THE ENERGY AND RESOURCES INSTITUTE
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Proceedings of the Discussion
On
National Inventory Management System: *Issues, needs and implementation framework*

Date: Wednesday, April 22nd, 2020 | Time: 15:00 – 16:30 hrs (IST)

Background

The Paris Agreement has made it mandatory for all countries to prepare and report inventory of their Greenhouse Gases (GHG), and provide the information required to track progress made in implementing and achieving their Nationally Determined Contributions (NDCs). The Agreement requires that each country provides information to account for emissions corresponding to the NDCs, while promoting environmental integrity, transparency, accuracy, completeness, comparability and consistency. All countries are also required to agree to a common format for reporting on the progress of the NDCs as also on the select indicators for measuring the progress as well as the methodology and accounting framework used for constructing the indicator.

For performing all these functions, it is necessary that the reporting countries have effective National Inventory Management System (NIMS) in place. An institutionalised NIMS in India is needed not only to compute India's emissions from various sources and sinks comprehensively and correctly, but also to fulfil India's international obligations to track the progress in respect of mitigation related commitments e.g. economy wide emissions intensity reduction goal and other sectoral goals as envisaged under the NDC. An ideal National Inventory Management System will involve setting up a centralised data reporting and management system that can collect, store, manage and analyse emissions data from public and private sources, including industry and point sources. NIMS should have the capability of explaining the methodologies used in accounting of emissions in relation to the NDCs, while keeping information in time series with adequate degree of accuracy and consistency.

TERI has prepared a discussion paper on "National Inventory Management System in India: Issues, Needs and Implementation Framework". TERI organised a virtual meeting of experts and stakeholders on 22 April 2020 to discuss the key findings of the paper and receive inputs/feedback with an objective to support implementation of a robust NIMS in India.

Welcome Address: Mr. R.R. Rashmi (Distinguished Fellow, TERI)

Mr. R.R. Rashmi (Distinguished Fellow, TERI) welcomed all the participants and introduced the subject for the discussion – National Inventory Management System (NIMS) in India, issues, needs and implementation framework.

Supported by MacArthur Foundation

Mr. Rashmi explained that the Paris Agreement has significantly increased the reporting burden on the developing countries while also diminishing the differentiation between Annex I and non-annex I Parties. The obligations for both are almost similar now and in addition to reporting on the GHGs, the developing countries are also required to track the implementation of NDCs. This new dimension further adds to the reporting burden, although, some flexibility has been accorded to developing countries in the way they prepare and report their inventories, and the extent to which they report on NDCs. The manner of reporting tables, indicators and structured summary of the reports are yet to be discussed and finalized by the Parties but there is a distinct movement towards a common system of inventory preparation and its examination at the international level. In due course, the challenges for the developing countries will grow despite flexibilities for them. Hence, TERI felt the need of a more systematic and robust NIMS in India which can complement the current requirements. Therefore, TERI worked on the building blocks of such a system which will be presented and discussed here.

II. Presentation 1: Dr. Himangana Gupta (Discussion Paper on National Inventory Management System in India)

Dr. Himangana Gupta presented on the "Building blocks for National Inventory Management System (NIMS) in India" and highlighted some of the major issues surrounding the implementation of NIMS in India, as also the strengths and gaps of the current system. Following were the key points of her presentation:

(i) NIMS is a sustainable system for systematic and timely preparation of GHG Inventories, which requires institutionalization of the inventory preparation process.

(ii) India has submitted two national communications and two BURs so far. The institutional arrangement consists of project based NATCOM Cell hosted by the Ministry of Environment, Forest and Climate Change. It is dependent on constant and timely flow of funds from GEF. There are no fixed institutions for preparing the inventory as it is more contractual in nature; there is no archival system and it also lacks legal backing. Various ministries provide data for inventory preparation which is shared with the institutions who prepare the inventory. Each Ministry is contacted separately for data as there is no regulation for collection on inventory specific data.

(iii) Major constraints and gaps of the current system include methodological issues such as quality of activity data, capacity constraints (Skill set, TACCC) and financial constraints (No sustainable funding)).

(iv) Under the new and enhanced transparency requirements of the Paris Agreement which includes submission of BTRs (to be submitted from 2024 onwards), the information and reporting needs to be more comprehensive.

