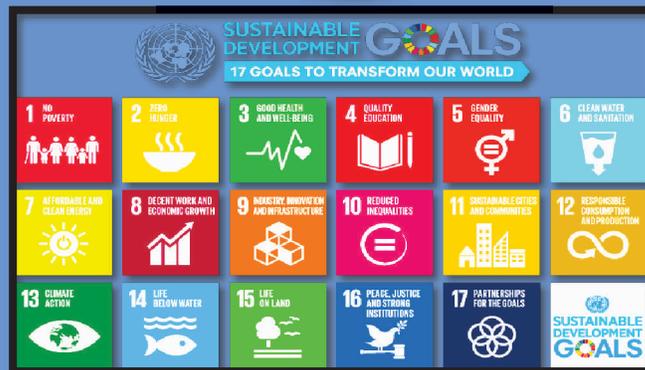




**TEMPLATES OF ASSET ACCOUNT
ON
MINERAL & NON-RENEWABLE ENERGY RESOURCES IN STATES**
**Goal 1 of
CONCEPT PAPER ON NATURAL RESOURCE ACCOUNTING IN INDIA**



**An initiative of Government Accounting Standards Advisory Board
under the aegis of Comptroller and Auditor General of India to
support implementation of Natural Resource Accounting in India**

October 2021

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FROM THE CHAIRPERSON'S DESK

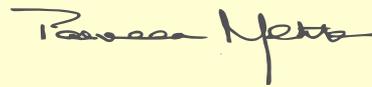
Natural resources play a pivotal role for economic development of a country and are crucial for their inbuilt value of inter-generational equity and sustenance. The need for NRA took its first step at the UN conference on Human Environment in 1970 when the relationship between economic development and environmental degradation was discussed for the first time. This was followed up by the Brundtland Commission, the Earth Summits in 1992, 2002 and 2012. Simultaneously, the UN also brought out and adopted the System of Economic and Environmental Accounting – Central Framework (SEEA – CF) in August 2012. NRA has deep inter-linkage with the Sustainable Development Goals as 10 of the 17 goals directly or indirectly relate to management of natural resources and their accounting.

The Concept Paper on NRA in July 2020 is an initiative towards handholding the Government of India and the States in implementing NRA across the country. The Paper envisaged a three-term plan commencing with the compilation of a periodic database on five selected resources in the shape of Asset Accounts while prioritizing on Mineral and Non-Renewable Energy Resources or the non-renewable resources.

Besides the action plans, we have also designed templates for compilation of the Asset Accounts. These went through an extensive stakeholder consultation process, to make them inclusive and robust. Subsequently, the templates were tested in five States to ascertain their comprehensiveness and implementability. Goa, Meghalaya and Rajasthan have completed the pilot studies successfully, preparing the model Asset Accounts on Mineral and Non-Renewable Energy Resources for their States. The results of the pilot studies and the templates were updated and circulated to the members of the Consultative Committee of NRA Cell constituted by GASAB, comprising stakeholder ministries in Government of India, Indian Bureau of Mines, ICAI, five State Governments, Accountants General in the States and eminent environmentalist Mr Mukul Sanwal. The templates, duly incorporating the comments/suggestions of stakeholders, experiences on pilot run in the States and suggestions of the Consultative Committee members, have been included in this booklet for a wider test run which will lead to developing a well-defined methodology for preparation of Asset Accounts, including identification of underlying assumptions. All States are requested to undertake this exercise for the year 2020-21, to be completed by March 2022. This will enable taking the process further with practical inputs from all states, and consequent development of asset accounting procedures.

I appreciate the tremendous work by all concerned in developing the templates for Asset Accounts of resources.

I am confident, the stakeholders and primarily the State Governments will continue to attach due priority to the project and help us in attaining the next ambitious target of preparing first draft of Asset Accounts on Mineral & Non-Renewable Energy Resources in the States for the year 2020-21 by March 2022 as the basis for stabilizing the methodology and fine tuning the Standard operating procedures. This will be an important step forward in our endeavor to prepare comprehensive and reliable Asset Accounts of natural resources in future.



(Parveen Mehta)

Dy Comptroller and Auditor General
& Chairperson, GASAB

NEW DELHI

DATED: 12-10-2021

PREFACE

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.

At its core, environmental and natural resources make an important contribution to the long-term economic performance and can be considered economic assets, even when they do not enter directly in the calculation of GDP of a country. The over exploitation of these resources in recent times has resulted in harmful impact on the environment and issues of climate change, extreme weather conditions and global warming have become a regular phenomenon round the Globe. These are subject matter of discussions at all Global and multilateral forums.

Natural resources play a vital role in the economic development of a country. They need to be exploited in a sustainable manner so that the future generations can also avail of their advantages. It is an accepted fact that **“Measurement of a resource leads to its better management”**.

Conventional accounting captures data for measuring the economic activities only whereas the environmental statistics are often generated focusing on a particular area or a question. The concept of NRA has thus emerged to capture the intimate interplay between the economic indices and the components of the natural environment including and not limited to its inputs and resultant residuals, which is also closely, associated with the SDGs. **The idea is to quantify the non-renewable damage to natural resources and reduce from economic GDP to arrive at Green GDP.**

The Concept Paper on NRA in India released 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.

The Paper also suggested tentative templates for the Asset Accounts supported by detailed guidelines for their preparation by the States. These templates have gone through wider consultation processes with the stakeholders and updated with the results of pilot studies conducted in five States of which, Goa, Meghalaya and Rajasthan have completed the pilots successfully by preparing the model Asset Accounts on Mineral & Non-Renewable Energy Resources in these States. The Accountants General Offices

with the active support of the State Government Departments carried out this pioneer work. The templates have also been vetted by a Consultative Committee set up by GASAB consisting of representatives of ministries in Government of India, Indian Bureau of Mines, ICAI, five State Governments and Accountants General in these States and eminent environmentalist and senior bureaucrat Shri Mukul Sanwal, IAS 1971 (retd).

In order to take the States onboard as one of the most vital stakeholders, virtual presentations were made to the State Governments highlighting the concept and importance of NRA; works done by GASAB; key takeaways on implementation of Asset Accounts; way forward and expectation from the States. The Chief Secretaries, Additional CSs / Pr. Secretaries of Mines and Finance Departments besides the Accountants General and State NRA Cell members attended the meetings. 28 States/UTs have been covered between 31 August and 28 September 2021.

The efforts of the State Governments and the Accountants General in jointly forming NRA Cells in the States and the enthusiasm and continued patronage of the NRA Cell members towards the project are gratefully acknowledged. Achievements attained till date and the release of the formats of Asset Accounts on Mineral & Non-Renewable Energy Resources within the targeted timeline would not have been otherwise possible. Unhindered support of the States is imperative for the success in preparation of the first Asset Accounts on Mineral & Non-Renewable Energy Resources in the States for 2020-21 by March 2022.

I take this opportunity to quote Neil Armstrong on landing upon the Moon – ‘That’s one small step for man. One giant leap for mankind’. I am sure that this endeavor of GASAB under the aegis of the CAG spearheading the implementation of NRA in India would serve as the stepping stone for building up a robust framework of NRA in the country which will not only help in meeting international commitments but would also aid in evidence-based decision making by the policy makers. It will also help in monitoring resource-usage aiding sustainable developments while on the other hand keeping necessary stock of resources for our future generations.



(Ram Mohan Johri)

NEW DELHI
DATED: 12-10-2021

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

EXPERT'S TAKE

The biggest impact on natural resource use arises from the population shift from villages to cities and into the middle class. The initiative of the CAG provides a better understanding of this transformation, and how best to manage middle class levels of living within ecological limits.

The Asset Accounts designed by the organisation of CAG of India and GASAB team will not only help the country in achieving its international obligations but will also add immense value to evidence-based decision-making process being stressed upon by the hon'ble Prime Minister of India. The formats are extremely well thought out and enable new policy issues, and comparisons of data will add value to good governance. The project must be seen as an evolving process and solutions will emerge through discussions with the States.

There is a global commitment to meet the Sustainable Development Goals, but there is no common understanding of how they affect society, and countries are implementing them responding to their national circumstances. The initiative of the CAG is significant for at least three reasons.

First, instead of adopting a purely market based approach for valuation of natural resources relying on a number of assumptions, as developed countries are doing, the GASAB is using assets, cost and revenue as extraction is regulated and analyzing these trends is an important part of good governance, including identifying 'leakage' of revenue and waste of natural resources.

Second, the shift from looking only at production to considering usage, or consumption, reflects the most stable global trend of urbanization and consumption as the major constituent of GDP. For example, construction material has the largest share of material use worldwide and is growing in India, while its impact on natural resources and on revenue has yet to be widely appreciated. The initiative is leading to broadening the scope of performance audit stressing the qualitative dimension.

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.

Third, the exercise is emerging as a joint effort of the CAG and the States as new questions are being raised on how we manage these 'assets' and solutions found in a cooperative spirit of common understanding. Prompted by this exercise, States are also re-looking not just the current system of collection of statistics but also seeing value in their modification and comparing different sets of statistics.

The team guiding the effort has to be congratulated for their dedication and needs encouragement as a bigger challenge will arise when 'water' with its deeper impact on society is considered.

NEW DELHI
DATED: 12-10-2021



(Mukul Sanwal)
IAS 1971 (retd)

Officers associated with this document

Ms Parveen Mehta,
Deputy CAG & Chairperson, GASAB
(Overall vision and guidance)

Shri Ram Mohan Johri,
Additional Deputy CAG, GASAB
(Concept visualisation, onboarding of stakeholders
and implementation strategy)

Shri Sudipta N Biswas,
Sr. Administrative Officer, GASAB
(Preparation of Concept Paper and this document,
dovetailing the way forward with milestones and
designing the templates for Asset Accounts)

Executive Summary

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

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

NRA Cells have been constituted in the States and headquarters of GASAB to steer the implementation process of NRA in India.

Besides the plans, the Concept Paper also suggested the templates for preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources. Simultaneous to the release of the Concept Paper, pilot studies were initiated (August 2020) in five States, of which, three States namely Goa, Meghalaya and Rajasthan have successfully completed the studies, preparing the model Asset Account on Mineral and Non-renewable Energy Resources in the States. The formats were reviewed based on the results of pilot studies and circulated (April 2021) among the members of Central NRA Cell for review and inputs/comments and suggestions. Based on the comments/suggestions, the formats were updated/modified and re-circulated to the members in July 2021. This was followed up by a virtual meeting of the Central NRA Cell on 20 September 2021. The templates have been finalised based on comments/suggestions received from the members.

In order to take the States onboard, the Deputy CAG & Chairperson, GASAB has demiofficially written to all the Chief Secretaries of States informing them about our endeavour, works done, successes and way forward. Virtual presentations were made to the States on the above and the State's views/comments and suggestions during the meetings have been gratefully acknowledged and taken into consideration while finalizing the templates.

This Paper contains the final templates of Asset Accounts on Mineral and Non-Renewable Energy Resources suggested for implementation in States to commence with the Asset Accounts for the year 2020-21 to be completed by March 2022. Detailed guidelines on methodology of collection of data, sources of data and depiction in the prescribed templates have been included for guidance of the States.

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

- ***A one pager document on State-wise resources***
- ***Compilation of physical and monetary values to enable cross verification of revenues vis-à-vis actual extractions***
- ***Consolidation of information over the years to provide pace of exploitation***
- ***Analysis of revenue vis-à-vis market value/export value will make it easier to assess and review the royalty rates – arrest windfall gains and protect State's revenue interest***
- ***To bring out sustainability of resources – in years***
- ***Enable assessment of revenue streams for the future***
- ***To help in identifying alternate resources (energy/ economic)***
- ***Close monitoring on illegal mining***

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

(Chapter VI and VII)

Besides the final templates, the Paper also lays down a plan for further streamlining and enhancing the internal control mechanism on mining activities in the States. The highlights are discussed below:

- **Installing an automated e-permit system with necessary bar-coding for verification at the check-posts/railway yards/customs stations/material acceptance points of industries etc.**
- **Automated systems could be installed for making available real time information of permits in the check posts (both intra and inter-State/customs check posts at international borders) so that the mining passes produced by the transporters at the check-posts can be verified before allowing movement**
- **Systems need to be put in place to prevent transportation of minerals with duplicate mining passes by making it mandatory to pre-register GPS enabled carriage vehicles with the Mining Departments**
- **The unladen weight of the vehicles should be captured so that the mineral carried could be easily ascertained by reducing the unladen weight and the Gross vehicle weight slip obtained from the weigh-bridges and carried by the vehicle**
- **Automated/manual systems need to be installed for regular flow of information from the points of consumption/sales/inter-state or outside the country movements to ensure end-to-end veracity of actual extraction data**
- **Making it mandatory to produce electronically verifiable e-permits for consumption, inter-state/international movement of minerals. Else, recovery of full royalty/taxes/duties etc along with penalty as applicable may be strictly enforced**
- **Enhancing the quantum of penal measures to act as high deterrent on illegal mining activities**
- **Enact stringent penal measures, wherever not available, on departmental authorities/personnel/agencies including their authorised personnel for not ensuring valid e-permits or royalty/penalty collections while allowing transportation/ purchase/ consumption-similar to Income Tax Act.**

The Paper also suggests the States to install an automated/app-based data collection mechanism by March 2022 for easing the process of compilation of Asset Accounts in subsequent years.

Successful implementation of Asset Accounts on Mineral and Non-Renewable Energy Resources in the States would mean that India not only meets the first of the four-stage implementation strategy prescribed by the SEEA – CF but will also get into the elite list of countries where Asset Accounts on natural resources (importantly non-renewable resources) are generated.

(Chapter VII)

CHAPTER 1

INTRODUCTORY



1.1 Natural Resource Accounting – the Concept

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

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

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

Natural resources play a vital role in the sustainable economic development of any country. They need to be exploited in a sustainable manner so that the future generations can also avail of their advantages. The rampant over –exploitation of these resources in recent times has resulted in harmful impact on the environment and issues of climate change and global warming have become a matter of discussions and deliberations round the Globe.

Conventional accounting captures data only of the measurable economic activity. In order to overcome this shortcoming and to capture the intimate interplay between the economic

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

indices and the various components of the natural environment, the concept of NRA has emerged.

