon emission per State and per capita along with progress of generation of renewable energy resources, 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**

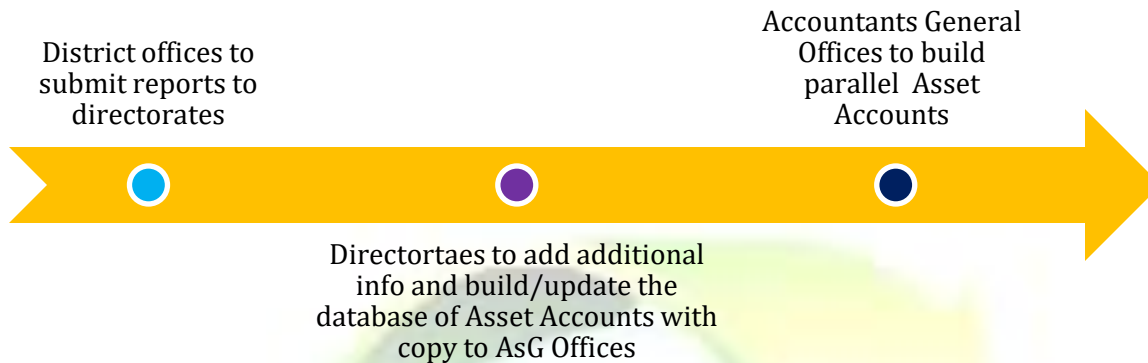
As discussed under para ‘revenue realisation’ under Para 2.3, there is a seamless system of reporting the receipts remitted to the State Government under different heads of mining and allied activities to the Accountants General Offices which compiles them into the total receipts of the States. The system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



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 Automating the systems of inputs**

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.



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 monthly to the directorates:

- Name of resource/mine – showing separately major minerals, fossil fuels, minor minerals and other resources (as the case may be)
- 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 sub-classification of minerals)
- OB of extracted resources/finished products for the current month (with detailed sub-classification of minerals)
- Quantity extracted during the month (with detailed sub-classification of minerals)
- Quantity dispatched during the month – showing separately Government sector, Private sector, others usage, exports
  - ✓ ***For this, suitable mechanism need 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/finished products (with detailed sub-classification of minerals)
- Amounts collected under district mineral foundations and those utilised
- 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 monthly 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 fortnight (15<sup>th</sup> day) after every month and submitted by the district Offices to the directorates and the directorates may submit the same to the AsG Offices within 30 days after closure of a month.**

### **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. 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, monthly. The NRA Cell can work on these data-sets, carry out necessary validations, cross-verifications etc for finalizing the Asset Accounts for the year.

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

As the data-sets 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 data-sets:

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

*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 validations and hand holding:** Though validations have been envisaged annually by the audit offices after the first level of State Government Department level validation, continuous validations and hand holding 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 monthly reports/returns, correctness of the reports/returns vis-à-vis the documents/data available in these Offices;

- The system of corroborating the monthly 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,
  - 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 dispatched are corroborated with records/documents, photocopies of which are supplied along with the monthly reports/returns,
  - An assurance from the lease holders that the figures mentioned in the extraction and dispatch figures are true and fair picture of the actual figures and that no excess extraction and dispatch has taken place to the best of their knowledge,
  - That the closing stock of extracted resources and the finished products are actually those available at the mine/production site.

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

While capturing the physical flows monthly along with the receipts will build up the basic datasets, the revenue receivable, total revenue receivable and the average market value as in columns 4 – 6 of Table 3 under para 6.2 of book on templates 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.

## **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:

### **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 2022 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**

As per the Minor Mineral Concession Rules, mining plans are required to be prepared for each of the resources before seeking approvals of the Government of India. Opening balance of resources could be worked out with the use of such mining plans. 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 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. Suggestive format for capturing riverine resources is depicted under the format of table 2 below.

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 of these mining areas need 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: Sub-classification/grades as maintained by IBM

States may adopt these broad sub-classifications 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.

## **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. Consequently, a number of instructions have been issued for revisions/updates in the formats of tables like additional column on district mineral foundations, mentioning the sub-categories of major minerals uniformly across the States besides additional tables 4 to 7 to depict the analysis or extraction – production- dispatch, district mineral foundation, carbon emissions and progress on renewable energy resources which are discussed separately in some of the succeeding paragraphs of these guidelines.