This calls for a sustainable NIMS which will also assist in achieving Transparency, Accuracy, Completeness, Consistency, and Comparability (TACCC) in GHG inventories.

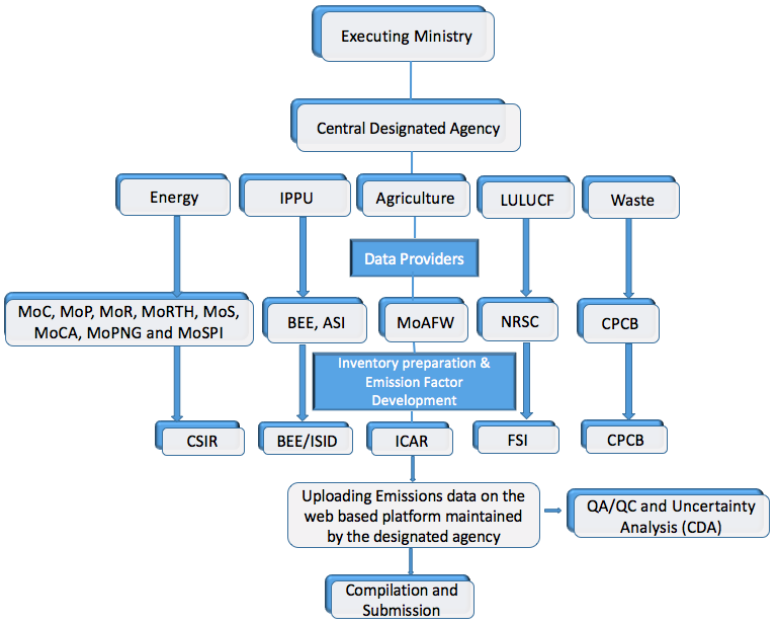
(v) Elements of NIMS include – Planning (Deciding the institutions that will prepare the inventory and calculate emission factors), Preparation (An agency to be set up for taking care of the planned needs), Reporting (Collecting and analyzing data for the GHG Inventory), Documentation and Archiving (Monitor, analyze and also recalculate past emissions) and Inventory improvement strategy (Country specific emission factors, disaggregated data, advanced QA/QC).

(vi) To set up a sustainable NIMS in India, a Central designated agency (CDA) needs to be put in place which hosts the inventory cell and the online data portal. CDA will be responsible for reporting and thus, for data collection from relevant ministries. The CDA has to be empowered with legal regulations that allow for smooth flow of inventory specific data to CDA and to expert institutions for timely preparation of the inventory. Such legal mandate can be in the form of a legislation i.e. an Act directing the Ministries to provide information to the online data portal and also an MoU for other data providers like inventory institutions preparing the emissions factors/ prepare emissions.

(vii) A comparison of NIMS in developed and developing countries, with that in India was presented:

Components	NIMS in Developed Countries	NIMS in Developing Countries	India
National entity	• One umbrella institution (national entity). • Sustainable. • Acts as the National Inventory compiler.	• A national entity handles inventory work. • Project based.	• One ad-hoc entity (NATCOM Cell within the MoEFCC) to handle inventory related issues but runs on a project basis. • Non-sustainable. • NATCOM Cell/ PMU compiles the inventory.
Data collection	• Centralized.	• Centralized/Non-Centralized.	• Non-centralized.
Inventory preparation	• Done by a set of institutions each year. • Long term MoU/legal regulations.	• Done by a set of institutions each year.	• May be done by the same or a different institution depending upon the availability of capacity and financial resource. • Contract based studies.
Frequency	• Prepared each year by Annex-I countries with an established NIMS.	• Prepared biennially but depends on availability of GEF funds.	• Prepared biennially but depends on the availability of GEF funds.
Online platform/Archival	• Available.	• Some countries have developed an online archival system. Eg: SIRENE (Brazil)	• No online archival system.
Data Management	• Statistics department of the countries play a major role in maintaining and sharing the data.	• Statistics agency is mostly involved.	• MoSPI is part of national steering committee and provides data. But MoSPI is not directly involved in preparation of inventories.
Legal regulations	• Laws in place to remove hurdles of data collection for inventory preparation.	• Lacks strong legal regulations to assure continuous flow of activity data.	• No specific law mandating data collection specifically for the preparation of GHG inventory. • Monitoring of pollutants done by CPCB +9

(viii) The following flow chart shows the role of various ministries and expert institutions in an established NIMS. Like now, the executive ministry is MoEFCC. For all the five IPCC sectors, a set of ministries can be data providers and there are a set of institutions under CSIR, ICAR, BEE, FSI, CPCB which can be directly involved in GHG Inventory preparation.