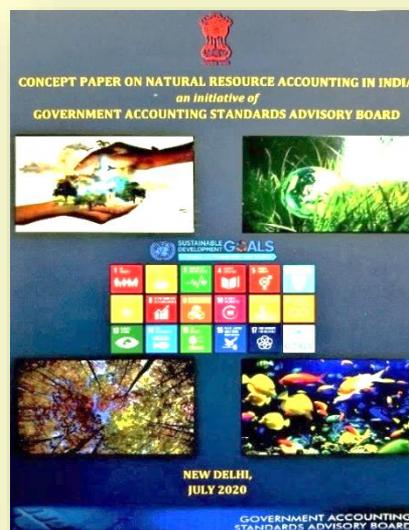
It is based on the concept “Measurement of a resource leads to its better Management.” The idea is to quantify the damage to the environment so that it can be reduced from GDP to arrive at Green GDP. It would assist in taking policy decisions in respect of matters affecting environment directly and indirectly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

<p>Economic Accounting</p> <ul style="list-style-type: none"> ✓ Conventional accounting captures data only of the measurable economic activity. ✓ Doesn't weigh environmental inputs ✓ Resources taken for granted 	<p>"Measurement of a resource leads to its better Management."</p>
<p>1978 2012</p> 	<p>Eco-Environmental Accounting</p> <ul style="list-style-type: none"> ✓ Intends to capture the intimate interplay between various components of the natural environment and the economy ✓ Can connect to other datasets to provide invaluable information on the larger picture connecting environment with the economy ✓ Able to help quantify the adverse impact on environment due to economic development and aid to sustainable growth
<p>Environmental Statistics</p> <ul style="list-style-type: none"> ✓ Often developed with particular question or objective ✓ Do not cater to larger picture ✓ Difficult to inter-relate with other datasets 	

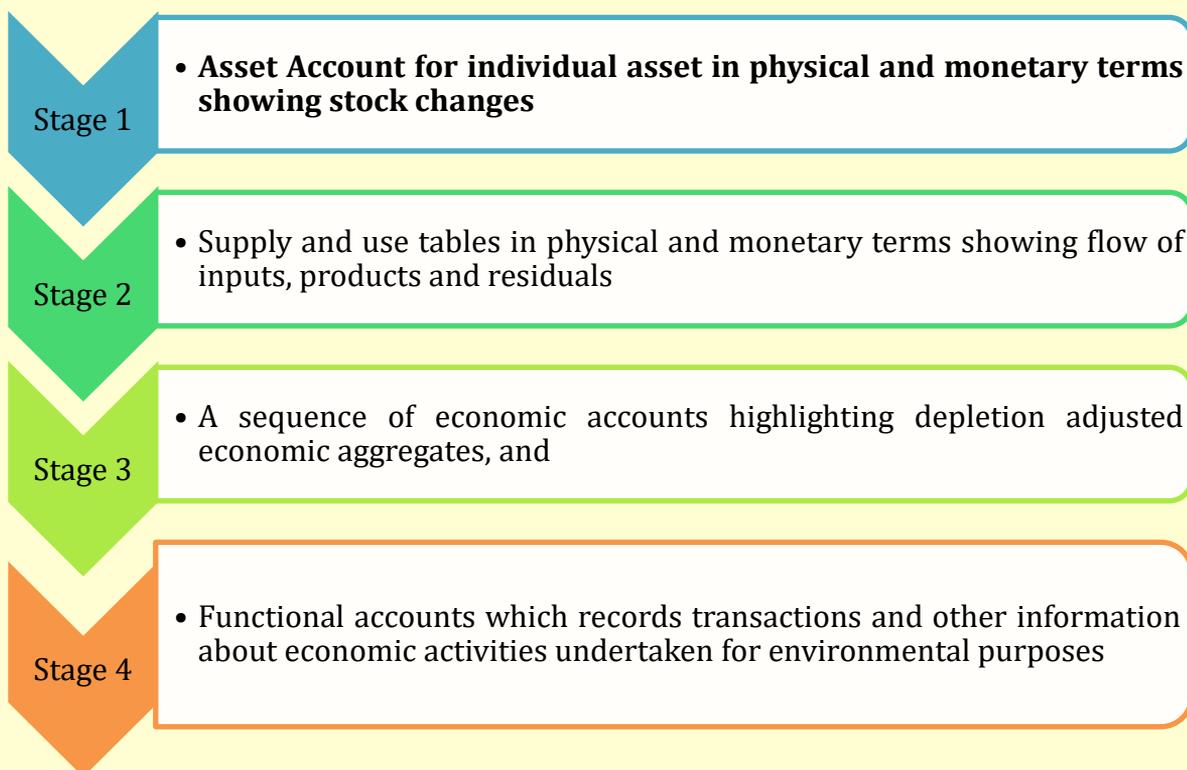
In keeping with the developments, the United Nations has been working towards an universally acceptable framework on environmental resource accounting which culminated into release of the System of Economic and Environment Accounting - Central Framework (SEEA - CF) in 2012 which is the latest internationally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

1.2 A recap from the Concept Paper on NRA in India – released by GASAB

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



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



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

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

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

1.3 CAG's role in implementing NRA in the country

Constitutional Provisions:

Article 150 of the Constitution provides that the accounts of the Union and of the States shall be kept in such form as the President may, on the advice of the Comptroller and Auditor General of India, prescribe.

CAG's (DPC) Act, 1971:

Section 10 – 12 of the CAG's (DPC) Act requires the CAG to compile, prepare and submit the accounts to the Legislature. Section 23 provides for powers of CAG to make regulations for carrying into effect the provisions of this Act in so far as they related to the scope and extent of audit, including laying down for the guidance of the Government Departments the general principles of Government accounting.

The CAG of India is a member of the INTOSAI (International Organisation of Supreme Audit Institutions), founded in 1953, which is an autonomous, independent and non-political organisation with special consultative status with the ECOSOC of the UN.

The WGEA (Working Group on Environmental Auditing), is a group constituted by the INTOSAI - aims to encourage the use of audit mandates and audit methods in the field of environmental protection and sustainable development by both members of the Working Group and non-member SAIs. The WGEA and its members share a commitment to use the power of public sector audit to leave a positive legacy for future generations, by improving the quality of the environment, the management of natural resources, and the health and prosperity of people around the world.

An initiative of Government Accounting Standards Advisory Board

The WGEA through its report of 2010 titled 'Environmental Accounting - current status and options for SAIs', provided the following recommendations:

In countries that are not currently developing NRA, SAIs could take the following actions:

- Determine the value of environmental accounts for their government by identifying the costs and benefits of developing environmental accounting within the country, and /or
- Assist the Governments in the development of environmental accounts, by
 - ✓ Identifying challenges to applying environmental accounting in their country;
 - ✓ Recommending strategies to overcoming challenges;
 - ✓ Identifying goals for developing environmental accounts;
 - ✓ Identifying agencies and organisations that compile information useful for NRA, and/or
 - ✓ Identifying best practices in NRA.



OPTIONS AVAILABLE TO SAIS IN COUNTRIES THAT ARE NOT CURRENTLY DEVELOPING ENVIRONMENTAL ACCOUNTS

In countries that are not currently developing environmental accounts, SAIs could take the following actions:

- determine the value of environmental accounts for their government by identifying the costs and benefits of developing environmental accounting within their country, and/or
- assist their governments in the development of environmental accounts by:
 - 1) identifying challenges to applying environmental accounting in their country,
 - 2) recommending strategies for overcoming challenges,
 - 3) identifying goals for developing environmental accounts,
 - 4) identifying agencies and organizations that compile information useful for national environmental accounts, and/or
 - 5) identifying best practices in environmental accounting.

The following are suggestions of various ways that SAIs can become involved in environmental accounting within their countries. It also includes examples of how SAIs are using environmental accounting, depending on the level of experience with the discipline within their governments.

Snapshot from the Paper on Environment Accounting - Current status and options of SAIs – WGEA (INTOSAI)

In view of the responsibilities enshrined in the Constitution, the CAG's DPC Act and the suggestions of WGEA, this initiative of GASAB under the auspices of CAG is an endeavour to assist and support the Government of India as well as the States in implementing NRA across the country.

CHAPTER - 2

NEED FOR THE ASSET ACCOUNTS



2.1 Asset Accounts on Mineral & Non-Renewable Energy Resources

Currently, many policymakers lack information needed to understand the potential environmental impact of their decisions, and the economic implications of changes to their environment and natural resources. Environmental accounts have the potential to provide key information that policymakers can use to understand the state of the environment, how it is changing over time, and the consequences of various policy options. For example, in recent times two major auction of natural resources like coal blocks and electro-magnetic spectrum were made by the Government of India. Though a broad outline of available stock was used as a base, availability of detailed physical stock and flows on a year-to-year basis with revenues generated on such extractions and their actual market value (as envisaged in the format of Asset Accounts) would have further helped the Government in effective decision making keeping an eye on the sustainability of these resources.

In essence, Asset Accounts should be able to address the following, that they are :

- Purposeful and consequential for the account-user who depends on the reported information;
- Able to measure change in a defined account subject through time;
- Organised to enable comparisons and crosschecks in an internally consistent manner; and
- Comparable with other relevant accounts so it can provide the basis for more detailed or aggregated analyses.

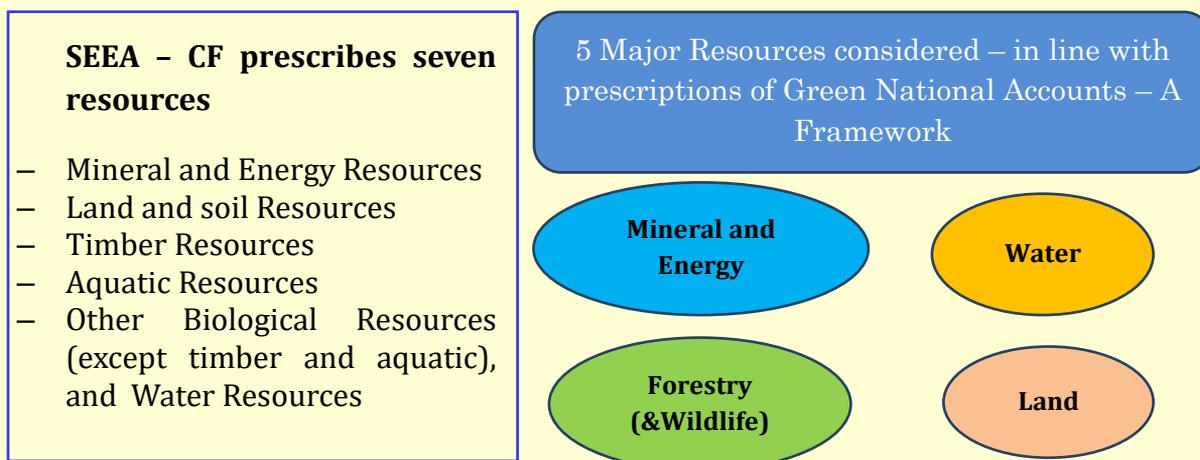
Environmental account ought to have the fundamental characteristics of relevance, credibility, and legitimacy for the accounts to be effective and play different roles in the development and value of the account. First, the account must have relevance to the users and align to their needs. Credibility would mean that while adequately representing the subject, the account would effectively render the desired information.

An initiative of Government Accounting Standards Advisory Board

Even if the environmental accounts are well-founded, relevant, and credible, legitimacy is also another important value to reckon while establishing NRA. Legitimacy is the degree of acceptance of an account by the account users. Legitimacy reflects the perception that the production of information and technology has been respectful of stakeholders' divergent values and beliefs, unbiased in its conduct, and fair in its treatment of opposing views and interests (Cash et al. 2003). These values guide and influence the environmental accounting principles and every aspect of the accounting process.

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

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



2.3 Mineral and Non-Renewable Energy Resources - in India

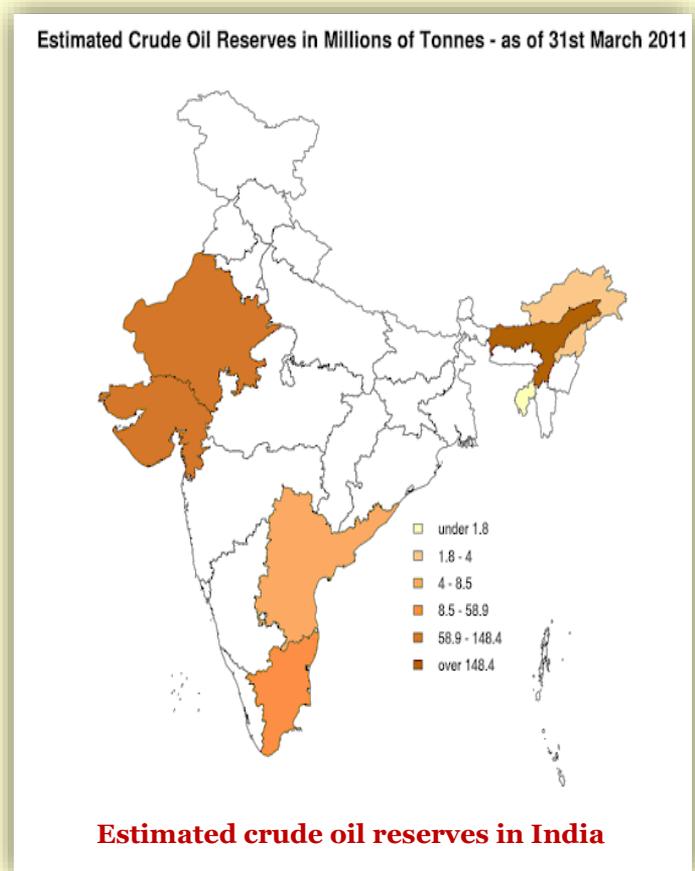
India possesses a wide range of minerals and other natural resources. Domestically supplied minerals form an important underpinning for India's diversified manufacturing industry, mining industry as well as a source of modest export revenues.

Among mineral resources, iron ore (generally of high quality) and ferroalloys - notably manganese and chromite - are particularly abundant and all are widely distributed over the country. Other exploitable metallic minerals include copper, bauxite (the principal

one of the aluminum), zinc, lead, gold and silver. Among important non-metallic and non-fuel minerals are limestone, dolomite, rock phosphate, building stones, ceramic clays, mica, gypsum, fluorspar, magnesite, graphite and diamonds.

Further, a comparison of the stock of minerals during 2005 and 2015 would indicate that a number of minerals are depleting fast. This, while pointing towards possible indiscriminate use of natural resources, also highlights the importance of preparation of physical stock and monitor their usage on sustainable basis.

Among the fossil fuels, India is well endowed with coal and modestly so with lignite. Coal supplies are widespread and comes from some 500 mines, both surface and deep - pit distributed over a number of States. By far the most important coal producing region is along the Damodar River, including the Jharia and Raniganj fields in Jharkhand and West Bengal which account for about half the nation's output and virtually all the coal of cooking quality. Also, coal is in abundant and easy to mine in the Chota Nagpur Plateau, which is the principal source area for coking coal.



Domestic reserves of petroleum and natural gas, though abundant, do not meet the country's large demand. Petroleum fields are located in eastern Assam (India's oldest production region) and in Gujarat and offshore in the Arabian Sea on an undersea structure known as the Bombay High. Several other onshore and offshore petroleum reserves have been discovered, including sites in Tamil Nadu, Andhra Pradesh and Arunachal Pradesh. As per the EnviStats 2018 compiled by the Ministry of Statistics & Programme Implementation, total crude oil recoverable reserves stood as 635.59 million MT while reserves of natural gas stock was calculated as 1,251.99 billion cum.

Important mineral and mineral oil reserves in various parts of the country are shown in the table and map below:

Table showing mineral reserves across the country

State	Prominent Minerals
Andhra Pradesh	Barytes, Ball Clay, China Clay, Dolomite, Fireclay, Iron, Quartzite, Manganese, Laterite, Mica, Ochre, Quartz/silica sand
Assam	Petroleum and Natural Gas, Coal
Chhattisgarh	Coal, Dolomite, Bauxite, Iron, Fireclay, Limestone, Quartzite, Quartz/silica sand
Goa	Iron, Bauxite
Gujarat	Bauxite, Marl, Petroleum and Natural Gas, Chalk, Bentonite, China clay, Dolomite, Lignite, Limestone, Laterite, Quartz/silica sand, Fireclay, Manganese, Talc/soapstone/steatite
Jharkhand	Coal, Graphite, Bauxite, Iron, Copper, Kyanite, Dolomite, Manganese, Talc/soapstone/steatite
Karnataka	Gold, Iron, Manganese, Limestone, Dolomite, Dunite Magnesite, Quartz/silica sand, Granite, Silver, China clay, Chromite, Copper, Quartzite
Madhya Pradesh	Diamond, Copper, Manganese, rock phosphate, Limestone, Diaspore, Laterite, Bauxite, Coal, Pyrophyllite, Dolomite, Iron, Ochre, China clay
Maharashtra	Fluorite, Kyanite, Bauxite, Manganese, Coal, Iron, Limestone, Quartz/silica sand, Quartzite, Sillimanite, Dolomite
Odisha	Chromite, Garnet, Bauxite, Manganese, Iron, Quartzite, Dolomite, Coal, Pyrophyllite, Titanium minerals, Dunite, Limestone, Quartz/silica sand
Rajasthan	Lead and zinc, Wollastonite, Silver, copper, Limestone, Rock phosphate, Talc/soapstone/steatite, Gypsum, Ochre, Bentonite, Fuller's earth, Feldspar, Calcite, Ball clay, China clay, Dolomite, Fireclay, Iron, Lignite, Mica, Quartz/silica sand, Granite, Manganese



<i>Tamil Nadu</i>	Vermiculite, Dunite, Fireclay, Graphite, Lignite, Limestone, Magnesite, Quartz/silica sand, Titanium Minerals, Zircon, Sillimanite, Bauxite, Feldspar
<i>Telengana</i>	Coal, Manganese, Limestone, Barytes, Dolomite, Feldspar, Quartz/silica sand, Laterite, Shale, Chinaclay, Iron
<i>Uttar Pradesh</i>	Diaspore, Pyrophyllite, silica sand, Coal
<i>West Bengal</i>	Coal, China clay, Fireclay, Graphite, Quartz/silica sand

2.4 Why - Mineral and Non-Renewable Energy Resources

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

In keeping with the implementation stages as envisaged in the SEEA (CF), the flexibility embedded therein and the importance of non-renewable resources discussed above coupled with the prescription of SEEA that a country may decide to focus its initial efforts

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

on those accounts that are most relevant to current issues, preparation of Asset Accounts on Mineral & Non-Renewable Energy resources have been conceptualised as the need of the hour and thus planned as the short term goal No. 1.

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

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

A system of collation of a periodic database in the shape of an Asset Accounts on available natural resources linked with inter-related factors like revenues and costs involved in exploitation of such resources, their sustainability for the future generations would be extremely helpful in monitoring the sustainability of resources, effective decision making and ensuring evidence based good governance, adoption/adaption of SEEA besides

attaining other pressing international obligations like the Sustainable Development Goals and Climate Change.

