

Summary of the Online Workshop on Natural Resource Accounting organized by International Centre for Environment Audit and Sustainable Development (iCED), Jaipur on 05.07.2021

One day Workshop on Natural Resource Accounting (NRA) was organised by International Centre for Environment Audit and Sustainable Development (iCED), Jaipur virtually on 05 July 2021.

Shri Pushkar Kumar, Director (Training and Research) welcomed the participants and highlighted the background of conducting this workshop. He also informed about the past initiatives at iCED related to NRA. Shri Manish Kumar, Director General, iCED inaugurated the workshop. He addressed the participants and underlined the relevance and objectives of the workshop for promoting good environmental governance. Total 83 Group Officers and Sr AOs/AAOs from the Indian Audit and Accounts Department (IA&AD) participated in the workshop. List of participants is attached as **Annexure I**.

There were five sessions led by five experts from the department as well as other agencies. Their details are given below:

1. Shri P K Jain, Chief Mineral Economist, IBM, Nagpur.
2. Shri Sudipt Biswas, Sr. AO, GASAB, O/o CAG, New Delhi
3. Shri Souvik Bhattacharjya, Associate Director, Integrated Policy Analysis Division, TERI, New Delhi
4. Shri D.P. Yadav, Pr. AG(A&E), Jaipur
5. Shri Priyom Roy, Scientist, NRSC, Hyderabad

During the workshop, following sessions were organized:

Session-I by Shri P K Jain, Chief Mineral Economist, IBM, Nagpur.

Shri P K Jain made power point presentation on the theme; '**Overview of Natural Resource Accounting with special reference to Mineral Resources**'. He informed the participant about different characteristics of mineral resources, their specialities and significance for overall development. He further informed about different mineral based industries and contribution of Indian Mining sector in GDP. It was emphasized that mining sector is one of the core sector of the economy because it provides basic raw material to many important industries.

He gave an overview of Wholesale Price Index (WPI) with special reference to minerals. He showed various examples of weighted diagram of minerals in current WPI with base year 2011-12 and explained about the structure of Minerals in the revised WPI basket which is based on the net traded value of the item in the base year i.e. 2017-18 (Revised base year). He further described the present pricing policy of the Mineral Sector along with definition of Ex. Mine Price (EMP), Average Sale Price (ASP) based on return submitted under rule 45 of MCDR 2017 and rule 44 of MCR 2016. He described the salient features of National Coal Index. In the end, he briefed about the methodology for calculation of index of mineral production and GVA (Gross Value Added).

During the discussion, one the participants asked about the status of data of reserve in respect of major and minor minerals and how the value of reserve is calculated. Sh. Jain informed that it is already available in public domain. The data related to major minerals are available with central government & data related to minor minerals are available with department of statistics

of respective state government and total price of reserve can be calculated by multiplying the ASP to the total quantity of the respective reserve.

Session-II by Shri Sudipta Biswas, Sr.AO, GASAB, O/o CAG, New Delhi.

Shri Biswas made power point presentations on the theme '**NRA and its Implementation: Role of GASAB**'. Initially, he briefed about the concept paper published by GASAB on NRA. He started his conversation with discussion about the concept and methodology for valuation of reserve in respect of major and minor minerals.

His presentation covered the importance of NRA, important international accords, NRA in other countries, NRA in India and described the need of NRA in India despite availability of huge data with IBM and EnviStats published by MoSPI in 2018 & 2019. He further outlined creation of NRA cells in GASAB and in different IA&AD offices. NRA aims to provide a framework for organizing information on the status, use, and value of natural resources and environmental assets as well as expenditures on environmental protection and resource management. Natural resource accounts differ from other data as they are organized in terms of stocks and flows. Right now we are only calculating the GDP including the consumption of natural resources but we are not taking efforts to calculate an environmentally adjusted macroeconomic aggregate, or 'Green GDP' by subtracting the cost of environmental damage from the GDP.