In terms of functioning, the different ministries provide activity data, which the expert institutions use to prepare inventory and upload it on the online portal. This can speed up the process from Biennial to Annual. An MoU instead of a contract shall bind the inventory institutions with an earmarked budget.

(ix) Legal mandate: Many acts in India already empower the ministries to collect environment specific data. These acts can be tweaked to also empower the CDA for inventory specific data. Some such legal provisions include – Pollution related Acts, Companies Act 2003, and Environment Protection Act 1986 etc. Regulations are important as companies usually feel insecure about disclosing and sharing data.

(x) Finance: Inventory preparation is currently funded by the GEF-UNDP-GoI project titled 'Preparation of Third National Communication and Other New Information to the UNFCCC'. This project can play a critical role in the initial setting up of NIMS. However, in the long run, NIMS will also require budgetary support to make it more sustainable.

III. Presentation 2: Mr. Abhishek Kaushik, TERI (Good practices by other countries)

Mr. Abhishek Kaushik presented global best practices on NIMS being followed by some of the Non-Annex I and Annex 1 Parties to the UNFCCC, data collection mechanism and institutional framework for compiling national GHG inventories. He informed that TERI has published a compendium of best practices in respect of GHG inventories as part of research project supported by the MacArthur Foundation. In addition to the compendium, TERI's discussion paper also highlights some of the key features of NIMS being established by the following countries:

1. Norway
   - National entity: Norwegian Environment Agency
   - Norwegian CO2 emission inventory has been produced for more than three decades
   - Statistics Norway is responsible for the calculation of emissions from the Energy, IPPU, Agriculture and Waste source categories
   - Norwegian Institute of Bioeconomy Research is responsible for the calculations of emission and removals from LULUCF
2. Finland
   - Statistics Finland is the National Entity responsible for preparing the national inventory
   - An advisory board consist of relevant ministries, energy market authority, Finish Environment Institute, etc. further monitors the preparation of national inventory
   - By law, Statistics Finland has access to data collected under the EU ETS, regulation on fluorinated gases, the European Pollutant Release and Transfer Register (EPRTR) registry and energy statistics regulation
   - The VAHTI system (Compliance monitoring data system) of Finland's environmental administration is one of the main data sources used in the inventory

Some of the key features of different NIMS being established by Non-Annex I countries are as follows:

3. China
   - National authority addressing climate change is responsible for the preparations of NC, BUR and reporting National GHG Inventory
   - Established in 2012, NCSC is the primary entity for managing National GHG Inventory database
   - Preparation of National GHG Inventories is still carried out on a project basis and identified as a capacity building need (as per BUR-2)
   - National Bureau of Statistics (NBS) has established a sector statistical reporting system and provides a legal backing for data collection from key category sectors

4. Brazil

- Ministry of Science, Technology, Innovation and Communications (MCTIC) coordinates the preparation of the national emissions inventory
- Formation of different working groups that survey sectoral information and conduct studies to obtain country-specific emission factors.
- Since 2016, the national emissions estimate database has been hosted on the MCTIC's servers and is also publicly available on the National Emissions Registry System (SIRENE) website

He also highlighted that unavailability, quality & consistent data, limited technical skills, low participation of relevant stakeholders and insufficient financial resources are some of the common challenges that are faced by most countries in the preparation of national GHG inventories. He further mentioned that strong institutional framework, mandatory policy obligations, MRV mechanism and use of GHG inventory management system are some of the proven strategies to overcome challenges around GHG inventory compilation process.