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

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

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

Particulars	Names of resources (for illustration only)			
	Coal	Crude oil	Natural Gas	Iron Ore
<b>Opening stock of environmental asset</b>				
Growth in stock				
Discoveries of new stock				
Upward reappraisals				
Reclassifications				
Total addition of stock				
<b>Reduction of stock</b>				
Extractions				
Normal loss of stock				
Catastrophic losses				
Downward reappraisals				
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>				

\* 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	Grade-wise sub-classification (may vary from State to State)	Opening stock of proved reserves	Addition to stock*	Reduction in stock			Closing stock of proved reserves	Sustainability of resources in years****
				Extracted by/for		Other extractions ***		
				Govt Sector*	Private Sector			
(in tonnes/cum - as the case may be)								
Major Minerals								
Fossil fuel								
Minor minerals								

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

Other resources, if any										
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Information compiled in Table 3 may come in this table in consolidated form.

**Table 2A**

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

Classification	Grade-wise sub-classification (may vary from State to State)	Available reserves at the beginning of the year (as per mining plans)	Accumulation during the year	Reduction in stock			Remaining reserves at the end of the year	Sustainability of resources in years (if ascertainable)
				Extracted by/for		Other extraction including exports		
				Govt Sector	Private Sector			
(in tonnes/cum - as the case may be)								
Riverine resources	Sand							
	boulder							
	Shingle							
	Others							

**Table 2B**

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

Particulars	Grade-wise sub-classification (may vary from State to State)	Physical unit extracted showing Govt, Private and other sector as in table 2A	Valuation of resources			District Mineral Foundation	
			Revenue receivable	Total revenue receivable	Average Market value	Amount receivable	Amount received
			(₹ in crore)				
Inputs as in Table 3 may be broadly followed							

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







**Table 3**

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

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 (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)		
<b>Opening stock/availability of resources at the beginning of the year</b>					
<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 Forest (on recovery of royalty, cess, fees, NPV etc) #					



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

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									
Production loss									
Final production									
Dispatch of finished products									
Exports									
Reduction due to mining activities not approved by Depts \$									
<b>Total reduction:</b>									
<b>Extractions permitted during the year</b>									
<b>Closing stock</b>									<b>(Will depict future revenue streams)</b>

Note: The clarificatory notes below tables 1 to 3 in the book of templates may kindly be consulted.

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

**Table 4**

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

Name of resource (s) with detailed grades	Opening stock at the beginning of the year		Extractions during the year	Productions during the year	Production loss/variations between extraction and production		Dispatch during the year	Closing stock at the end of the year	
	Raw/ores	Finished products			In volume	In per cent		Raw/ores	Finished products
	Physical units					Physical units			

**Table 5**

**Tables showing analysis of district mineral foundation**

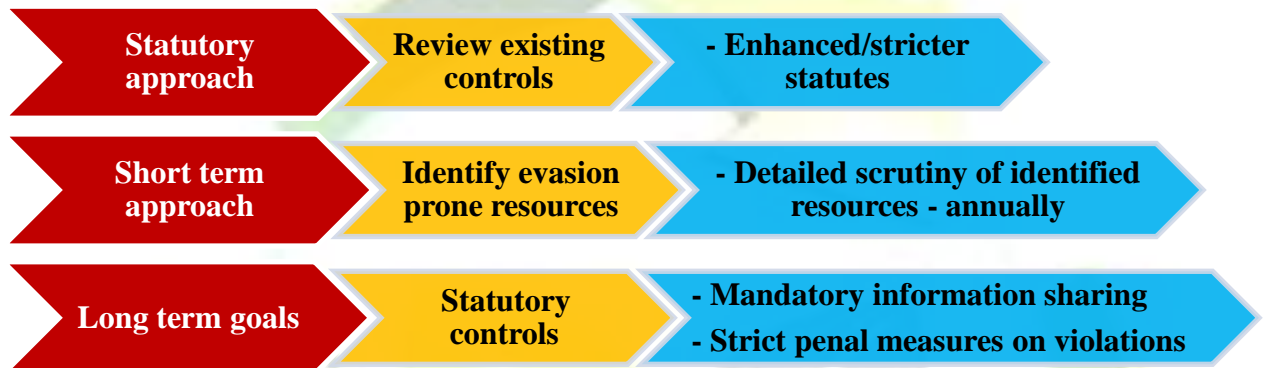
Name of Mine/Mineral/District	Volume of minerals on which DMF was realisable	Rate at which DMF realisable	Total DMF realisable	Total DMF realised	Variations, if any	
					In ₹	Percentage

Thus, States may use the aforesaid formats of Asset Accounts for preparation of Asset Accounts from the year 2021-22 and also use these as targeted tables for laying down the monthly 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 non-renewable energy resources consists 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. While States have already endeavoured various control 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, 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:



### **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 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 and relatively increase in illegal mining activities, 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 process the statutory changes and 360 degree 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
- Present 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.