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



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

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

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

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

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

OIL	1985	1990	1995	2000	2001	2002	2003	2004	2005	2006	2007
Opening stocks ¹	146,207	19,475	26,215	46,964	53,611	51,812	50,833	53,045	78,536	100,192	120,921
Extraction ²	-9,717	-1,112	-3,780	-6,878	-6,578	-6,326	-6,166	-8,260	-10,034	-10,982	-16,674
Revaluation due to time passing	3,847	580	1,698	2,735	2,557	2,333	2,524	3,657	4,924	5,610	8,784
Other volume changes	1,174	332	-1,577	-295	1,467	5,051	3,238	6,103	2,134	8,922	2,190
Change in extraction	176	0	276	-1,142	-961	0	-1,291	-2,253	-3,459	-3,685	0
Change in rent	-58,596	-6,458	15,267	11,660	611	-3,584	2,283	24,918	26,329	18,282	59,183
Normal holding gains	8,389	1,486	690	567	1,105	1,597	1,574	1,326	1,762	2,581	3,487
Closing stocks	91,480	14,304	38,789	53,611	51,812	50,883	53,045	78,536	100,192	120,921	177,891

A sample table showing benefits of Asset Accounts over the years

Revenue vis-à-vis market value: Ascribing money value with reference to the royalties/revenues combined with the market value would aid in continuous analysis of the royalty/duty/taxes to help the public exchequer while keeping a tab on windfall gains on commercial exploitation and resale/consumption.

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

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

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

CHAPTER 3

ASSET ACCOUNTS IN OTHER COUNTRIES



3.1 Initiation of environmental accounts

Though the latest framework on NRA was released in 2012, different countries including the United Nations were relentlessly working on this agenda since 1970s. The UN set up the Brundtland Commission in 1983 to formulate 'a global agenda for change' hinged on the concept of sustainable development as an alternative to unfettered economic growth. The Paper, released in 1987, defined sustainable development as development that meets the need of the present without compromising the ability of future generations to meet their own needs. Simultaneous to the efforts of the UN, different developed and some developing nations attempted to draw up their environmental accounts, in which, countries like Australia, Canada, France, Germany, Norway are the frontrunners as briefly discussed in the succeeding paragraphs.

3.2 Compilation of natural resource asset accounts - some experiences

A review of the international experience in compiling environmental accounts in different countries brought out the following:

Australia

Both mineral and energy accounts are compiled – Land, timber and water account also compiled

Physical and monetary accounts compiled

Time series of accounts : 1995 onwards

Produced at national level and annually

Follows SEEA methodology

Figures are added to the national balance sheet

Salient outputs of Asset Accounts:

- The value of Australia's environmental assets increased nearly 150 *per cent* over the years 2002-03 to 2016-17
- Land is the most valuable natural asset while iron ore is the most valuable sub-soil asset
- Environmental assets have made up the largest share of Australia's capital base since 2014-15

Canada

Mineral, energy and timber asset accounts compiled

Physical and monetary accounts - current prices plus a volume index

Time series of accounts : 1961 onwards

Produced at national and provincial levels and annually

Follows SEEA methodology

Figures are added to the national balance sheet

Salient outputs of Asset Accounts:

- Though the value of the natural assets have increased, yet there is clear indication of steady downward trend in the volume of natural assets

The Netherlands

Only energy - natural gas and oil accounts are compiled

Physical and monetary accounts

Time series of accounts: 1990 onwards

Produced at national level and annually

Follows SEEA methodology

Salient outputs of Asset Accounts:

- The asset accounts provided information on opening stock, new discoveries, extraction and other changes and closing stock
- One of the components of monetary accounts is Government revenue

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The United Kingdom

Energy - natural gas and oil accounts are compiled, Timber and Fish Accounts are also compiled

Physical and monetary accounts

Time series of accounts: 1989 onwards (physical) and 2011 onwards (monetary)

Produced at national level and annually

Follows SEEA methodology

Salient outputs of Asset Accounts:

- The asset accounts clearly depicted continuous reduction in natural resources like oil and natural gas

The Philippines

Selected mineral resources (gold, copper, chromium and nickel) and energy resources (coal, oil and natural gas) are compiled

Physical accounts only for energy and both physical and monetary accounts for minerals

Time series of accounts: 2002 onwards for mineral and 2000 for energy resources

Produced at national level and periodically

Follows SEEA methodology

Salient outputs of Asset Accounts:

- Asset Accounts of minerals include sub-classes as well
- Oil and natural gas stock registered a steady declining trend

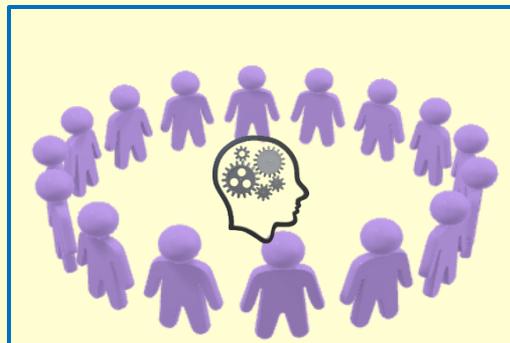
3.3 Relativity of international experience with India

The above discussions would reveal that the major countries have varied degrees of achievement and objectivity in preparing their environmental accounts. Understandably, the prescriptions of the SEEA (CF) which provides for flexibility in designing and preparing the accounts coupled with the provision for countries to decide on their initial focus on those accounts which are most relevant to current issues have been fundamental basis of operationalizing NRA in these countries.

Thus, the way forward laid down in the Concept Paper on NRA to initially focus on the preparation of Asset Accounts on Non-Renewable Energy Resources keeping the country-specific needs in view bridges the efforts in India envisaged by the GASAB under aegis of CAG of India with the internationally accepted principles as discussed above and as prescribed in the SEEA (CF).

CHAPTER 4

STAKEHOLDER CONSULTATION AND CAPACITY BUILDING



4.1 Preparing the Paper

Commencing the work in mid-2019, four draft Papers were floated between November 2019 and the final version in July 2020. While formulating the way forward and suggestive templates of Asset Accounts, extensive consultation process was carried out as detailed below:

- Four drafts issued between November 2019, January 2020, April 2020 and July 2020) – to ensure optimum consultation
- **Paper shared and inputs sought from** – Department of Environmental Studies, Delhi University; The Energy & Resource Institute, ICAI, Ministry of Statistics and Programme Implementation, Ministry of Mines, Indian Bureau of Mines (IBM), Ministry of Environment, Forest and Climate Change, Ministry Jal Shakti and Department of Land Resources
- Finance Secretaries in the State Government shared with copies of the Paper with the request to suggest inputs/suggestions
- Senior management of CAG of India
- Board members of Government Accounting Standards Advisory Board
- All field Offices of CAG of India – both Audit and A&E Offices across the country
- **Paper peer reviewed by**
- International Center for Environmental Audit and Sustainable Development (iCED), Jaipur and Director General of Audit, Environment and Scientific Departments Audit, New Delhi

4.2 Constitution of NRA Cells

Central NRA Cell

In order to steer the implementation strategy envisaged in the Concept Paper, an NRA Cell has been constituted at GASAB headquarters at CAG's Office with experts from

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diverse stakeholder ministries in the Government of India, five State Governments, the Accountants General in these five States, besides environmental specialists. Besides steering the implementation strategy, the Cell is mandated to help with technical insights especially on the templates for Asset Accounts on the resources. The constitution of the Cell is as under:

The Core Cell	Consultative Committee
<ul style="list-style-type: none"> • Deputy CAG & Chairperson, GASAB • Additional Deputy CAG, GASAB • Sr. AO, GASAB & NRA Cell • AAO, GASAB & NRA Cell • Other staff members 	<ul style="list-style-type: none"> • Member of Government Accounts Wing, Commercial Wing and iCED under CAG • Five State Governments – Gujarat, Jharkhand, Meghalaya, Karnataka and Uttarakhand • Accountants General of Audit and A&E Offices of these five States • Members from Ministries of Mines, Environment, Forest & Climate Change, Jal Shakti, Land Resources, Statistics Programme Implementation • Member from IBM • Member from ICAI • Shri Mukul Sanwal, IAS 1971 (retd)

Details of members, designation/credentials and their contact details are at **Annexure - A**.

The first revised draft of the Asset Accounts on Mineral & Non-Renewable Energy resources as it stood after the modifications based on the inputs from pilot studies in States were circulated to the members in April 2021 with the request to provide inputs/comments/suggestions. Responses were appropriately incorporated and the draft Asset Accounts revised and re-circulated to the members in July 2021. Annotated statement showing the comments/suggestions of the members of the committee and action taken thereon is at **Annexure - B**. The members met through a virtual meeting on 20 September 2021 to deliberate upon the final formats of the Asset Accounts to arrive at finality on these templates for implementation across the States. The minutes of meeting are at **Annexure - C**.

NRA Cell in the States

In addition to the NRA Cell constituted in GASAB headquarters, NRA Cells have also been formed in the States with joint representations from Audit, A&E Offices of CAG of India and technical resource persons from the concerned State Government Departments like Geology & Mining, Finance, Environment, Forest and Climate Change, Statistics and Land Resources. The State NRA Cells are intended to enable co-ordination between the

Accountants General Offices in the States with the local State Governments and steer the implementation process associated with the project.

The State NRA Cells are already functional in 25 States while in other States it is under finalisation. These State level Cells served as key impetus, besides regular interactions from GASAB Headquarters, in completing the pilot studies in the States of Goa, Meghalaya and Rajasthan. In other States also where the Cell is functional, regular interactions are being held between the Accountants General Offices and the State Government Departments easing the implementation process with consultations and mutual co-operations.

4.3 Taking the States on-board in implementation of Asset Accounts

The Concept Paper has envisaged initiation of the implementation process with preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources in the States, targeted for the year 2020-21 to be completed by March 2022. To take the States onboard in this ambitious project, the matter was demi-officially taken up (August 2021) with the Chief Secretaries of the States by the Deputy CAG & Chairperson, GASAB intimating the highest echelons in the States about the endeavour of GASAB on NRA and also our vision on implementational roadmap. This was followed up with virtual presentations to the State Governments underlining the concept and importance of NRA; international developments vis-à-vis those in India, implementation strategy suggested by SEEA framework and those adopted/works done by GASAB and successes thereagainst; key takeaways on implementation of Asset Accounts on Mineral & Non-Renewable Energy Resources in the States; way forward and expectation from the States.

Seven meetings were organized between 31 August 2021 and 28 September 2021 in which 28 States/UT have participated. Major points emanating out of the meetings are summarised below:

- *The State Governments while appreciating the initiative of GASAB on implementation of NRA across the country, assured of their full co-operation and participation.*
- *The States agreed that the Asset Accounts would put forth a valuable database and capture information on exploitations – both, commercial or for Government needs, sustainability of resources, revenues vis-à-vis market trends while keeping close watch on the illegal mining aspects.*
- *The targets and timelines envisioned are achievable due to availability of data/information with the concerned Departments in the States.*

- *State specific workshops would help further disseminate the idea and expectations vis-à-vis discussing on the concerns and constraints of the Officers and staff at the grass root level.*

Minutes of meetings are appended in **Annexure - D**.

4.4 State-specific Workshops

At the instance of Office of the Principal Accountant General, Audit – II, Gujarat, GASAB has organized state specific workshop on NRA for the State of Gujarat wherein the Officers of the Audit, A&E Offices of the State along with the departmental Officers of the State Government participated. Similar workshops had also been held for the States of Punjab and Karnataka. In other States, either the State Accountants General have held workshops/presentations for the State Government, or they are working out dates for such workshops. These workshops aided in furthering the implementation process by enabling both way communications. While there were presentations from the GASAB headquarters, the Officers of the State Government departments were urged to share their views/concerns and constraints. Number of issues were discussed during the meeting as put forth by the State authorities and solutions arrived after detailed deliberations.

4.5 Capacity Building

Simultaneous to the release of the Concept Paper and the pilot studies, capacity building was of utmost significance to effectively carry forward the implementation of the project. Under the Knowledge Center of GASAB at Regional Training Institute at Prayagraj, continuous virtual workshops were organized training about 100 participants in each of the programmes covering Group A and Group B Officers working on implementation of NRA in the field Offices. These workshops were designed to serve as platforms for dissemination of information, requirements for the Asset Accounts and doubt clearing sessions. It is undenyng that the workshops helped largely in timely completion of the pilot studies.

CHAPTER 5

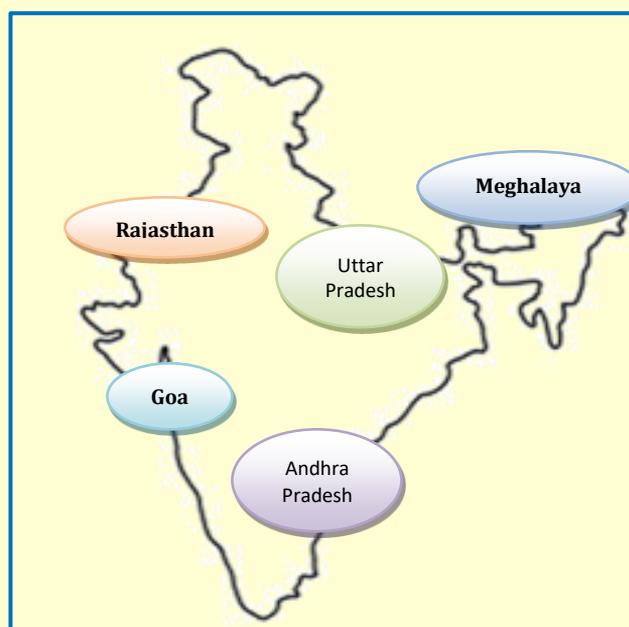
PILOT STUDIES ON TEMPLATES OF ASSET ACCOUNTS



5.1 Pilot Studies – templates

Framework would remain only a concept unless tested for implementation through real time scenarios. While GASAB Secretariat endeavoured to design and suggest the templates of Asset Accounts of all five resources shortlisted, in view of the short term goal 1 to prioritise on Mineral & Non-Renewable Energy Resources, pilot studies were instituted in five States, namely Andhra Pradesh, Goa, Meghalaya, Rajasthan and Uttar Pradesh immediately upon release of the Concept Paper.

Suggested templates: The SEEA – CF provides flexibility to embed the country specific needs while implementing NRA. Accordingly, while the mother template of Asset Account depicting the opening balance, additions, extractions and closing balance has been retained *in toto*, the sub and detailed tables have been designed to suit the country specific needs and aimed at capturing the data to disclose the physical flows of resources along with the stock, distinct segregation of extractions for Government, Private, Exports and other purposes, monetised value showing the Government revenue streams as well as the average market/sale value, sustainability of resources for the future, information on the extent of illegal mining etc.



Guidelines for preparation of Pilot Studies: The templates were supported with detailed guidelines on compilation of data and other methodologies for capturing data for the accounts, and source for acquiring such information/data for the tables. Besides the guidelines, a sample table mapping the physical flows and the revenues therefrom was created with the information available in the Finance Accounts and Audit Reports of the State of Andhra Pradesh – to detail that compilation of physical and monetary flows were possible.

Methodology for working out the opening balance: As the pilot studies were being conducted post-release of the Concept Paper, financial year 2018-19 or 2019-20 were suggested to be taken up. Availability of data for ascertaining the opening stock was identified as a major challenge. As the IBM releases the State-wise mineral repository every five years and the latest one available pertained to 1 April 2015, this was suggested to be considered as base and the opening balance worked out in the following manner:

Methodology for working out the opening balance with available information

Name of minerals	Opening stock as on 1 April 2015	Annual extraction during			Closing stock as on 31 March 2018 or opening stock of 1 April 2018
		2015-16	2016-17	2017-18	
Minerals economically important for each States may be included in the Asset Accounts	Stock of minerals as of 1 April 2015 available in the National Mineral Inventory of IBM may be used.	Monthly actual extraction of minerals may be obtained from the Departments			Resultant balance of deduction of annual productions of three years from the opening balance

The States were advised to incorporate the methodology adopted for working out the opening balance and other aspects through appropriate notes to accounts for easy referencing and understanding.