In his concluding remarks, Mr. Kaushik also shared India's experience on GHG inventory process. He cited some of the key challenges such as:

- Lack of adequate archiving and management of data
- Limited application of QA/QC procedures in inventory compilation
- Lack of consistent methodologies to assess uncertainties of GHG inventories

Sector-specific gaps:

- Energy: limited coverage of fuel-consuming industries
- IPPU: Lack of reliable data as majority of industries are small, unorganised (except Cement, I&S and Aluminum)
- LULUCF: lack of real time monitoring systems

IV. Panel discussions

1. *Dr. J R Bhatt (Scientist G, MoEF&CC)*

India has a robust, tested and transparent inventory system in place, built over the last 25 years and is evolving. 12 institutions are carrying out inventory preparation in the respective sectoral expertise. Various government ministries, and PSUs provide inputs for the preparation of the National Inventory. All these institutions have developed expertise over years in inventory preparation. There is credibility and expertise in these institutions which will remain for a long time. The process of inventory preparation is evolving globally and also within India. India is continuously upgrading the tier ladder by removing the uncertainties. New sectors are also being included. India has also improved on the reporting of emissions. There is a top-down approach in addition to the bottom-up approach due to the efforts of institutions such as IITM, Pune which helps in validation. This top-down method adds to the bottom-up system of inventory preparation. The findings from the research at IITM have been published in a renowned journal and are also included in BUR-2. At COP25, a number of developed countries approached this research work presented by India to emulate the learnings. India is performing competently and needs to work further. What is required by both the developing as well as the developed countries is the usage of back calculations of the inventories to contribute to the development of the process. AP Network (APN) and the WGIA provide a platform for meetings between and among countries to share their inventory processes. India has held inventory related meetings with Norway, South Korea, and APN to showcase the work which India is doing. Civil society platforms have come up with numbers that are almost the same, and have endorsed the transparent way in which inventory management is functioning in India.Hence, institutions and systems exist already exist in India. However, there is a need to upgrade the system and ensure that India champions inventory management. The system needs to be nurtured further; the main challenge is to continuously move ahead and meet the challenges of funding, irrespective of the source.

2. *Shri J.M. Mauskar, (Advisor, Observer Research Foundation (ORF)*

Paris Agreement is the implementation agreement to the UNFCCC. Article 10 and 12 of the Convention and Article 13 of the Paris Agreement deals with Transparency. For reporting under Article 13, India needs to see the arrangements for reporting on NDCs internally. This will reflect on international reporting as well. It is important to know how the NIMS can be part of the overall domestic preparation and implementation of the NDCs consisting of both mitigation and adaptation components. NIMS capability for external reporting should not be only mitigation-centric. Other aspects such as - GHG Intensity of emissions, the need to take into account granularity and frequency of our GHG measurement etc. are necessary. India needs to assess GHG intensity as well. Another key issue is the commercial confidentiality, the

companies don't like parting with information be it their routine or annual emissions. They prefer bulk emissions information for the entire industry. Beyond the national system, the confidentiality aspect needs to be accounted for in NIMS, as the commercial entities are also important stakeholders. Environment Protection Action, Section 3(3) already provides for giving directions to various entities, government agencies so legality is there. However, the power vests with the government; it cannot be delegated. Thus, the Ministry of environment could take the parental control over the NIMS as well as reporting on NDCs. CPCB doesn't maintain data in the manner required by the NIMS. He said that PMO cannot be expected to take up the role of coordination as it provides a support function to the PM and does not have a direct administrative role..Similarly, one cannot be sure if NITI Aayog can take up the role earlier played by the planning commission. Since India has a federal system, examples of Australia and Canada which have strong federal systems should be analysed to devise NIMS for India. Heexpessed doubt over the questione if India actually required international funds for inventory preparation.

He suggested that the paper should give several options in respect of the models for the proposed NIMS rather than suggesting one single option.

3. *Dr. Ashok Kumar (Director, Bureau of Energy Efficiency, Ministry of Power, Govt. of India)*

It is timely that we should be looking at a centralized agency to collect data, make inventory and make it accessible and available for analysis. At BEE, even with only a few energy related sectors, it is difficult to gather all data. BEE is currently covering around 30 sectors of the economy pertaining to energy usage. 75% and more emissions come from the energy sector. BEE is strengthening the capacity of the participants to keep data, report data, and enhance man power to enhance its overall capacities. A central agency which has access to all the sectors and all data is required. Cement, Iron &Steel and few other sectors can be said to have made good data recording and reporting but others like textiles have a lot of gaps in data recording. International studies which have highlighted the good practices like in the case of Norway, Finland (M&E), Germany (Centralized system of measuring GHG emissions) could be replicated in India. India needs a well-kept data base to keep a tab on our progress, capacities. There is a need to go beyond organised sector to collect data and make the NIMS robust.