### **Long term goals**

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 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

- 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 carbon emissions and progress on generation of renewable energy resources**

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:**

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 above commitments, information on carbon emissions, i.e. State wise position and per-capita emission, progress on generation of new and renewable energy are envisaged to be captured annually and depicted in the Asset Accounts in the following formats as Table 6 and 7 (tables 1 to 3 as prescribed in the book on templates issued in October 2021 and tables 4 and 5 inserted on analysis of extraction vis-à-vis production and collection of DMF).

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 inventory, at present. However, certain agencies are publishing State-wise emission data in public domain. The nationally determined contributors for capturing data-sets related to carbon emissions are under finalisation at the Ministry of Environment, Forest and Climate Change in co-ordination with other stakeholder ministries. Till such time, the endeavour would be to collect the data, if maintained by any of the State Governments, to initiate compilation of State-wise emissions till the uniform nationally determined contributors becomes applicable in the States.

Availability of credible and robust State-wise data on carbon emissions will not only enable easy and transparent data compilation at the national level but will also help in building data-sets at local Government level and aid in better management of carbon footprints at all levels of governance. Besides, the private agencies can also source their required data-sets from these State Governments to ensure that only credible data, authorised by the Governments are published in public domain as it bears international ramifications.

**Carbon Emissions (Table 6)**

Name of State	Total population (last census)	Source of emission	Carbon emission	Total emission	Per capita emission
		Industrial			
		Vehicular			
		Commercial/ residential			
		Others			

Note: Information on the details of models, techniques and assumptions in lines with guidelines of the Inter-governmental panel on climate change (IPCC) from time to time based on which the data has been captured may be obtained and disclosed.

Also, brief note about carbon sequestration efforts/carbon sinks in the State along with whether any assessment being carried out with their results may please be stated.

**Progress in generation and use of renewable energy resources (Table 7)**

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		Reduction of carbon emission as a result of increase in renewable energy usage over previous year (in volume/pc)
			Non-renewable (N/R) 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										

\* 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

## 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, their credibility for the templates at tables 1 to 3 provided in Chapter VI of the book on templates. Further, the data flow and source of data along with the periodicity of data collection/flow for the tables 1 to 7 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	Monthly flow of data as envisaged in Para 3 above	Monthly
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	Monthly flow of data as envisaged in Para 3 above	Monthly

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

Revenue receivable	Royalty and other due to Government as notified from time to time by Governments	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 managing resources</li> <li>• Enforcement agencies</li> <li>• Police Department</li> </ul>	<ul style="list-style-type: none"> <li>• Detected by the departments/enforcement and Police Department</li> <li>• Annual cross verifications carried out by NRA Cell as per para 6 above</li> </ul>	Annual
Cross verification on usage/sale of resources as in Para 6 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 6 – through deployment of personnel and collection of information/data through requisitions</li> </ul>	Annually
Table 6 Emission particulars	<ul style="list-style-type: none"> <li>• Pollution Control Boards</li> <li>• E, F &amp; CC Departments</li> <li>• New &amp; Renewable Energy Resources Departments</li> </ul>	Collection of information through requisitions	Annual – after closure of the year
Table 7 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, monthly progress could be gathered on production and use of renewable energy resources – in the lines of non-renewable energy resources	