5.2 Monetising the physical flows

The Concept Paper delved deep into the valuation methodologies suggested by SEEA, research papers, those adopted by other countries combined with the flexibility allowed in SEEA. After detailed analysis of the different approaches, the Concept Paper has suggested monetising the physical flows on two accounts – first being the revenue involvement method while the second is the average sale/market value of produces. While the revenue method has been found also adopted by the Netherlands, it actually suffices one of the targets of the building the Asset Accounts, i.e. providing information on revenue streams for the policy makers. The actual sale/market price has been

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adopted as the website of IBM is already capturing these data in respect of major minerals making them readily available and usable for compilation of the Asset Accounts. The sale price/market value of minor minerals are captured by the State Government Departments mainly the Statistics Departments and the departments administering the resources.

5.3 Close co-ordination and follow up

As discussed in the Chapter on stakeholder consultation and sensitization, the pilots were carried out by the State Accountants General with joint collaboration with the State Government Departments while GASAB headquarters maintained overarching control and supervision on the field studies. Besides regular contacts with the field teams, mid-term appraisals chaired by senior management of GASAB was organized to discuss the progresses and way forward to identify detailed milestones and timelines. These efforts paid dividends with timely completion of pilot studies in three States by March 2021.

5.4 Results of pilot studies

The pilot studies yielded the model Asset Accounts on Mineral and Non-Renewable Energy Resources in three States which are first of its kind in the country. The highlights of the reports are summarised as under:

- ***A one-page compilation of mineral resources of the State***
- ***Exhaustive coverage on important Mineral & Non-Renewable Energy Resources of States***
- ***Physical flows of minerals during the period brought out***
- ***Two-pronged monetisation done – revenues and market values***
- ***Revenues and market values of resources brought together – variations ranging between three to ten times pointed out***
- ***Sustainability of resources in years***
- ***Revenue leakage and illegal mining detected and pointed out***
- ***Stock of minerals available at the end of the Report period***

While there were positive outcomes as discussed above, the studies also highlighted deficiencies in the systems and processes followed in the states, viz, in Goa, the State authorities were found not maintaining the stock position of minor minerals which hindered assessment of opening and also closing stock. The State also did not maintain

segregated data on mineral-usage for Government, Private etc purposes which were found to be available in other two States.

Snapshots of the pilot study reports are given in the succeeding paragraphs:

GOA

Due to mining ban, there was no physical flows related to major minerals. However, compilation of data on minor minerals was brought out.

Table 9 - Showing Asset Accounts on Physical flows of Minerals and Energy Resources for the year 2019-20

Classification	Sub Classification (may vary from state to state and Union)	Unit	Opening Stock of Reserves	Addition to Stock	Reduction in Stock			Closing Stock of Reserves	
					Extracted for use in				Total Extractions
					Govt. Sector	Private Sector	Others Extractions		
Major Minerals	Bauxite	Quantity in '000t	12188.154 ^(a)	NA	0	0	0	12188.154	
	Iron Ore	Quantity in '000t	280392.000 ^(a)	NA	0	0	0	280392.000	
	Manganese	Quantity in '000t	0	NA	0	0	0	0	
Minor Minerals	Basalt	Quantity in cu. m.	NA	NA	423985.650 ^(b)	6.000 ^(b)	423991.650 ^(b)	NA	
	Murrum	Quantity in cu. m.	NA	NA	49455.000 ^(b)	0	49455.000 ^(b)	NA	
	Laterite stones/rubble	Quantity in cu. m.	NA	NA	NA	5982.000 ^(b)	5982.000 ^(b)	NA	
	Sand	Quantity in cu. m.	NA	NA	NA	122.000 ^(b)	122.000 ^(b)	NA	

The opening stock as on 1 April 2019 in respect of major minerals was worked out by considering the figures of National Mineral Inventory as published by the IBM as of April 2015 and by deducting the actual extractions during the subsequent four years as per methodology suggested in the Concept Paper.

Table 12 Working out the Opening balance of Mineral and Energy Resources

No.	Name of Minerals	Unit	Opening Stock as on 01.04.2015	Addition					Annual Production during					Closing Stock as on 31.03.2019 or Opening Stock as on 1 st April 2019
				2015-16	2016-17	2017-18	2018-19	Total	2015-16	2016-17	2017-18	2018-19	Total	
Major Minerals														
1	Bauxite	quantity in '000t	12357.000	NA	NA	NA	NA	NA	163.950	0	4.378	0.518	168.846	12188.154
2	Iron Ore	quantity in '000t	301635.000	NA	NA	NA	NA	NA	1794.000	9170.000	10279.000	0	21243.000	280392.000
3	Manganese	quantity in '000t	0	NA	NA	NA	NA	NA	0	0	0	0	0	0

NA = Not available.

Notes :

- i) Opening stock is as per National Mineral Inventory published by IBM.
- ii) Annual production is as per Monthly Statistics of Mineral Production published by IBM.

Meghalaya

The study, besides bringing out extractions for Government, private sectors, also worked out the sustainability of resources in years. By comparing the figures of department of Geology and Mining with those of the Customs Department (export data), the study brought out substantial illegal mining activities.

Table - 9 showing Asset Accounts on physical flow of Minerals and Energy Resources for the year 2019-2020

Classification	Sub-classification (may vary from State to State and Union)	Unit	Opening Stock of reserve (in Million tonne/Cum)	Addition to Stock	Reduction in Stock (Quantity in Tonne/Cum)					Closing stock of reserve (Quantity in Million Tonne/Cum)	Sustainability of resources in years****
					Extracted for use in		Other Extractions	Illegal Mining	Total Extraction (in Million Tonne/Cum)		
					Govt Sector	Private Sector					
Major Minerals	Iron Ore*	Tonne	3.6	0	0	0	0	0	0	3.6	#
	Limestone**	Tonne	9515	0	55801	7061008.59	8271262		1.54	9513.46	6177.6
Fossil fuel	Coal***	Tonne	133.13	0	0	191048	0	4284	0.2	132.9	664.65
Minor Minerals	Granite*	Cum	24	0	0	0	0	0	0	24	#
	Limestone	Tonne	17.07	8.77	0	1883129	0	111935.8	1.99	23.85	11.985
	Sand	Cum	4.27	1.93	7853.807	36610	0		0.04	6.16	154
	Boulderstone	Cum	7.49	1.43	692978	594495.714	0		1.29	7.63	5.9147
	Brick Earth	Cum	1.93	0	30000	36900	0		0.07	1.86	26.571

* In respect of Iron Ore and Granite there was no addition to stock and no reduction in stock

** Limestone in respect of which mining Lease granted by the Mining & Geology Department for use in cement manufacturing or in any other manufacturing industry is treated as 'Major Mineral' and Limestone in respect of which Mining Lease was granted by the Forest & Environment Department for use in kilns for manufacturing of lime is treated as 'Minor Mineral'

RAJASTHAN

The Rajasthan study included comprehensive coverage of resource bases incorporating altogether 39 Mineral & Non-Renewable Energy Resources divided into fossil fuel, major minerals and minor minerals. The resources were further divided into sub-classifications of resources. The opening stock was ascertained by considering the figures of IBM as of 2015 as base and reducing them with actual extractions/production figures.

Classification	Sub-classification (may vary from state to state and Union)	Unit	Opening stock of reserves	Addition to Stock	Reduction in stock				Closing stock of reserves
					Extracted for use in			Total extraction	
					Govt Sector	Private Sector	Other extractions		
Fuel Minerals	Lignite	Quantity in '000t	1144414.000					8677.000	1135737.000
	Natural Gas (ut)	m c m	5039.074	9892.626	844.449		532.671	1377.120	13554.580
	Petroleum (Crude)	Quantity in '000t	12801.492	32902.774	7661.755		0	7661.755	38042.511
Major Minerals	Bauxite	Quantity in '000t	0.000					0	0
	Copper Ore	Quantity in '000t	70789.500	8870.000	1349.566			1349.566	78309.934
	Copper Metal	Quantity in '000t	608.670						608.670
	Emerald crude	Quantity in '000t	0.000					0	0
	Epidote	Quantity in '000t	0.000					0	0
	Fluorite	Quantity in '000t	0.000					0	0
	Gamet	Quantity in '000t	66.827			5.166		5.166	61.661
	Iron Ore (Magnetite)	Quantity in '000t	32102.000	121.000		1108.000		1108.000	31115.000
	Zinc Metal	Quantity in '000t	29444.520	5054.000				1581.000	32917.520
	Lead Metal	Quantity in '000t	4922.607	673.000				101.000	5494.607
	Kyanite	Quantity in '000t	0.000					0	0
	Lead Zinc Ore	Quantity in '000t	85863.000	4520.000		13752.297		13752.297	76630.703
	Limestone	Quantity in '000t	5353094.000	364840.000	5359.564	74959.355		80318.919	5637615.081

Also, the pilot studies brought out major variations between the Government revenues and average market/sale prices which ranged between approximately upto ten times as shown below.

➤ Abstract for Valuation of Resources

Particulars	Total Revenue (₹ in crores)	Total market value (₹ in crores)	Remarks
Opening stock as on 1 st April 2018	1,13,134.50	11,12,175.32	Total Revenue based on: 1) MIMDR Act, 1957 2) Gazette notification dated 27.10.2017 3) Concerned department figure adopted where royalty rate not available Total Market value based on: 1) Monthly Statistics of Mineral Production, March-2018 2) Concerned department figure adopted where ASP not available
Production/ Extraction for the year 2018-19	7,839.58*	44,797.29	Total Revenue and Total Market value as per department concerned.
Closing Stock as on 31 st March 2019	1,28,605.05	11,87,662.24	Total Revenue based on: 1) MIMDR Act, 1957 2) Gazette notification dated 27.10.2017 3) Concerned department figure adopted where royalty rate not available Total Market value based on: 1) Monthly Statistics of Mineral Production, March-2019 2) Concerned department figure adopted where ASP not available

Particulars	Sub classification	Physical unit (in tonnes/ meter) showing Govt., Private and other sector*	Revenue worked (in crore) showing Govt., Private and other sector	Valuation of resources		
				Total revenue Implication	Average Market Value (as ascertained from the BML or State Statistical Dept.) %	
Opening Stock at the beginning of the year	Bauxite	12188.134 (in 000)	NA	NA	NA	
	Iron Ore	280992.000 (in 000)	NA	NA	NA	
	Manganese	Nil	NA	NA	NA	
	Besit	NA	NA	NA	NA	
	Marum	NA	NA	NA	NA	
	Lateralite stones/cobble	NA	NA	NA	NA	
	Sand	NA	NA	NA	NA	
	Reductions during the year (Extractions by lessee)	Bauxite	Nil	33,00,000 #	Nil	Nil
	Iron Ore	Nil	4,74,83,889 #	Nil	Nil	
	Manganese	Nil	Nil	Nil	Nil	
Besit	42985.650 # (in cu. m)	2,83,56,155 #	7,94,71,483	38.15,085 #		
Marum	49453.000 # (in cu. m)	6,49,440 #	Nil	1,73,09,250 #		
Lateralite stones/cobble	Nil	Nil	Nil	Nil		
Sand	Nil	Nil	Nil	Nil		
Revenue related to exploitation of resources out of total revenue included in Statement I & of State Finance Accounts				12,93,66,904 #		

Table 10: Showing Subsidiary Asset Accounts linking detailed physical flows in respect of mineral and energy resources with the valuation of resources for the period 2018-20

5.5 Major challenges

This being a pioneer project, States conducting the pilot studies faced with real-time difficulties most of which were foreseen and discussed in the Concept Paper. The major ones are discussed below:

Availability of ready-to-use data: Though many States have electronic mechanisms for issuance of mining permits, yet, availability of consolidated data on extraction of Mineral & Non-Renewable Energy Resources was still an issue faced by the field teams. Data had to be collected from the Directorate of Geology and Mining and their field offices, compiled and got validated by the Department.

Further, in Goa, it was observed that the State was not in possession of stock of reserves of minor minerals though the Minor Minerals Concession Rules makes it imperative to work out stock of minerals for obtaining approval of Government of India on mineral

extractions. In absence of this, stock of minerals could not be ascertained and the study was limited to physical flows of minerals during the year.

Stock of minerals: An area of major concern, data on stock of minerals as on the opening date of the year of study was not readily found available. The States resorted to methodology suggested in the Concept Paper to use the National Mineral Inventory figures of 2015 and then reduced it with extractions during subsequent years to arrive at the estimated reserves.

Information on minor minerals: Unlike major minerals which is well compiled by the IBM as regards their production as well as average market/sale values – month wise and yearwise, information on minor minerals, both physical flows and market prices was not readily available. These figures had to be collected from the concerned departments/Statistical departments of the States.

Lack of co-ordination: In Meghalaya, gaps between the data of administrative departments and the exit points of the State were noticed which pointed towards need for strengthening the control mechanism as the pilot study revealed cases of illegal extractions.

CHAPTER 6

FINAL TEMPLATES - ASSET ACCOUNTS ON MINERAL & NON-RENEWABLE ENERGY RESOURCES – for implementation in States



6.1 Final templates – core framework

The templates of Asset Accounts on Mineral and Non-Renewable Energy Resources have been finalised after incorporating the comments of the Consultative Committee members and the experience gained in successful completion of pilots in three States. While the core framework as prescribed by the SEEA – CF has been retained, designs of the sub and detailed tables have been worked out based on country specific needs and other peculiarities besides constraints/data availability etc. Table 1 provides the format for the core framework while Tables 2 and 3 provide templates for compiling the Asset Accounts and subsidiary Asset Accounts to capture data required for the core framework and also to serve as repository of an inclusive informative database for use by policy makers, stakeholders, academia and other interest groups.

Table 1

Basic asset account on Mineral & Non-Renewable Energy Resources

Opening stock of environmental asset
<i>Growth in stock</i>
<i>Discoveries of new stock</i>
<i>Upward reappraisals</i>
<i>Reclassifications</i>
<i>Total addition of stock</i>
Reduction of stock
<i>Extractions</i>
<i>Normal loss of stock</i>
<i>Catastrophic losses</i>
<i>Downward reappraisals</i>
<i>Reclassification</i>
<i>Total reduction in stock</i>
<i>Revaluation of the stock*</i>
Closing stock of environmental assets

* Only applicable for asset accounts in monetary terms.

As discussed in some of the preceding Chapters, flexibility is inbuilt in the framework and SEEA suggests that the entities commence preparation of the Asset Accounts with available information which can be reviewed and constantly updated in subsequent years after receipt of updated information. Accordingly, the core framework allows reconciliatory measures like upward and downward re-appraisals, reclassifications, revaluation of stock etc.

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

6.2 Final templates – Asset Accounts and subsidiary Accounts

Table 2

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

Classification	Sub-classification (may vary from State to State)/ UNFC Code	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 ***			Total extraction
				Govt Sector* *	Private Sector				
<i>(in tonnes/cum - as the case may be)</i>									
Major Minerals									
Fossil fuel									
Minor minerals									
Other resources, if any									

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

* - to include - Growth in Stock, discoveries of new stock, reclassifications etc

** - Extractions for Government sector may be further classified into extractions for State Government Departments, Central PSEs/State PSUs, Central and State Autonomous Bodies, Municipal bodies and other local authorities

An initiative of Government Accounting Standards Advisory Board

*** - to include - extractions other than those for **Government** and **Private** Sector, such as **exports**, untaxed extractions (if any) allowed by Government, normal reduction in stock, catastrophic losses, downward reappraisals, cases of illegal mining detected, reclassifications etc

**** - Considering the yearly extraction during the current year vis-à-vis the closing stock
 In certain cases, sand, stone, boulders are extracted from riverine areas and thus these could be listed as renewable resources. However, as these are managed under the Minor Mineral Concession Rules and governed by the Geology & Mining Departments in the States, these resources may also be covered here with appropriate qualifications through notes under the tables.

The United Nations Framework classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC) is a universally applicable scheme for classifying evaluation energy and mineral reserves and resources

Table 3

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

Particulars	Classification/ Sub- classification of minerals (as per the priorities of the State Governments)/ UNFC Code	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		
Opening stock/availability of resources at the beginning of the year				(a)	(b)

Templates of Asset Accounts on Mineral & Non-Renewable Energy Resources in States

Additions during the year:						
<i>Growth in Stock</i>						
<i>Discoveries of new stock</i>						
<i>Reclassifications</i>						
Total Addition:						
Actual reductions during the year:						
<i>Extractions as reported by the State Government Department of Geology & Mining, Petroleum, Environment and Forest (on recovery of royalty, cess, fees, NPV etc) #</i>						
<i>Revenue related to exploitation of resources out of total revenue included in Statement 14 of State Finance Accounts/Statement 8 of Union Finance Accounts pertaining to four major heads¹</i>					(c)	(d)
<i>Other extractions, not taxed (if any)</i>						(e)
<i>Normal reduction in stock</i>						
<i>Catastrophic losses including natural and manmade disasters</i>						
<i>Downward reappraisals</i>						
<i>Reclassifications</i>						
<i>Production loss</i>						
<i>Exports</i>						
<i>Reduction due to mining activities not approved by Depts \$</i>						

¹ Petroleum, non-ferrous mining and metallurgical industries, coal and lignite heads of receipts

Total reduction:				(f)	(g)
Extractions permitted during the year					
Closing stock				(h) (Will depict future revenue streams)	(i)

Notes (General):

The information on extraction of minerals for Government, Private and other Sectors may include data on actual extraction of resources during the year

States may amend the format of the Asset Accounts to suit their need/availability of data in keeping with the flexibility allowed by SEEA - CF; however, the overall framework and the information to be gathered may be kept intact.