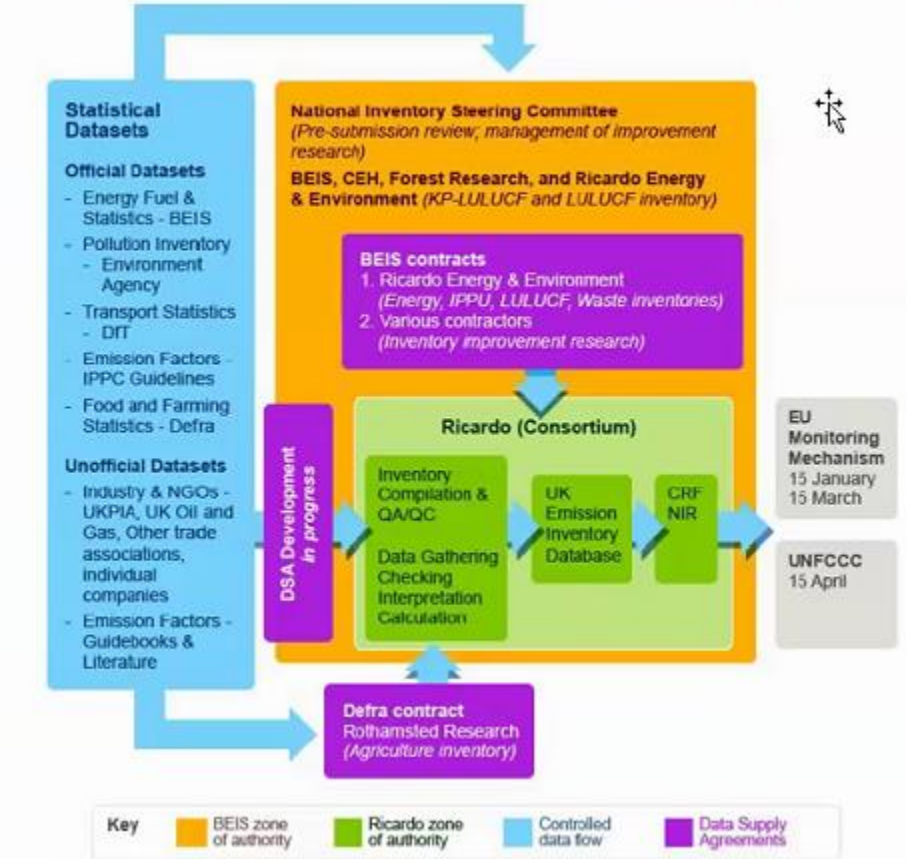
4. *Dr. John Watterson (GHG Emissions Inventory Knowledge Leader, Ricardo Energy & Environment)*

Dr. Watterson suggested that it is better to build on the existing systems rather than approaching new agencies. India already has excellent building blocks on which NIMS could be

based. There is however a role for an independent body to oversee this. In the UK, NIMS is run by the government but managed by professional agencies. The Climate Change Committee is not a government body. Its views are independent. Administratively, the creation of a good quality inventory is down to the inventory agency (i.e. Ricardo) and it is overseen by the BIES in UK. The UK has some legal support for data collection and two legal support systems/legislations but they are the very last resort. The UK's approach has usually been to negotiate with data providers rather than legal mechanisms. Some formal agreements like MoUs, data supply agreements etc., but in the UK there is some resistance to them being used and progress to implementing them have been slow. For QA/AC, a wide range of actors are involved and the primary responsibility rests with the inventory agency which is Ricardo.They get the core data from a wide range of sources; many are from national statistics which come with their own quality assurance. Ricardo also gets data from industries and trade associations, and regulators and many of them also have quality assurance attached, and yet, in some of the most well-checked data there can be some issues. So the inventory must attest them. For inventory, industry associations are the key to get access to point source data.. The way to proceed is to slowly raise awareness and increase trust as their concerns need to be heard. Confidential data is the prime focus here, the inventory agency needs to manage this well.