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

**11. GPS enabled district-wise mining map – a necessary requirement**

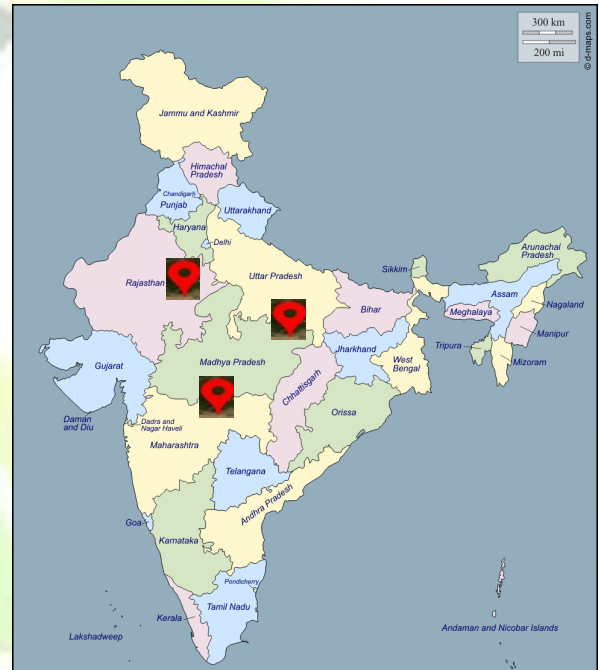
The GPS co-ordinates of the mine areas, resource wise, could be collected well before the commencement of the year 2022-23. This will enable creation of resource-wise maps including geo-tagging of the actual mine areas by each States with mine indicators



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 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.

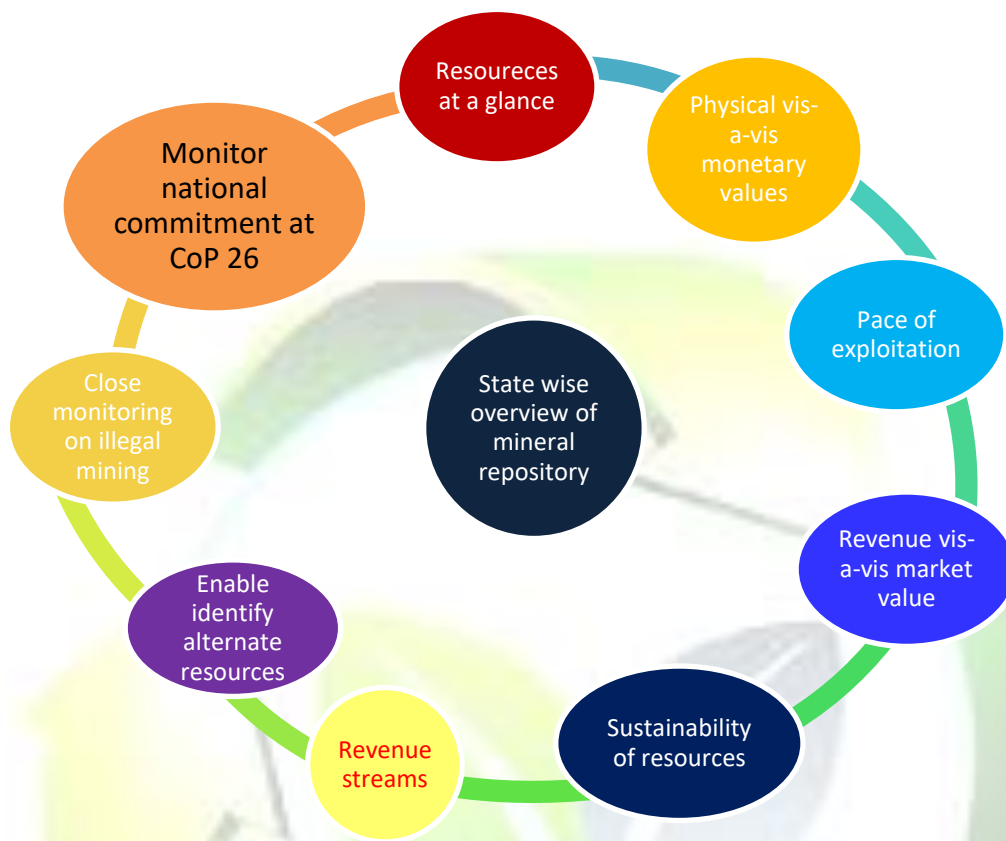
Requisite mapping could be enabled navigating the readers to the latest Asset Accounts providing information on total stock of resources in the district, annual extraction, revenue realised and other details captured through our Asset Accounting processes in the districts and compiled State-wise.

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 not only enable birds-eye view on the available resources and their exploitation besides other advantages as depicted through the diagram below:



Additionally, the data-sets, once compiled State-wise, would give way to big-data analysis in States, add impetus to audit of 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.