- Opening Stock of resources:** The SEEA (CF) envisages that, ideally, estimates of the opening and closing stocks of an asset should be compiled with information pertaining to the reference dates of the accounting period. However, if information in respect of those dates is not directly available, relevant information may need to be time-adjusted. From time to time, new information will emerge that leads to a change in the assumptions underlying a set of estimates. When additional information is being incorporated, it is important that the estimates continue to reflect the quantities and values that could reasonably be expected at the reference dates. For the opening stock, **only proved reserves** should be considered. A suggestive methodology for working out the opening balance is provided with this document.
- Additions:** Additions in stock includes mainly discoveries in new stock, reclassifications, reappraisals, opening up of new blocks etc to add with proved reserves. Of these, opening up of new blocks, new discoveries may occur in some years; otherwise, additions will more or less remain 'nil'. However, the reappraisals/reclassification may be used to adjust changes detected in stock in future years.
- Reductions:** The SEEA (CF) prescribes reduction in stock to be enumerated under five distinct categories, i.e. extractions, normal reductions in stock, catastrophic losses, downward reappraisals, and reclassifications. Of these, reduction on account of extraction of resources would be annual phenomenon which may be captured regularly while other causes of reduction may occur once in a while. To embed country specific needs, other

elements of reduction like extraction not taxed, production loss, mining not authorised by departments have been included under this category.

- **Closing stock:** *The resultant value of opening stock, plus the additions, reduced by the reductions would lead to closing stock of resources. However, non-ascertainability of opening stock would result in non-determination of the closing stock. Similar to opening stock, appropriate explanation would have to be inserted against reasons hindering calculation of closing stock, if such need arises.*

Notes (Specific references):

(a) Rate(s) of royalty/ies in respect of each of the resources and their sub-classifications multiplied by opening balance of physical units to appear here. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

(b) Average market price as available on the website of IBM in respect of each of the resources multiplied by the opening balance of physical units to appear here. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

(c) Total of column 4 (total revenue receivable) in respect of extraction of resources to appear here.

(d) Average market price as available on the website of IBM/available with the States/Union in respect of each of the resources multiplied by the resources extracted during the year to appear here.

(e) - Revenues earned by the entities by way of royalties, taxes and duties on extraction of mineral resources as reported through the Finance Accounts may be incorporated here. As the Indian Finance Accounts are maintained on cash basis, actual amount of revenue received during the year may only be incorporated here. Reasons for variation between (c) and these figures of Finance Accounts which includes lease rents and other administrative charges may be appropriately clarified through notes.

(f) - Rate(s) of royalty/ies in respect of each of the resources multiplied by total extracted resources to appear here. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

(g) - Average market price as available on the website of IBM/ available with the States/Union in respect of each of the resources multiplied by the total extracted resources to appear here.

(h) Rate(s) of royalty/ies in respect of each of the resources multiplied by closing balance of physical units to appear here. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

(i) Average market price as available on the website of IBM/ available with the States/Union in respect of each of the resources multiplied by the closing balance of physical units to appear here. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

*# - please refer to preceding table - extraction of resources may be shown separately for **Government, Private and Other Sectors** which mainly includes exports, untaxed extractions etc*

% - The IBM compiles and releases average market value of minerals on monthly basis. Besides, the Statistical Departments in the States maintain the market prices of minor minerals. The average of these prices could be used to fill in these columns. Sub-tables may be prepared as required to work out the figures in respect of each of the resources.

\$ - Information may be gathered from all possible sources as discussed in Table 1 of Para 7.3 including those detected by the administrative Departments like Mining, Police, Environment & Forests and also from other sources like NHAI, PWD, Inspection Reports of Accountant General (Audit) etc – examined and incorporated in this row with suitable notes.

There is a system of generating flags pointing towards illegal mining in the States by the IBM in collaboration with National Remote Sensing Center. These flags may be followed up to ascertain follow up done by the State Governments and volume of illegal mining detected – for incorporation in this row.

Also, NRA Cell may carry out independent joint verification to ascertain loss of natural resources due to illegal mining following up the flags of IBM which have not been attended to by the State Governments. The results may be appropriately disclosed here with necessary notes.

If necessary, the National Remote Sensing Center, Hyderabad may be collaborated to assess the extent of illegal mining and results thereof included in this table. Notes to that extent may be included.

However, the cross verifications may be subject to availability of time and resources.

While working on the illegal mining aspects, sub-judice cases may be given special attention and appropriate disclosures regarding the same should be made in the accounts. In such cases, working out the revenues may be avoided till final verdict of the court cases.

- Physical unit may be reckoned as per the usual practice, like standard cubic meter for natural gas, tonnes for metallic and non-metallic minerals, cubic feet for timber, cubic meter for minor minerals and so on.

6.3 Working out the opening balances

The IBM provides the stock of minerals (metallic, non-metallic and fuel minerals) every five years and the latest such database as of April 2015 is available which could be held as the base. The Department of Geology and Mining, Petroleum, Environment and Forests in the States maintain the data on extraction of resources, month wise. These data can be collected for the years till the accounting year to arrive at the opening balance. In case of non-availability or difficulty in availability of data on extraction of minerals from the State Government Department, monthly production data of minerals available on the website of the IBM could be reduced to arrive at the opening stock of 1 April 2020. The following table has the details.

Methodology of working out the opening balance with available information

Name of minerals	Opening stock as on 1 April 2015	Annual extractions during					Closing stock as on 31 March 2020 or opening stock of 1 April 2020
		2015-16	2016-17	2017-18	2018-19	2019-20	
Minerals economically important for each of the States may be included in the Asset Accounts as per the priority of the State Governments	Stock of minerals as of 1 April 2015 available on the website of IBM for major minerals and data available with the State Government departments on minor minerals to be considered	Figures to be obtained from the district mining offices under the Department of Geology and Mining					Resultant balance of deduction of annual productions of three years from the opening balance

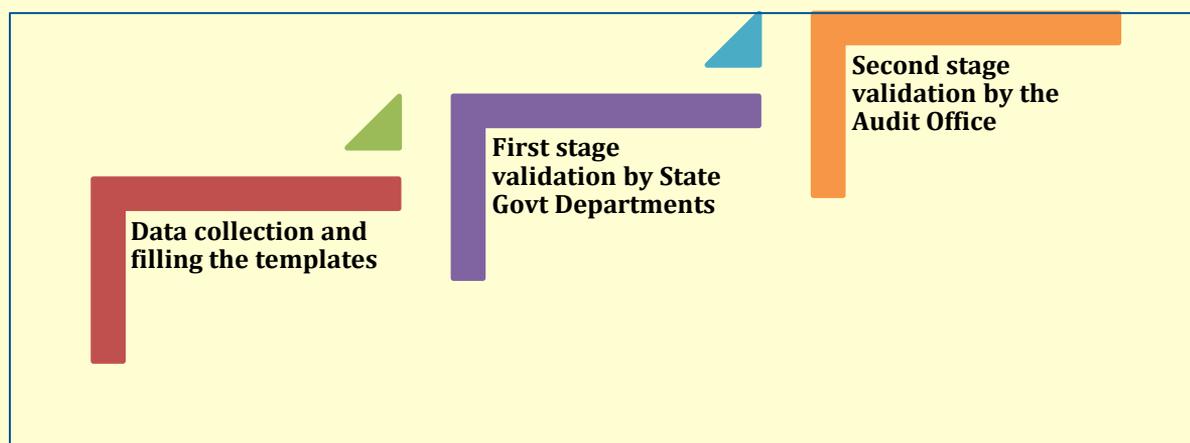
6.4 Source of data and validations

The sources of information/data for filling the templates of Mineral & Non-Renewable Energy Resources could be following:

- The National Mineral Inventory an Overview as on 01.04.2015 available at www.ibm.gov.in for the opening stock of reserve/Indian Minerals Yearbook 2018 - State Reviews/Monthly statistics of Mineral Production (www.ibm.gov.in).
- Coal Directory of India Coal Statistics (www.coalcontroller.gov.in).

- Energizing India's Progress (www.petroleum.nic.in).
- Primary source of data on extraction of resources would be the Department of Geology and Mining, Environment Forest and Climate Change, Department of Petroleum etc in States.
- Sources of data for valuation of resources would be the above departments in States and also the data on average sale/market price available on the website of IBM and the Department of Statistics in States.

The duly filled templates would have two stage validation checks. First by the concerned Departments of the State Government and second by the State Audit Offices.



CHAPTER 7

WAY FORWARD –

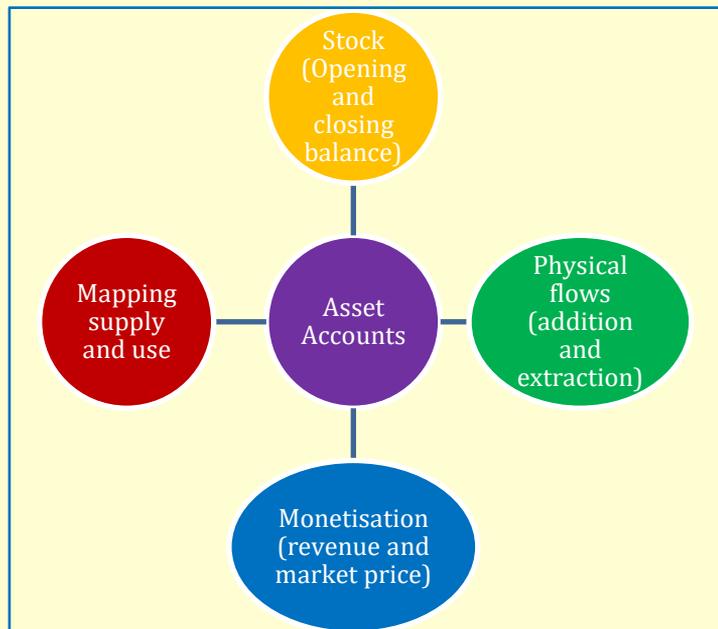
Milestones and timelines



7.1 Way forward – the imperatives

Milestones and timelines envisaged for achieving Goal No. 1 under short term goals, i.e. preparation of first Asset Accounts on Mineral and Non-Renewable Energy Resources in the States for the year 2020-21 by March 2022 evidently calls for strategic planning keeping in view the imperatives with flexibilities allowed in SEEA framework and challenges associated with this highly important yet untrodden path.

Preparation of a foolproof Asset Accounts would largely depend upon four main pillars for success. These are ascertaining the opening stock of resources, information on physical flows or additions and reductions during the year, monetising the physical flows of resources and end-to-end encrypting the supply and use and verifying veracity of data.



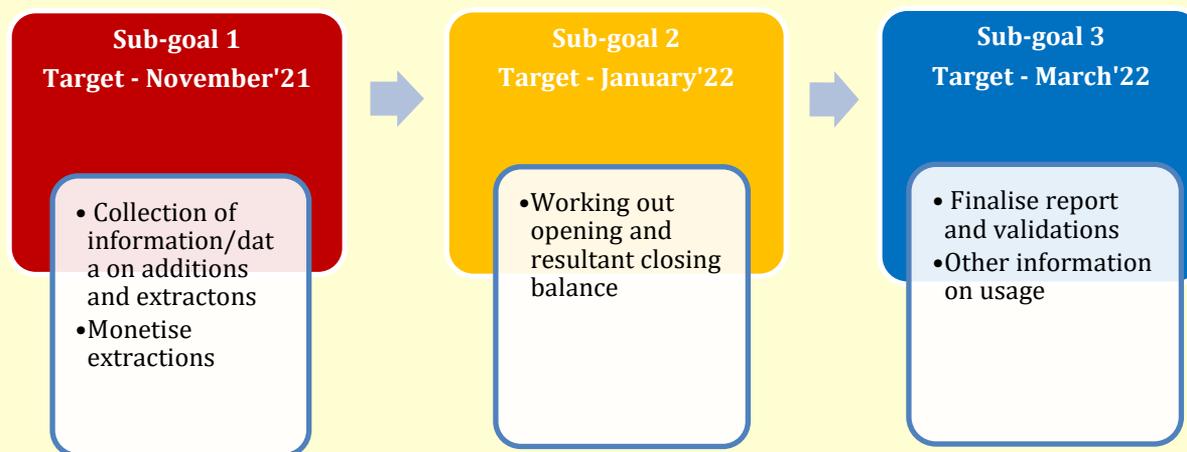
Keeping in view activities involved in the compilation process of Asset Accounts vis-à-vis the challenge that this is a completely

unchartered area and also keeping the scope of flexibility enshrined in the SEEA

framework in mind, the four components of preparation of Asset Accounts are classified under three distinct categories, one – activities those are mandatory during the period, second is what is recommended while the third one consists of those that are desirable as the implementation process begins and goes along.

7.2 Goal 1 – preparing the Asset Accounts for 2020-21 by March 2022

In view of discussions in preceding paragraph, the Goal 1 on preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources for the year 2020-21 by March 2022 is targeted to be taken up as follows:



Sub-goal 1 – Target of completion by November 2021:

Sub-goal 1.1 Physical Flows (mandatory): The most vital component of an Asset Account is the physical flow during the reporting period. Further, the data/information on actual extractions are readily available with the departmental units/State-level Offices. These information can, therefore, be quickly collected and compiled thereby enabling preparation of the basic additions and extractions of resources for the year 2020-21.

Sub-goal 1.2 Monetising the extractions (mandatory): The physical flows on extractions may be monetised based on Government revenues and average market/sale price. While average royalty rates/duties/fees etc applicable to the concerned resources during the year may be used for working out the revenues attributable to the resources extracted, average figures of actual market/sale price as captured by the IBM (monthly figures of major minerals available on the website of IBM) may be used for attributing market value to the resources. For minor minerals, information of market values could

be obtained from the State Statistics Department or the Departments administering the resources.

Sub-goal 2 – Target of completion by January 2022:

Sub-goal 2.1 Opening balances (recommended): Methodology suggested for opening balance in para 6.3 of Chapter 6 could be useful in working out the balances. As the data available in National Mineral Inventory is used to reducing the extractions as provided by the Department, the figures of stock may be ‘tentative’ for the Asset Accounts 2020-21. Based on the opening balances and the additions/extractions, the closing stock may be worked out which may also be marked as ‘tentative’.

The IBM is expected to bring out the National Mineral Inventory as on 1 April 2020 by mid-2022. Hence, the Asset Accounts of subsequent year 2021-22 would be ascertained by reducing the actual extractions incorporated in Asset Accounts 2020-21 from the balances brought out in the National Mineral Inventory as of April 2020. Thus, in light of the flexibility provided by SEEA framework, while the balances of Asset Accounts 2020-21 would be ‘tentative’ the same will be reconciled with the available data of National Mineral Inventory as on 1 April 2020 during next year using the tools like upward and downward reappraisals/reclassifications as available in the basic table of Asset Accounts prescribed by SEEA, thus, making the figures real-time.

As regards the minor minerals which are not captured in the National Mineral Inventory, information would need to be gathered from the concerned Departments in the States.

Sub-goal 3 – Target of completion by March 2022:

Sub-goal 3.1 Finalisation of Asset Accounts and validations (mandatory): Upon compilation of the physical flows and balances, the report may be shared with the State Government Departments for validations and further inputs, if any. All efforts may be made to finalise the report by March 2022. Information which are not readily available may be skipped and necessary notes on unavailability of those information may be inserted in the Accounts.