He made a diagrammatic presentation on the system followed in the UK:

Figure 1.2 Main elements for the preparation of the UK greenhouse gas inventory



The National Inventory Steering Committee guides the development of the inventory and also approves the final numbers before submission. The UK department of BEIS has an executive oversight role. Ricardo and others advise UK Government Department on how they should prioritize the development of the inventory but it's entirely up to the government. The institutional memory lies with Ricardo, even as the persons in the government departments keep changing. Archiving, documenting is crucial and India must put in resources to ensure that. The air quality and GHG inventory are connected in the UK. This connection is very beneficial and India could ponder over this aspect. UK has quality control system developed over the years, and there are a series of steps and checks to assure that data is rightly used for the inventory and in the reports. UK has a dedicated quality manager, a useful role within the inventory. The stability and continuity of the inventory agencies has been a huge help to the UK to build the quality of the inventory. UNFCCC review process also guides the inventory management very well.

5. *Dr. Sumana Bhattacharya* (*Advisor- Climate Change, IORA Ecological Solutions)*

CPCB is dedicated to only pollutant assessment but it also collects data from each and every industrial unit in state. Therefore, the data includes different fuel types, fuel combusted, their quantities and different units. Thus, if the NATCOM can pull the data from the CPCB, it could fill a major chunk of the data gap. Some corrections will be required but it can be added to the data sets. Verification needs to be done time to time and should be evolving. With regard to institutionalization, she said that India does have an excellent system in place but nonetheless, another layer of institutions can be inserted which would be dedicated to each and every reporting requirement under the Paris Agreement (beyond transparency) such as Article 6 etc. The Cell can be converted into an Institution via an Act with the Project Director as the head of the institution; it can have different departments looking at different reporting aspects of the Paris Agreement. IIM Ahmedabad can be designated as the working group chair for the energy sector, IARI for agriculture (similar to how Ricardo in the UK is functioning). IPPU Sector can also be bridged with the energy sector in order to plug the data from energy and non-energy sources from different point sources, and industries via the CPCB data. CII looks at the IPPU emissions but they are repeating the activity which the CPCB is doing. Having multiple QA-QC managers for each sector of inventory can improve its efficiency. It is a good idea to do an internal system, where a MoU with all activity data generators who could update the data on an internal platform/website in order to reducing data accuracy loss and bring in manual digitalization of data from different departments. The cell can be constituted as an institution within the MoEF&CC.

V. Q/A Session

1. Should we have a formal, regulatory arrangement for data providers to provide data in a transparent manner or should we be live with the incumbent arrangements and negotiate for data?

   Dr. Watterson: It is a very country specific issue. In the UK there is no heavy regulatory approach; the reason being that the existing arrangement works well between the inventory managers and data providers. Secured treatment of confidential data is established, so there is a high degree of trust. In countries where there is no close connection between the two, there might be a need to have a more formal arrangement. A heavy handed approach does not guarantee a secure supply of data. Nonetheless, some countries did benefit from regulatory arrangements. It may be necessary to have some kind of legal arrangement if it helps.

   Dr. Mauskar: The National Inventory Management already present in India needs to be a part of a larger whole with regard to NDC reporting. It should not be done in isolation as eventually, it might become difficult in India. Here is already a legality in the existing arangementsand the requirement is to engage with the industries regarding confidentiality. It's important to assess the degree to which a top-down approach or a bottom-approach should be exercised.

   Other comments:

2. Dr. Lokesh pointed out the importance of having all 6 wheels of NIMS in place: Institutional Arrangement, Data Archival (long term for future teams to use), methodology and data documentation, QA/QC and verification, National Inventory Improvement Plan (guided by Key Category Analysis), Continuity of experts.
3. Dr. J R Bhatt: We should not see inventory processes in a routine or mundane process. The Annex I countries together have been able to reduce only 1.3 % of the total emissionsas estimated on the basis of the inventory data. On the other hand, India;s performance is much better. India therefore speaks from a position of strength, and the world recognizes India's efforts at compliance. This has been due to the continuous inventory processes and reporting. Countries like South Korea, Norway, and India have gone out of the way to host inventory meetings, seminars. Thus, more countries and the UNFCCC need to unit and think of long term understanding on training the rest of the world regarding inventory training.
4. Dr. Ashok Kumar: From the energy perspective, the BEE and MoP are in the process of restructuring some of the legal and administrative processes in order to ensure that data reporting, and archiving can be facilitated . Learning from other countries and processes can help upgrade the system in place.

5. Dr. Sumana Bhattacharya: If there are identified agencies to collect data and there is government backing, the data should easily be in the hands. However, it does need to be continuous. Data collection for better transparency and usage is crucial for success of any mechanism – NIMS or NDCs.