Shri Biswas covered the four stages of NRA (as per SEEA guidelines) along with descriptions of short-term goals, mid-term goals and long-term goals envisaged in concept paper. He further explained that formats as suggested under SEEA for accounting of natural resources are very much flexible in nature keeping in view needs of developing/ un-developed countries and there is an adequate scope for inclusion/ rectification of data captured earlier and may be modified accordingly till the things get streamlined. He further stated that firstly Asset Accounts in states are prepared only in respect of mineral and energy resources and further elaborated the physical flow of mineral and energy resources with valuation of resources. He also emphasized that during the execution of NRA, situation may occur when we may not have complete information about some particular area but that will not be the sole reason to stop the entire process. He also stated that if some estimation is done during the preparation of asset accounts, it must be clearly stated in foot notes i.e. effect of illegal mining, non-availability of opening balances, change in probable reserve, change in estimation methods etc.

Shri Biswas stressed that in addition to what SEEA prescribed, draft NRA templates are aimed to identify the effect of reduction in natural resources due to illegal mining and a particular row is also inserted for this purpose in the draft templates. He further explained NRA valuation methodologies and issues noticed during the conduct of pilot study in different states i.e. Rajasthan, Goa, Karnataka and Meghalaya.

During the discussion & question session, the participants were of view that quantum and valuation of illegal mining is very subjective in nature and can't be quantify accurately because different users are interpreting this concept differently. The participants asked about the issues related to illegal mining and their treatment during preparation of Asset Accounts. Shri Biswas clarified the same very elaborately by giving some examples from Karnataka & Goa.

Session-III by Shri Souvik Bhattacharjya, Associate Director, Integrated Policy Analysis Division, TERI.

Shri Souvik Bhattacharjya in his presentation on ‘**Accounting for Mineral Extraction**’, explained generic financial statements with special reference to depreciation, United Nations SEEA, classification of exhaustible resources, United Nations framework for renewable resources.

He stated that core idea of NRA comes from the fact that in economy, for generation of goods & services, we not only take inputs from natural resources in different forms but also return residuals in different forms (including air and water emissions). We neither measure the magnitude (both in terms of quantity and monetary) of natural resources consumed in economy nor the amount spent for mitigating the effects caused by residuals due to their flow in environment. He further explained about SEEA central framework (SEEA-CF) of four types of accounts i.e. flow accounts, stock accounts, activity/ purpose accounts and combined physical and monetary accounts. He further explained about the conversion of physical accounts to monetary accounts and described three methods used for the same i.e. Net Present Value Method, User cost method or El-Serafy approach and Net price method.

In conclusion, he underlined the importance of a well identified dashboard of indicators for Mineral resource accounting including physical indicators to assess the outcomes to the environment aspects of sustainability.

Session-IV by Shri D.P. Yadav, Pr. AG (A&E), Jaipur

During presentation on ‘**Assets account on Mineral and Energy Resources: A Case Study**’ Shri D P Yadav explained the chronology of instructions received from CAG headquarter related to implementation of NRA. He further described that the State of Rajasthan was among the few states selected for pilot study for preparation of Asset Account on minerals and energy resources. He described the chronology of actions taken at field level for smooth execution of the process of preparation of Asset accounts. Shri Yadav also explained the step by step actions along with various initiatives taken with regular persuasions with respective state government departments. He also outlined the achievements of Rajasthan state with respect to pilot study of NRA and present status as well as the salient features of asset account.

In the end, he discussed the problems faced that were faced at ground level, measures taken, lessons learnt, action plan for near future and areas identified for further improvement.

During the discussion, Mr. Biswas, Sr AO, GASAB stated that Rajasthan was the first state to complete and submit the asset accounts in the pilot study of NRA and an appreciation letter was issued by CAG headquarter to Rajasthan office for this pioneer task. The processes and methodologies used by Rajasthan office could be a breakthrough for other states during the entire process of preparation of Asset Accounts. He further opined that this session provided the participants the practical approach and solutions to various problems that may come across during the whole process.

Key note address by Shri R M Johri, Addl. Dy. CAG, GASAB

Shri Johri first of all congratulated the iCED for organizing virtual workshop on such an important topic of NRA which is very much realistic in the present pandemic situation. He further stated that implementation of NRA is very much significant in context of India because India is bound to adhere to commitments of SDGs as suggested by United Nations. He further stated that although official time line to prepare the NRA has already elapsed i.e. year 2020 yet all the goals had to be achieved till 2030 so still we have enough time to fulfil our international obligations. He further elaborated that implementation of NRA is not just an option for India but it had to be done to fulfil our international obligations.