Sub-goal 3.2 Include other information on illegal mining etc (desirable): The formats of Asset Accounts in Chapter 6 require collection of additional information on mining activities not approved by departments through cross verification of information from the user agencies etc. Due to paucity of time, these activities are marked as ‘desirable’ for the current Asset Accounts for 2020-21. However, for the subsequent

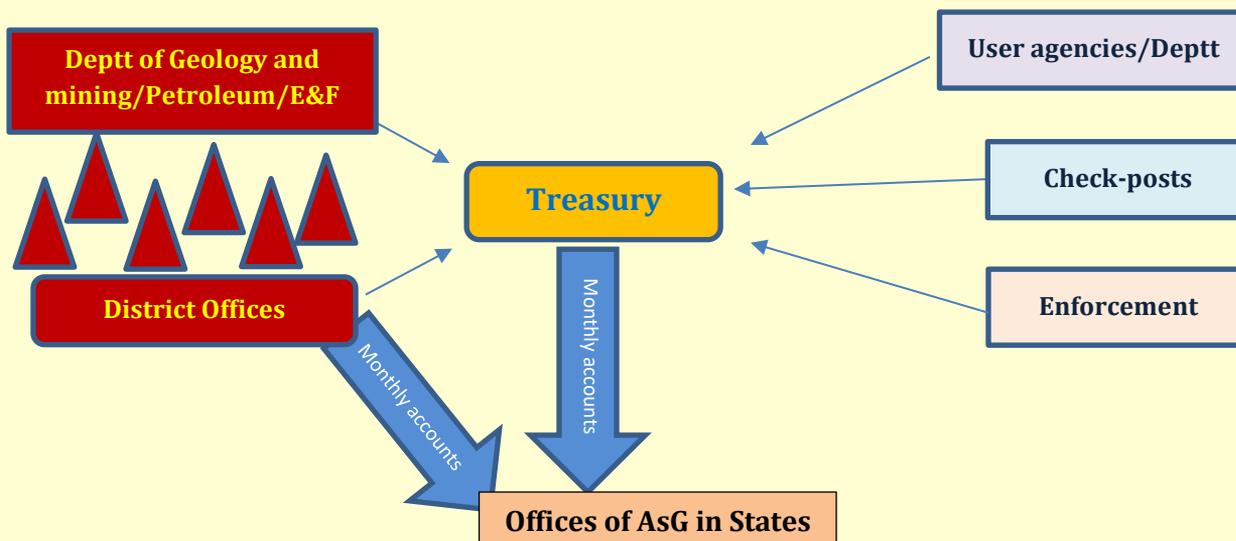
year's Accounts, these are mandatory activities to highlights gaps in the processes and systems besides revenue leakages. These are discussed in detail in succeeding paragraph.

7.3 Systems and processes for ensuring consistent dataflow on supply and use of resources

While some leverages will be applicable for Asset Accounts 2020-21 being a greenfield area and time/resource constraints, necessary systems and processes would have to be put in place well before April 2022 so that automated systems of data capture for Asset Accounts 2022 onwards could be enabled and installed well in time. These are discussed in the succeeding paragraphs.

Capturing the physical flows regularly

The Departments of Geology and Mining/Petroleum/Environment and Forests and their field units in the districts are principal source of revenues accrued to the State exchequer through issue of mining permits, auction of mines, yet revenues are also accrued under the mining and related heads through other user agencies/departments, check posts and enforcement activities of the departments. The principal departments managing the Mineral and Non-Renewable Energy Resources and the treasuries furnish monthly accounts of receipts to the Accountants General Offices which are compiled in annual receipts of the State from Mineral and Non-Renewable Energy Resources - as depicted through the block diagram below:



Thus, there is a well-defined system of reporting the receipts in the States. Slight tweaking of the system to enable 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 would aid in constant capturing of the physical flows of Mineral and Non-Renewable Energy Resources in the directorates as well as in AsG offices. These information can form the basic database of annual physical flows of resources.

Secondly, introduction of a system of reporting the physical volumes of resources procured/used by the user agencies/departments and volumes of resources on which fines/penalties besides royalties/duties/fees are collected by check-posts/enforcement wing to the principal administrative departments – would help installing a system of cross verification of usage of resources. This has been discussed in greater details below.

Capturing other information on supply and use

The SEEA framework embeds a system of continuous verification of supply and use of natural resources. A system of collection of information on use/sale/exports of resources is felt necessary for effectively monitoring the flow and use of resources.

Mapping of supply and use essentially hinges upon continuous and more importantly automated process of real-time dataflow into the system on Mineral and Non-Renewable Energy Resources – as prioritized by respective States. It is only then it will be possible to ensure 360-degree mapping of extractions vis-à-vis consumption and sale of resources for assuring reliability of datasets generated by way of Asset Accounts.

There are instances of highly reliable systems of e-permit mechanisms in States with real-time verifications at the check-posts, point of consumption to cross verify the actual movements vis-à-vis those authorised on payment of due share of royalties, taxes and duties to the State exchequer which can be adopted/adapted by the States.

The following table/mechanism/block-diagram suggests the data-collection methodology to monitor the supply and use.

Table 1

Suggestive methodology of data collection on use/sale/exports of Mineral & Non-Renewable Energy Resources (may vary from State to State)

Name of mineral	Total volume allowed for extraction during the year/ Volume actually extracted	Used in construction by user agencies@	Consumed by major public/private sector entities#	Exported out of State/ Country\$	Total use/sale/ exports	Variation between col 6 and col 2

Notes :

@ - this may include Works Divisions (roads and buildings), PHE, Rural Development, CPWD, NBCC, NHAI etc.

- Major industries under Public Sector/Private Sector using Mineral and Non-Renewable Energy Resources may be covered.

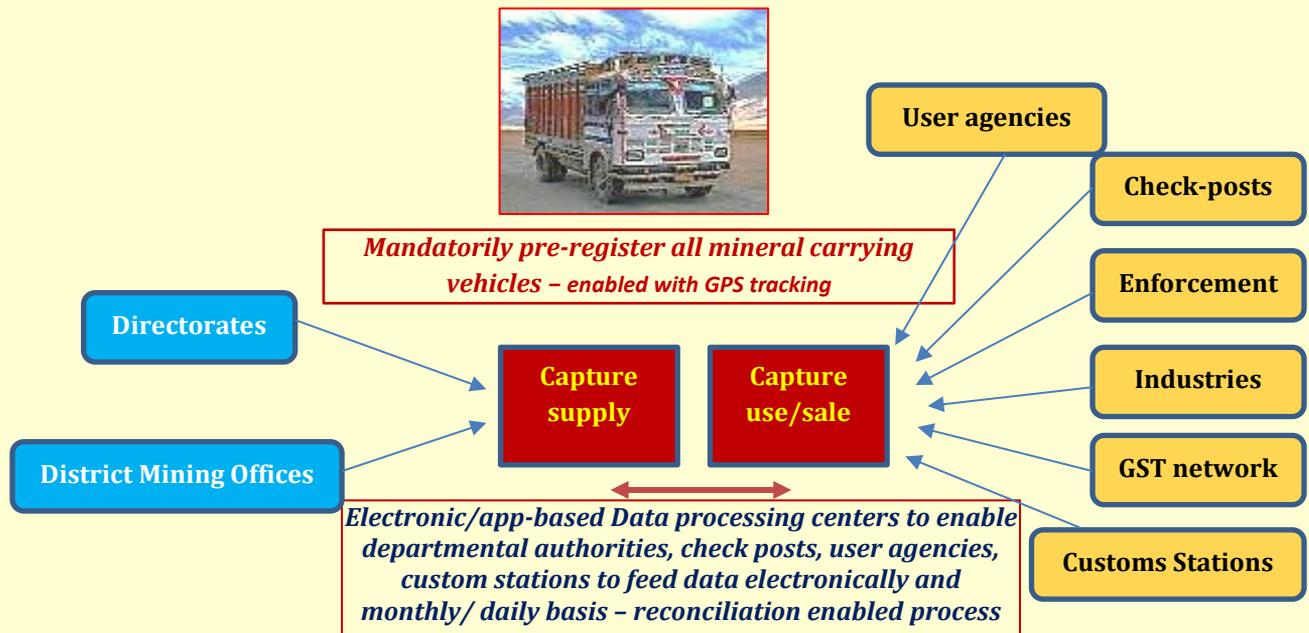
\$ - Intra/inter-state and international check post's data may be covered.

Some of the indicative areas recommended for the States to ponder upon to increase vigilance over mining activities to optimize revenue streams by ensuring automated systems of data gathering are suggested below.

- **Installing an automated e-permit system with necessary bar-coding for verification at the check-posts/railway yards/customs stations/material acceptance points of industries etc.**
- **Automated systems could be installed for making available real time information of permits in the check posts (both intra and inter-State/customs check posts at international borders) so that the mining passes produced by the transporters at the check-posts can be verified before allowing movement**
- **Systems need to be put in place to prevent transportation of minerals with duplicate mining passes by making it mandatory to pre-register GPS enabled carriage vehicles with the Mining Departments**
- **The unladen weight of the vehicles should be captured so that the mineral carried could be easily ascertained by reducing the unladen weight and the Gross vehicle weight slip obtained from the weigh-bridges and carried by the vehicle**
- **Automated/manual systems need to be installed for regular flow of information from the points of consumption/sale/inter-state or outside the country movements to ensure end-to-end veracity of actual extraction data (Table 1 above and discussion under para 7.4 refers)**
- **Make it mandatory to produce electronically verifiable e-permits for consumption, inter-state/international movement of minerals. Else, recovery of full royalty/taxes/duties etc along with penalty as applicable may be strictly enforced**

- Enhancing the quantum of penal measures to act as high deterrent on illegal mining activities
- Enact stringent penal measures, wherever not available, on departmental authorities/personnel/agencies including their authorised personnel for not ensuring valid e-permits or royalty/penalty collections while allowing transportation/ purchase/ consumption-similar to Income Tax Act.

The suggested framework – illustrative only



Thus, while the processing center capturing data on supply would gather information on minerals allowed by the authorities and validly extracted by miners/users; the processing center instituted to capture actual use/sale of minerals would gather data from all sources on usage/sale within State/exports/movement through check-gates etc. The GST mechanism requires transporters to generate UA Bills before initiating movement of goods. Mapping the data captured in the GST database is highly recommended. Electronic/app-based systems installed to capture data periodically, daily/weekly/ monthly would enable continuous processing of data/information into the systems. While ensuring optimum flow of receipts to State exchequer, a reconciliatory

At the instance of the State NRA Cell, Government of Andhra Pradesh has modified the e-permit portal of Mines and Minerals to enable automated capture of data for subsequent year's Asset Account

mechanism would help raise flags on variations between both the data sets pointing towards need for further investigation on mining activities not authorised by the departments. The diagram is illustrative only and the States may consider including other sources to further strengthen the system of cross verification in the revenue interest of the State as well as ensuring scientific mining and sustainability of resources.

7.4 Way forward – summing up

Thus, the action plan for preparing the first Asset Accounts for the year 2020-21 would be more reliant on data collection, compilation and validations firstly on physical flows and then on ascertaining the stock subject to availability of time/resources. Secondly, the NRA Cells in the States alongwith other related stakeholders would like to quickly work on the designs, preferably electronic/app based models on input forms, for data capturing – not only from the Departments administering the resources, but also the user agencies, check-posts, enforcement wings, industries etc (as in Table 1 above and block diagram in preceding paragraph) so as to enable installing e-system without human interface before commencement of year 2022-23. This will assist in making the overall process of data collection/compilation and validations easier from 2022 onwards - with end-to-end system-based automated processing and capture of information for the subsequent year's Asset Accounts.

Successful implementation of Asset Accounts on Mineral & Non-Renewable Energy Resources in the States would mean that India not only meets the first of the four-stage implementation strategy prescribed by the SEEA - CF but will also get into the elite list of countries where Asset Accounts on natural resources (importantly non-renewable resources) are being generated.

Annexure - A
(Reference Para 4.2)

List of Consultative Committee members

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
1.	GASAB Secretariat	Sh. R M Johri, Addl. Deputy CAG, GASAB Sh. S. N. Biswas, Sr. A.O./GASAB, NRA	johrirm@cag.gov.in sao2gasab@cag.gov.in
2.	Government Account Wing in CAG's Office	Sh. Ravikiran A. Ubale Director (Govt. Accounts)	ubalera@cag.gov.in
3.	Commercial Wings in CAG's Office	Ms. Kavita Prasad DG/Comml.-I	prasadk@cag.gov.in
4.	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur	Sh. Pushkar Kumar Director (Training & Research)	kumarp2@cag.gov.in 2772012(O) 9805501717(M) FAX - 2772011,2772030
5.	Ministry of Statistics and Programme Implementation (MoSPI)	Sh. Siljo V K, DDG (SSD)	8860413898 (M) dir5.ssdiv@mospi.gov.in
6.	Ministry of Mines and IBM	Sh. Arputhaswamy S, Director, Ministry of Mines	arputhaswamy.s@gov.in 8056111130 23073046
		Dr. A H Ramteke, Joint Director (S), MMS Division, Chief Mineral Economist, India Bureau of Mines	cme@ibm.gov.in 9868264198 (M)
		D.W. Beck Supt. Mineral Economists	cme@ibm.gov.in 7588746394 (M)
7.	Ministry of Environment, Forest	Ms. Anshu Singh, DDG (Stats)	anshu.s@nic.in

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
	and Climate Change (MoEFCC)		
8.	Department of Land Resources	Sh. Niraj Kumar, Deputy Secretary,	Department of Land Resources, R. No. 109, 1 st Floor NBO Building, G-Wing, Nirman Bhawan, New Delhi - 110011 Ph:23062698/9891756683 niraj.kumar72@nic.in
9.	Ministry of Jal Shakti	Shri Sunil Kumar, Director (BP-1),	Central Water Commission, 5th floor (S), Sewa Bhawan, R.K. Puram, New Delhi-110066. Telephone: 011-26100802 e-mail: bpdte@nic.in
10.	Institute of Chartered Accountants of India (ICAI)	CA. (Dr.) Sanjeev Kumar Singhal, FCA, New Delhi	(M) 9811565606 sanjeevsinghalca1997@gmail.com, sanjeev.singhal@srb.in
11.	Expert in Environmental Accounting	Sh. Mukul Sanwal, IAS (Retd.), 1971	sanwals@gmail.com
Five State Governments (from East, West, North, South and North East) AsG (Audit/A&E)			
12.	AG (Audit), Meghalaya	Shri. Subbaiah, DAG (AMG-II)	2223189(O) 9448707986 subbaiah.1@cag.gov.in
	State Government, Meghalaya	Sh. Shantanu Sharma, Joint Secretary, Govt. of Meghalaya Finance (Bud. Deptt.)	+91-7002861847 9435813045 shantanu.sharma91@ias.nic.in shantanu.ssharma@gmail.com
13.	AG (A&E), Jharkhand	Sh. Bharat Chandra Behera, Deputy Accountant General	Email - NA 2411043(O) 9437426834 (M) FAX - 2411745 beherabc@cag.gov.in
	PAG (Audit), Jharkhand	Sh. Sanjeev Kumar, Sr. DAG	kumarsenjeev@cag.gov.in 2410050 (O) 9724805514 (M)

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
			FAX - 2412517,2413701
	State Government Jharkhand	Awaited	
14.	AG (A&E), Uttarakhand	Sh. R. S. Negi Sr. Accounts officer	9412989776 (M) negirs.utk.ae@cag.gov.in
	PAG (Audit), Uttarakhand	Sh. Yogesh Agrawal, DAG (AMG-II)	9235772484 (M) agrawaly@cag.gov.in
		Sh. Ravindra Kumar, Sr. Audit Officer (FINAT)	9410360321 (M) kumarr.utk.sca@cag.gov.in
	State Government, Uttarakhand	Sh. S L Pattrick, Additional Director Mines and Geology Department	8192802321 slpatrick54@gmail.com
15.	AG (A&E), Gujarat	Sh. Saji Thomas, Sr. DAG	2441110 (O) 9898006047 (M) thomass@cag.gov.in
	AG (Audit-I), Gujarat	Sh. Siva Subramanian, DAG/AMG-III	9913344278 (M) sivas@cag.gov.in
	AG (Audit-II), Gujarat	Ms. Anita Singh, Sr. DAG	9320929066 (M) singhar@cag.gov.in
		Sh. P. B. Chougule Sr. A.O.	9426561173 (M) chougulepb.guj.sca@cag.gov.in
	State Government Gujarat	Sh. Roopwant singh Commissioner Geology & Mines, Industries & Mines Department (Representative of State Govt. for Consultative Committee of NRA Cell)	079-23254151 Commissioner-cgm@gujarat.gov.in
		Sh. A. D. Kanani, Chief Engineer (Central Gujarat) & Additional Secretary Naramada, Water Resources, Water Supply and Kalpasar	9909939803 (M) 079-232-51667, 079-232-51668 ce-cg-nwrws@gujarat.gov.in, pa2ce-cg-nwrws@gujarat.gov.in, kananiad@gmail.com