He further stated that environment degradation had been a matter of concern for all of us since the natural disasters had significantly increased all over the world including in India and that is why concept of NRA had become more important in this present time. He further elaborated that concept popularly known as Gross Domestic Production (GDP) only takes into account the economic development with respect to production of goods and services but it do not consider consequences related to environment degradation. He further outlined that whenever any country becomes more developed, it exploits more of its natural resources to meet those development targets and consequently harms environment very badly. They perhaps forget that they could not survive much longer without taking care of environment. So concept of NRA came from the broad idea that whatever the damage that could not be recouped should be mandatorily accounted both in terms of volume and monetary impact and also to be reduced from Gross GDP to depict a true picture of green GDP.

He further gave some recent examples of the consequences of environmental degradation where global warming had been visible all over the world including frigid countries like Canada and USA, where temperature has significantly touched the benchmark of more than 50 degree Celsius. He further expressed his concern that if the same scenario continues to exist over a period of time, it would be feared that most of the costal countries would be on the verge of serious natural disasters like extreme flood & tsunami etc. and that is why the concept of NRA had become more significant in present scenario.

He further explained that although there exists many natural resources on earth yet initially only four natural resources are identified during the process of NRA. He further outlined the basic features of SEEA framework of NRA with many examples and concluded his valuable remarks on methodologies and challenges in implementation of NRA. At the end, he suggested that natural resource accounts should be prepared in such a way that it gives a clear set of presumptions and assumptions used in asset accounts, methodologies used and how credible it supposed to be and then only, it would fulfil the purpose of NRA for all its intended users.

Session-V by Shri Priyom Roy, Scientist, NRSC, Hyderabad

During presentation on '**Use of Space Technology in Accounting of Natural Resources**' Shri Roy explained remote sensing applications in mining (E&P), ISRO launch vehicles (from SLV-3 to GSLV- MKIII) and Remote sensing basics. He further explained remote sensing applications especially for mine monitoring. He stated that NRSC has been closely associated with Indian Bureau of Mines (IBM) to monitor the mining sites in areas such as how mining area is changing, status related to adherence of protocols of mining, monitoring of lease area

boundaries and most importantly how much extraction is being carried out and how much reported to govt. authorities in terms of volume.

He showed satellite images of Tandur Mines, Telangana and Bellary Mines of Karnataka and explained how mining area is changing over the time period due to continuous extraction and explained how in some cases, violation of the lease boundaries got clearly depicted in satellite images. He further explained that by using satellite images over a period of time, estimation could be made of volume of extraction during that period against the actually permitted/reported to govt. authorities. He further stated that by using remote sensing technique, government authorities can make a close watch on illegal mining.

In conclusion, he stated that by using this technique, estimation accuracy up to 85 percent can be achieved. Although accuracy in some cases may be lesser, yet it will provide a good idea about change in mine area, actual extraction and illegal mining and monitoring of lease area boundaries that will ultimately be very useful in terms of accounting of natural resources. He further described that in addition to the above, remote sensing can be useful in agricultural crop cutting, forest area monitoring, identification of hotspots for stub burning etc.

During the discussion, participants asked about the possibility of monitoring of underground mining extraction as compared to surface mining which is being closely monitored through remote sensing. In reply, Shri Roy stated that underground mining can't be accurately measured in terms of accounting but some environmental flags can be generated by measuring change in soil surface and amount of overburden directly deposited in terms of extraction. Some of the participants also enquired about the procedure to sign an MOU with NRSC for getting professional support and Shri Roy explained the procedure in brief.

Discussions/ Summing-up and valediction

At the end of the sessions by the faculties, detailed discussion were held with all the participants by Director General, iCED and Director (T&R), iCED. Director General, iCED briefed about the importance of NRA and future endeavour of iCED with respect to natural resource accounting. The representative from CAG, Headquarter i.e. Shri Biswas also highlighted the insights gained from this workshop and termed the workshop very successful in achieving its desired goals. He assured to extend full cooperation of GASAB in organizing this type of workshop in near future also.

The workshop ended with a vote of thanks given by Director (T&R), iCED.