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
		Department, Government of Gujarat	
		Sh. Nisarg Joshi Deputy Secretary Energy and Petrochemical Department, Government of Gujarat	9978409686 (M) ds-petro-re-epd@gujarat.gov.in
		Sh. P.R. Joshi, Deputy Director (State Income) Directorate of Economic and Statistics, Government of Gujarat	9879830900 (M) 079-232-52882 stateincomegujarat@gmail.com dd-si-des@gujarat.gov.in
		Sh. N. Srivastva, Additional Pr. Chief Conservator of Forest. Forests & Environment Department	8980755055 (M) 079-23252009 apccf.fst.fm@gmail.com
		Sh. D.R. Bhammar, Deputy Secretary (Land) Revenue Department	9978442540 (M) 079-23251517 js-land-rev@gujarat.gov.in
		Sh. J.I. Hindocha, Deputy Director (Treasury Control) Finance Department	9427314323 (M) 079-232-54411 dydir1-dat@gujarat.gov.in
		Sh. M. R. Wala, Sr. Geologist Industries & Mines Deptt.	9727706383 (M) dydir-fs-inm@gujarat.gov.in
16.	AG (A&E), Karnataka	Smt. Yashoda S., Sr. Dy. AG	yashoda@cag.gov.in 22640220 (O), 22268964 (O) 9448569518 (M)
		Smt. M. Girija Kumari, Sr. Account Officer TM	girijakm.kar.ae@cag.gov.in

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
	PAG (Audit)-I, Karnataka	Miss Monali Phadtare, DAG (AMG-III)	monaliphadtare@cag.gov.in 22262417 (O), 9769506364 (M)
	AG (Audit-II)	Smt. Sunita Mary Samson Sr.AO/Civil/AMG-II	080-22640396 9481773818 (M) sunita.trs@gmail.com
	State Government, Karnataka	Sh. Chandrashekar Nayaka. L Deputy Secretary to Government, Finance Department (B&R),	080-22033550 dsbr-fd@karnataka.gov.in
		Shri S.C. Venugopal Director(Technical) Energy Department	9742966500 (M) 080-22254545, 22355217 tdkpcl@karnataka.gov.in
		Shri Raj Kishore Singh Director General Forest Ecology and Environment	080-22032275/2174 Empri.blr@gmail.com
		Shri Basana Gouda, Joint Director Planning, Programme, Co-ordination and statistics	desjdsip@gmail.com
		Shri Kiran H Mausti Deputy Secretary to the Government (KBJNL), Water Resources	9980774689 (M) dskbjn@gmail.com
		Shri B Guru Prasad Joint Director, Statistics Miner Irrigation Department	cemisouth@gmail.com
		Shri C V Raman Joint Director (M&G Dept.) Commerce and Industries	catvraman@gmail.com

Sl. No.	Name of Office/Organization	Name of the Officer nominated	Contact details
		Shri C Balram Under Secretary to Government, Revenue	9379293078 (M)

Annexure – B
(Reference Para 4.2)

Comments/Suggestion received on draft formats of Asset Accounts on Mineral & Non-Renewable Energy Resources (NRA) as on 13.07.2021

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
1.	DG, Commercial, CAG of India	(i) The template requires extraction of resources to be shown separately for Government, Private Sector and Others. In this regard Government may be bifurcated into Central and State Government with further bifurcation into CPSEs/ State PSUs, Central and State Autonomous bodies, Municipal and local authorities etc.	(i) Agreed. Necessary modifications included in the draft Asset Accounts.
		(ii) We need to define what the term Others include. For example, does it include Public Private Partnerships?	(ii) Since incorporated.
		(iii) We need to take into consideration the fact that there are certain materials like atomic materials which are exclusively under the domain of Central Government as per the provisions of Mines and Minerals (Development & Regulations) Act 1957. As such, the natural resources required for production of such materials are regulated by Central Government.	(iii) As per the action plan envisaged in the Concept Paper, we are now on goal 1 – Asset Accounts on Mineral and Non-Renewable Energy Resources for States. The national Asset Accounts is planned in the next stage, i.e. from 2022-23 onwards, please
		(iv) Extraction of natural resources is always bound by rules and regulations in force. We need to look into the issues pending in courts and violation of Central and State Pollution Control Boards directives regarding illegal extraction/ extraction not as per norms prescribed.	(iv) This aspect is incorporated in the notes under Asset Accounts, please.
2.	Ms. P. Bhanumati, DDG(SSD),	(i) In respect of Methodology 2 of the Concept paper prescribed for	(i) At the initial stage, collection of data from the State on

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
	Ministry of Statistics and Programme Implementation (MoSPI)	<p>compiling opening stocks as on April 1, 2019, this method uses production figures to adjust the stock of reserves as given in the IBM National Mineral Inventory — Though the production figures could be used as a basis for estimating the amount of ore extracted, it may not be appropriate to take just the production since adjustments may need to be made for the wastages during the mineral extraction process. It is suggested that IBM be contacted for advice on the procedure to be adopted for estimating the opening stock for each year.</p>	<p>extraction of minerals was cumbersome and due to COVID restrictions, it was thought of collecting the production figures from the IBM which was readily available. More so as it was a pilot project. However, the actual Asset Accounts for the year required collection of information on actual extraction from the States. This aspect has been incorporated in the draft Asset Accounts now, please.</p>
		<p>(ii) Table 9 of the Concept paper intends to show the extraction of minerals by Government sector and private sector entities and not really the amount used by these sectors. This may need to be clarified during collection of information from other States. Detected 'illegal mining' could be considered for inclusion in private sector.</p>	<p>(ii) A separate note has been inserted to clarify this.</p>
		<p>(iii) In the recording of royalties, care may need to be taken not to show the royalties pertaining to an extraction undertaken in a previous year alongside the extraction during the current period. Such differences may occur due to the recording of transaction in government accounts on cash basis rather than on accrual basis. If the intention is to provide an analysis of the mismatch between production and royalties in a State,</p>	<p>(iii) In view of this foreseen problem, an effort has been made to link the revenues reported through the Finance Accounts to map the revenues as well as the physical extractions. Little bit of overlap cannot be ruled out. However, our endeavour is to capture the overall picture of extraction vis-à-vis the stock and the closing balance of resources</p>

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
		such divergences in recording two entries of the same table may not be able lead to any valid conclusion.	with an eye towards their sustainability and prevent overuse.
		(iv) For a better view of the learnings from the pilot studies, it may be worthwhile to have the agencies present the pilots, highlighting the challenges faced. This may be useful to understand whether the templates or the instruction set need to be amended/revised before they are circulated to other States for replication.	(iv) Recently, a national workshop on NRA was organized in the International Center for Environmental Audit and Sustainable Development (iCED), Jaipur under CAG. We had representative from the IBM, GASAB, NRSC and also Principal Accountant General, Rajasthan who presented the case study on preparation of Asset Accounts on Mineral & Non-Renewable Energy resources. Recorded sessions are enclosed for kind reference.
3.	Sh. Mukul Sanwal, IAS (Retd.), 1971 Expert in Environmental Accounting	(i) Congratulations. The report (Concept Paper) will be important for policymakers and for our environmental credentials. The table in Annexure A (page 8) captures the items comprehensively.	
		(ii) Apart from use of coal for electricity, the other main uses are steel, cement and construction material (that is also the case world over). You have these in the table on page 8. The table, that construction material is much more in volume than fossil fuel and generates substantial revenue. You could bring this out in the conclusion. It links with infrastructure development and urbanization.	(ii) Agreed, please. This aspect has now been included in the draft Asset Accounts please. As sand is part of resources managed by the Department of Geology & Mines in the States coupled with the fact that sand is a product of erosion of stones/boulders which is finite in nature, this is included as a part of the Asset Accounts on Mineral & Non-Renewable Energy resources, please.

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
		<p>(iii) I have one suggestion sand, which is mainly in the river beds, is replenished each year during the monsoon. Is this in the official data you have from the departments? In this sense, sand will be a renewable resource, a situation that is unique to us because of the heavy rains in a short period during the monsoon. Please look into this.</p>	<p>(iii) Agreed, please. The three pilot States have succeeded in collecting information from the sources earmarked in the Concept Paper which can be replicated by other States, please.</p>
		<p>(iv) Regarding the methodology, the policy issue is availability of data and appropriateness. Some element of rigour is certainly needed for the major natural resources - coal, iron ore, raw material for cement and construction/building material. Here royalties could be supplemented in a box with data from power plants, steel mills, cement plants and urban construction (that is, from a different agency). Industry federation data could also be used. NITI may also have some data. This will serve to flag a possible issue for further refinement and review and reconciliation of data kept by the different agencies, which is also the role of the CAG. So, use what is available and do analysis to highlight any issues for the future.</p>	<p>(iv) Aspect of cross verification of information of Directorate of Geology and Mining in the States with possible resource centers like the IBM and other Ministries/agencies have been incorporated in the draft Asset Accounts, now, with the aim to highlight any case of variation in data sets pointing towards need for reconciliation.</p>
		<p>(v) The agencies who have conducted pilot studies, in addition to highlighting the challenges, could also be requested to suggest specific changes in the template and instructions, which would then be</p>	<p>(v) We have issued specific instructions to the field Offices to coordinate with the State Governments to suggest changes in the format. And flexibility in the reporting format has been embedded in</p>

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
		reviewed in the Office of the CAG. This will make your task easier.	all correspondences with the States allowing them full liberty to remodel the formats as per their needs and availability of data while keeping the main framework and information requirements intact.
4.	IBM, Nagpur and Ministry of Mines, GoI	<p>(i) The format of data collection appears to be good for the first instance. There may be limitations on the compilation of data.</p> <p>(ii) IBM is entrusted with the administration of mining law such as MCDR, 2017/ Mineral (Auction) Rules, 2015/ Minerals (Other than Atomic and Hydro-Carbons Energy Minerals) Concession Rules, 2016, etc. Therefore, the control of IBM is only on mines and minerals covered under MCDR.</p> <p>(iii) For the mineral covered under MCDR, information/data is received through Monthly and Annual Returns. The information available in those returns can only be shared as and when required. Information beyond scope of monthly/ annual returns cannot be compiled..</p> <p>(iv) So far as statutory returns are a concern, information related to the environmental aspects is mostly available in Annual Returns, and sometimes such information is even not furnished despite repeated reminders.</p> <p>(v) The data on fuel minerals and minor minerals are collected on a non-statutory basis from the respective</p>	<p>Points noted, please.</p> <p>Successful completion of pilot studies in three States has given space to optimism that similar exercise could be replicated in all other States.</p>

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
		<p>source agencies. Therefore, IBM cannot compel any of the source agencies for specific information not provided by them.</p> <p>(vi) For fuel mineral data is available for production only. Data for values, stock are not compiled and maintained.</p> <p>(vii) Minor mineral data is compiled from the state government, where consistency is not maintained. For some of the states, the minor mineral data has not been received for the last 20 years.</p> <p>(viii) In view of the above, it is stated that the format of data collection appears to be good for the first instance. There will be limitation on the compilation of data as mentioned above</p>	
5.	Shri Santanu Sharma, JS Budget, Government of Meghalaya	<p>(i) Limestone can be classified as a minor mineral also depending on the end usage of the extracted ore. This is just to highlight this as you have already mentioned that States have the flexibility to classify extraction as per rules.</p> <p>(ii) Can there be another column in the extracted for segment meant for exports. Meghalaya for example exports to Bangladesh. This can be relevant as it also earns FX for the country.</p> <p>(iii) I am not clear about the sustainability part. Is there a Standard that can be applied? For example, is Coal mining sustainable if the present reserves of coal will get over in 40</p>	<p>(i) Flexibility is allowed to the States to modify the templates as per their needs keeping the overall framework intact.</p> <p>(ii) Since inserted, please.</p> <p>(iii) The aim of preparing the Asset Accounts to compile the database on stock and flows of Mineral and Non-Renewable Energy Resources for better</p>

Sl. No.	Name of Office/ Organization	Comments/Suggestions	Remarks
		years let us say? Different States will be mining at different rates so how is this going to be classified and reconciled?	disclosure and decision making by the policy makers who has to take the final call on continuity or otherwise of mining and related activities. Compilation of data into an Asset Accounts is a tool or aid to evidence based decision making.
6.	AG (Audit), Meghalaya	No further comment.	
7.	AG (A&E), Jharkhand Sh. Bharat Chandra Behera, Deputy Accountant General		
8.	PAG (Audit), Uttarakhand		
9.	PAG (Audit)-II, Gujarat		
10.	PAG (A&E), Gujarat		
11.	AG (A&E), Karnataka		
12.	PAG (Audit)-I, Karnataka		
13.	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur		

Annexure – C

(Reference Para 4.2)

Minutes of meeting on virtual presentation on Natural Resource Accounting – implementation of Asset Accounts on Mineral & Non-Renewable Energy Resources in States for the NRA Cell constituted by GASAB

Background: As part of the implementation process envisaged in the Concept Paper on NRA released by the GASAB Secretariat in July 2020, GASAB Section has developed tentative templates for the Asset Accounts on Mineral & Non-Renewable Energy Resources for implementation in the States. The templates, besides being successfully piloted in three States (Goa, Meghalaya and Rajasthan) have also been vetted by the Consultative Committee on NRA Cell set up by GASAB consisting of important stakeholders, State’s representatives and eminent environmentalists. The templates are in final stage and are planned to be rolled out in the States by September 2021 after necessary approvals for preparation of Asset Accounts for the year 2020-21, targeted to be completed by March 2022.

In order to discuss the developments with the eminent members of the Consultative Committee before finalisation of the templates of Asset Accounts for rolling out to the States for implementation, a virtual meeting with the members was planned.

Date and time : 20 September 2021 at 11 AM.

Participants : Ms Parveen Mehta, Deputy CAG & Chairperson, GASAB chaired the meeting. Shri Mukul Sanwal, IAS (Retd) eminent environmentalist was present. A list of other dignitaries in the Ministries of Government of India, State Governments and Accountants General Offices of NRA Cell besides Officers of GASAB is enclosed.

Mode: Virtually through MS Teams

Proceedings : At the outset, Additional Deputy CAG, GASAB, welcomed Shri Mukul Sanwal and all dignitaries and eminent members of NRA Cell involved in this prestigious endeavour of GASAB on implementation of NRA across the country. The contribution of accounting of natural resources towards long term economic performances and India’s obligations on implementing resource accounting as part of the sustainable development goals were highlighted. He brought out the action plans envisaged in the Concept paper which, *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 Environmental Accounting – Central Framework

(SEEA – CF); of which, the first such goal is preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources, more importantly the non-renewable resources because of its finiteness in nature, to commence from the States and gradually moving towards the national level.

The Addl Dy CAG set the tone of the meeting as a platform for conveying to the members of NRA Cell regarding the status of implementation of action plans as on date and way forward as part of GASAB's zeal to implement NRA across the country.

To take the meeting further, he requested the Deputy CAG (Government Accounts) & Chairperson, GASAB (hereinafter referred as CP, GASAB) to kindly inaugurate the meeting and provide the key-note address.

In her keynote address, CP GASAB, while conveying sincere gratitude to the luminaries of the Cell especially Shri Mukul Sanwal for sparing time for attending the meeting, highlighted the crucial role played by the natural resources in economic development of a country and their inbuilt value of inter-generational equity and sustenance. Important milestones on natural resource accounting and economic environmental accounting like the UN conference on Human Environment in 1970, the Brundtland Commission, the Earth Summit at Rio de Janeiro in 1992, international standards for the compilation of national accounts in 1993 revised in 2009, deep inter-linkages of economic environmental accounting with the SDGs, the SEEA – CF in 2012 – which is the latest internationally accepted and adopted framework for resource accounting were touched upon.

CP, GASAB informed the august house about the progresses made towards implementing NRA in India by the concerned stakeholders and ministries and stated that despite best efforts, a system of collation of a periodic database in the shape of an Asset Accounts on available natural resources linked with the inter-related factors like revenues and costs involved in exploitation of such resources, their sustainability for the future generations – which is the first stage of implementation of NRA as suggested by the SEEA - CF, was still to be achieved.

In the above backdrop, CP GASAB underscored GASAB's initiatives in hand holding the country and the States to implement NRA across the country through the release of the Concept Paper on NRA, drawing up of tentative templates for capturing data related to selected natural resources especially Mineral and Non-Renewable Energy Resources to commence with from the States. The CP GASAB also mentioned that this meeting was planned as a platform for conveying the works done, successes in pilot studies, way forward

and the templates of Asset Accounts on Mineral & Non-Renewable Energy Resources being readied for implementation in the States and to seek the insights of the members before finalisation of the templates.

CP, GASAB requested the members to continue to attach due priority to this project of national importance and keep up the wholehearted support which is imperative for its successful implementation.

After the key-note address, a powerpoint presentation on NRA was made by SAO, GASAB highlighting the concept and importance of NRA; international developments vis-à-vis those in India, implementation strategy suggested by SEEA framework and those adopted/works done by GASAB and successes thereagainst; draft templates of Asset Accounts on Mineral and Non-Renewable Energy Resources and the key takeaways; results of pilot studies on implementation of Asset Accounts on Mineral & Non-Renewable Energy Resources and proposed way forward.

After the presentation, the following were discussed.

Commissioner of Geology and Mining, Gujarat pointed out that the list of minerals may not be pre-fixed and requested for allowing flexibility to the States to select the list of minerals to be included in the Asset Accounts.

While appreciating the input, it was informed that the core framework of Concept Paper has been designed to allow flexibility to the States to modify the formats as per their need subject to overall framework to enable State-wise compilations and also to prioritise the mineral resource to be included therein.

Indian Bureau of Mines highlighted that in many States the minor minerals are auctioned and thereafter the extractions are not monitored properly. Taking instance of some States, the Officer pointed out that information on minor minerals is not forthcoming for decades which is a concern. As regards the administrative departments, it was mentioned that in addition to the Geology and Mining Departments, Environment and Forest Department was also involved in many States in managing mineral resources. Lastly, it was informed that the State of Andhra Pradesh has developed system of collection of data on Mineral and Non-Renewable Energy Resources which is found to be effective.

While the technical inputs are accepted gratefully, preparation of Asset Accounts on Mineral and Non-Renewable Energy Resources in States, year-wise, has the potential of addressing most of the above concerns.

Ministry of Statistics and Programme Implementation pointed out the requirement of measuring the production loss as in some cases it is more than 70 *per cent*. It was also informed that data under illegal mining can be listed under Private extractions only and not under Government sector.

The input on production loss is gratefully acknowledged, and necessary amends has been carried out in the formats. As regards illegal mining, the table contains only a row on collection of information without classifying them under any specific sector with the idea of only bringing the known information in the main framework to add to the total extractions.

After the discussions, Shri Mukul Sanwal in his expert speech lauded the organisation of CAG of India and GASAB for the endeavour which, he said, will not only help the country in achieving the international obligations but will also add immense value to evidence-based decision-making process being stressed upon by the hon'ble Prime Minister of India. The idea of commencing the implementation process from the States was also appreciated as the key data lies there, he added. The icon cautioned the house that this was an evolving process, and the country will learn as we commence and progress with implementing this highly important project for the country and solutions will continuously emerge as we go on. He added that the formats of Asset Accounts designed by the CAG/GASAB establishment as the first step is extremely well thought of and will add value to good governance by enabling new policy issues, new comparisons to emerge.

CP, GASAB noted the expert views of the iconic dignitary as extremely encouraging, reassuring, and heartening.

Before concluding, CP GASAB once again thanked the dignitaries for their involvement and enthusiasm and attending the meeting to make it a success and expressed confidence that the members of NRA Cell would continue to support GASAB in implementing NRA across the country

At last, CP GASAB affirmed that successful implementation of Asset Accounts on Mineral & Non-Renewable Energy Resources in the States would mean that India not only meets the first of the four-stage implementation strategy prescribed by the SEEA - CF but will also get into the elite list of countries where Asset Accounts on natural resources (importantly non-renewable resources) are being generated.

The meeting ended with vote of thanks to the Chair.

**Officers attending the Virtual Presentation on NRA for the members of
Consultative Committee of NRA Cell (Date 20.9.2021)**

Sl. No.	Name of Office/Organization	Name of Officer
1.	GASAB Secretariat	Ms Parveen Mehta, Deputy CAG & Chairperson, GASAB
		Sh. R M Johri, Addl. Deputy CAG, GASAB
		Sh. S. N. Biswas, Sr. AO, GASAB/NRA
2.	Sh. Mukul Sanwal, IAS (Retd.)- retired bureaucrat and eminent environmentalist	
3.	Ministry of Statistics and Programme Implementation (MoSPI)	Sh. Siljo V K, DDG (SSD)
4.	Ministry of Environment, Forest and Climate Change	Ms Anshu Singh, DDG (Stats)
5.	Ministry of Mines and Indian Bureau of Mines	Sh. Arputhaswamy S, Director, Ministry of Mines
		Dr. A H Ramteke, Joint Director (S), MMS Division, Chief Mineral Economist, India Bureau of Mines
		Sh. D.W. Beck, Supt. Mineral Economists
6.	International Centre for Environment Audit and Sustainable Development (iCED), Jaipur	Sh. Pushkar Kumar, Director, (Training & Research)
7.	Institute of Chartered Accountants of India	CA. (Dr.) Sanjeev Kumar Singhal, FCA, New Delhi
8.	State Government Gujarat	Sh. Roopwant singh, Commissioner Geology & Mines, Industries & Mines Department
		Mr A V Champaneri DD, Statistic
9.	AG (A&E), Gujarat	Sh. Saji Thomas, Sr. DAG
		Ms. Annie Jeejo, Sr.AO
10.	AG (Audit-II), Gujarat	Sh. Aditya Pant, DAG
		Sh. P. B. Chougule, Sr. AO
11.	AG (A&E), Jharkhand	Sh. Bharat Chandra Behera, DAG
12.	State Government Karnataka	Shri C V Raman, JD (M&G Dept.)

Sl. No.	Name of Office/Organization	Name of Officer
		Commerce and Industries
		Technical Director, Karnataka Power corporation ltd. (KPCL)
		Joint Director SIP, Directorate of Economics and Statistics
13.	AG (A&E), Karnataka	Sh. R Naresh, Pr. AG
		Smt. Yashoda S., Sr. Dy. AG
		Smt. M. Girija Kumari, Sr. AO, TM
14.	Pr. AG (Audit), Karnataka	Ms. Kavita, Sr. AO
15.	AG (Audit), Meghalaya	Shri. Subbaiah, DAG (AMG-II)
		Shri. S. Nangbah, Sr. AO
	State Government, Meghalaya	Sh. B. G. Momin, Research Officer, O/o the Director of Economic & Statistics (Planning)
16.	PAG (Audit), Uttarakhand	Sh. Yogesh Agrawal, DAG (AMG-II)
		Sh. Ravindra Kumar, Sr. Audit Officer (FINAT)
17.	AG (A&E), Uttarakhand	Shri R S Negi, Sr. AO
18.	State Government, Uttarakhand	Representatives of State Government

Annexure - D

(Reference Para 4.3)

Minutes of meeting on virtual presentation on Natural Resource Accounting for the Chief Secretaries, other Officers and Accountants General of States

Background: As part of the implementation process envisaged in the Concept Paper on NRA released by the GASAB Secretariat in July 2020, GASAB Section has developed tentative templates for the Asset Accounts on Mineral & Non-Renewable Energy Resources for implementation in the States. The templates, besides being successfully piloted in three States (Goa, Meghalaya and Rajasthan) have been vetted by a Consultative Committee set up by GASAB consisting of important stakeholders and eminent environmentalists. The templates are in final stage and are planned to be rolled out in the States by September 2021 after necessary approvals for preparation of Asset Accounts for the year 2020-21, targeted to be completed by March 2022.

In order to discuss the matter with the highest echelons in the State Government to ensure smooth co-ordination between GASAB headquarters, the field Offices of the CAG and the State Governments in steering the implementation process, virtual presentation on NRA was made to the Chief Secretaries and other State Government Officers besides the Accountants General in the States. Details of meetings, participating States and key decisions are mentioned in the table below.

Date	Participating States	Discussions and decisions
31-8-2021	Goa, Haryana, Mizoram, Punjab, Rajasthan and Odisha	<p>The Additional Chief Secretary, Mines, Government of Haryana while appreciating the presentation made assured the CP, GASAB of completing the preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources within 90 days. CP, GASAB hailed the assurance and commitment.</p> <p>Additional Secretary, Finance, Government of Odisha also congratulated GASAB on the presentation and requested for a copy of the presentation and assured that with the implementation of IFMS in Odisha, the State will also endeavour to complete the preparation of the Asset Accounts within the targeted timeline.</p> <p>Commissioner and Secretary, Commerce & Industries, Government of Mizoram commended GASAB for the initiative and</p>

Date	Participating States	Discussions and decisions
		<p>assured that the State would take necessary steps towards preparing the Asset Accounts. CP, GASAB assured the State Government of all support from GASAB through the Office of the AG, Mizoram.</p>
3-9-2021	Arunachal Pradesh, Himachal Pradesh, Meghalaya, Sikkim and Uttarakhand	<p>Arunachal Pradesh while hailing the idea of NRA and GASAB's work towards its implementation assured that the State would provide all support and attempt to prepare the Asset Accounts. The State also requested for State specific workshops for capacity building and guidance to which CP, GASAB agreed.</p> <p>Himachal Pradesh: Economic Advisor speaking on behalf of Himachal Pradesh Government appreciated GASAB's initiative in implementing NRA and requested for a copy of the PPT. The Officer highlighted the need for scaling up the preparing forest Asset Accounts in the lines of Forest Resource Assessment of one district carried out in 2013-14 in the State. CP, GASAB requested for a copy of the report to which the EA agreed. The Finance Department of HP requested for State specific workshops in Shimla.</p> <p>Meghalaya : The Chief Secretary, Meghalaya while complimenting GASAB for this huge work and requesting for a copy of the PPT highlighted that there were data gaps in regular flow of information for the compilation of Asset Accounts and the State was working to overcome it to make the system robust by March 2022. It was also suggested that in view of the immense importance of forests, forestry sector should be prioritised after completion of the works related to Mineral and Non-Renewable Energy Resources. The Officer also requested for holding State specific workshops for Meghalaya, which was agreed to by CP, GASAB. He assured GASAB of all support of the State Government of Meghalaya in implementing NRA in the State.</p>

Date	Participating States	Discussions and decisions
		<p>Uttarakhand: Representative of Uttarakhand Government highlighted the importance of minor minerals in the economy of the State Government and added that more thrust be given to these minerals while preparing the Asset Accounts in the State.</p>
7-9-2021	Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Karnataka, Madhya Pradesh, Nagaland, Tripura and Uttar Pradesh.	<p>Andhra Pradesh Accountant's General Office informed that the preparation of Asset Accounts was underway and the opening balance is under finalisation in consultation with the Department.</p> <p>Bihar State Government while highlighting the requirement of a framework on accounting principles for natural resources requested for holding State specific workshops which was agreed to by the senior management of GASAB.</p> <p>Gujarat: The State Government informed that they are in process of collecting data for compilation of the Asset Accounts.</p> <p>Karnataka Accountant's General Office: Asset Accounts on major minerals under finalisation with the IBM data used for ascertaining the opening stock. As regards the minor minerals, the state mentioned that since the IBM database do not provide information on minor minerals, OB was being ascertained with the help of the concerned Department(s).</p> <p>Madhya Pradesh State Government while assuring of full support informed that the Geology & Mining Department maintains electronic data which would smoothen compilation of Asset Accounts. The State Government also confirmed that they would co-ordinate with the Accountant's General Office and follow up preparation of Asset Accounts.</p> <p>Nagaland State Government requested for a copy of the presentation to understand the issues involved and work out the way forward. Addl Dy CAG assured that a copy of the presentation would made available to the State Government.</p>

Date	Participating States	Discussions and decisions
		<p>Uttar Pradesh State Government desired to know about nominations for the NRA Cell. Senior management of GASAB assured the State Government of all help and informed that the Offices of Accountants General will co-ordinate with the State Government to guide them on the matter.</p>
7-9-2021	Maharashtra	<p>The Addl Chief Secretary, Industries while appreciating the presentation stated that it was a noble initiative of GASAB and the CAG. The total area of the state vis-à-vis mineral bearing districts and also the details of major minerals in the State were discussed. It was also assured that Maharashtra would definitely be a part of the endeavour and the Department would co-ordinate with the Accountants General Offices through the Director of Mining for more understanding, clarifications and detailed guidelines for the study. The Addl CS requested GASAB for sharing a copy of the presentation which was agreed to by Addl Dy CAG.</p> <p>The Principal Secretary, Finance also assured full co-operation and requested for conducting State specific workshops to sensitise the diverse stakeholders which was agreed to by Addl Dy CAG.</p> <p>Principal Accountant General (A&E) – I, Mumbai stated that NRA was a much-needed initiative and given the flexibility, the Asset Accounts could be possible to be completed within the targeted timeline of March 2022. Pr. AG also stressed upon state specific workshops as a good starting point.</p> <p>Accountant General – II, Nagpur congratulated GASAB for this initiative and mentioned that the Office has close interactions with the State Government and assured that the Office would deploy dedicated teams to work with the State Government to bring up the Asset Accounts on Mineral & Non-Renewable Energy Resources in the State.</p>

Date	Participating States	Discussions and decisions
10-9-2021	Assam, Jharkhand, Manipur, Kerala and West Bengal.	<p>State Government of Assam informed that the NRA Cell has been notified in the State and they are planning to hold the first meeting of the Cell, soon. The State Government requested for holding State Specific Workshops. Pr. Accountant General, Assam informed that a presentation has been made on NRA to the State Government and more such meetings were in the anvil. Addl Dy CAG assured the State Government and the PAG of all support from GASAB in holding State specific workshop.</p> <p>Jharkhand State Government while appreciating the presentation on NRA assured of forming the NRA Cell at the earliest. The Principal Accountant General informed that there were positive vibes from the State Government on preparation of Asset Accounts on Mineral & Non-Renewable Energy Resources and the NRA Cell will be notified very soon.</p> <p>State Government of Manipur while appreciating the initiative of GASAB expressed confidence that the Asset Accounts, once prepared, will be immensely helpful for showcasing the State's value to the investors at large to attract investments towards the State. The Principal Accountant General informed that the State Government has issued a formal order on constitution of NRA Cell. He also echoed the sentiments of the State Government that the Asset Accounts would bring out a vital and useful database. State Specific workshop to train the human resources was insisted upon. Addl Dy CAG while appreciating State Government and Pr. AG's enthusiasm assured of all support in holding the State specific Workshop on NRA.</p> <p>State Government of Kerala exhorted that the preparation of Asset Accounts will be very important for the State of Kerala as though the State did not possess much major minerals, yet, it has strategic rare earth which needs to be monitored closely. The Officer also highlighted that preparation of Asset Accounts will yield</p>

Date	Participating States	Discussions and decisions
		<p>multiple benefits as it would enable the State to monitor commercial exploitation as well as prevent smuggling of the rare minerals. The State also assured that NRA Cell will be notified very soon. Accountant General agreed with the State Government regarding the need for Asset Accounts in keeping tab on exploitation of rare mineral extractions and formation of NRA Cell.</p> <p>Finance Department of West Bengal State Government informed that the matter is under consultation with the Industries and the Accountants General Offices. The State was optimistic of going ahead in preparing the Asset Accounts on Mineral & Non-Renewable Energy Resources. The Principal Accountants General were unequivocal about the co-operation of the State Government and assured that both, the AGs Offices and the State were on the same page and the State would get all the support of the State Accountant General Offices in building up the Asset Accounts. The State also assured of completing the work within the targeted timeline.</p>
20-9-2021	Jammu & Kashmir	<p>The State Government requested for State specific workshop on NRA implementation and also a copy of the tentative templates in which data has to be captured.</p> <p>The Pr. Accountant General (Audit) while appreciating the presentation as comprehensive assured the State Government of all co-operation and assured that both the State Government and the AsG Offices would attach due importance to the project and all efforts would be made to complete it within the timeline.</p>
28-9-2021	Tamil Nadu	<p>The State Government while thanking GASAB for holding the virtual presentation informed that they would follow the templates prescribed by GASAB and presently they are actively working on preparing the Asset Account on Mineral & Energy Resources.</p>

Date	Participating States	Discussions and decisions
		<p>The Officer added that such a framework will be immensely helpful for the State not only for monitoring the extractions but also to ascertain whether adequate revenues are being accrued to the State exchequer from mining activities being carried out. He lauded the cross-verification mechanism which is embedded into the system.</p> <p>The Accountant General (A&E) informed that the NRA Cell is fully functional in the State of which the first meeting has already been held while the second meeting was in the offing. The Office also mentioned that they have received data from the Mining and Energy Departments which are being examined for posting in the templates of Asset Accounts.</p> <p>The Officer also stated that some minerals are under the administration of the Public Works Department which needs to be covered as well.</p> <p>The State Government requested for organising State specific workshop, which was agreed to by Addl Dy CAG, GASAB.</p>

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