VI. Closing Remarks by Mr. R.R. Rashmi

By and large, there is a consensus that we need to introduce a greater degree of formality in the existing system so that it imparts better credibility to our data. While the current Indian inventory is robust and well prepared, there is scope of improvement in view of the need to have stability and continuity of expertise, fill the data gaps, comply with greater frequency of reporting, and develop capacity of rising the tier ladder and prepare time series data. The BUR II also stresses the need to evolve a stable and robust NIMs in India.

The arrangements for collecting data internally are equally important and must infuse trust in the stakeholders. Certain formal arrangements, though not heavy handed, are needed to make it obligatory for the stake-holders to report. A host of legal arrangements do exist in India such as the provisions of EPA and other sectoral legislations, which could be utilized for the purpose. However, confidentiality and integrity of the data is imperative. Institutional structure of the NIMS could be autonomous but responsible to the government.

He hoped that the researchers would benefit immensely from this discussion and aid thathe records of the meeting will be put in the public domain by TERI very soon.

Annexures:

I. Agenda:

15:00 - 15:10	**Welcome remarks** ***Mr. R.R. Rashmi, Distinguished Fellow, The Energy and Resources Institute (TERI)***
15:10 - 15:20	**Building blocks of the proposed NIMS in India** *Dr. Himangana Gupta, JSPS-UNU Postdoctoral Fellow at UNU-IAS and University of Tokyo*
15:20 – 15:25	***Global best practices on NIMS*** *Mr. Abhishek Kaushik, Associate Fellow & Area Convenor, Earth Science and Climate Change Division, TERI*
15:25 - 16:15	**Feedback from the Lead Discussants** ***6.*** *Dr. J.R. Bhatt, Scientist G, Ministry of Environment, Forest & Climate Change, Govt. of India* 7. *Dr. Ashok Kumar, Director, Bureau of Energy Efficiency, Ministry of Power, Govt. of India* 8. *Shri J.M. Mauskar, Advisor, Observer Research Foundation (ORF)* 9. *Dr. John Watterson, GHG Emissions Inventory Knowledge Leader, Ricardo Energy & Environment* 10. *Dr. Sumana Bhattacharya, Advisor- Climate Change, IORA Ecological Solutions*
16:15 – 16:25	**Q&A**
16:25 – 16:30	**Vote of thanks**

II. List of participants

S. No.	Name	Designation	Organisation
1.	Dr J R Bhatt	Scientist G	Ministry of Environment, Forest & Climate Change, Govt. of India
2.	Dr Ashok Kumar	Director	Bureau of Energy Efficiency, Ministry of Power, Govt. of India
3.	Mr. R.R. Rashmi	Distinguished Fellow	TERI
4.	Mr J M Mauskar	Advisor	ORF
5.	Dr Sumana Bhattacharya	Advisor, Climate Change	IORA Ecological Solutions
6.	Dr John Watterson	GHG Emissions Inventory Knowledge Leader	Ricardo Energy & Environment (U.K)
7.	Dr Himangana Gupta	JSPS-UNU Postdoctoral Fellow	UNU-IAS and University of Tokyo
8.	Mr Abhishek Kaushik	Associate Fellow & Area Convener	TERI
9.	Prof. Purnamita Dasgupta	Chair in Environmental Economics and Head, Environmental and Resource Economics Unit	Institute of Economic Growth
10.	Dr Mukesh Kumar	Director	SRTMI (Steel Research & Technology Mission of India)
11.	Mr Akhilesh Awasthy	Former CEO Power Markets	Mercados
12.	Ms Mathsy Kutty	Regional Manager - Green Initiatives	Infosys Limited
13.	Dr Nisha Mendiratta	Scientist G and Associate Head, Climate Change Programme	Department of Science & Technology, Government of India
14.	Mr Thomas Buckland	Principal Consultant	Ricardo Energy & Environment (U.K)
15.	Mr Damandeep Singh	India Director	CDP
16.	Ms Shweta Singh	Associate Counsellor	CII
17.	Mr Lokesh Chandra Dube	Programme Officer (NATCOM Cell)	MoEF&CC
18.	Dr Chhemendra Sharma	Sr. Principal Scientist	NPL
19.	Mr Ajay Raghava	Dy. Director	MoEFCC
20.	Dr Kiran Chand	Scientist	NRSC
21.	Dr Hemant Kumar Badola	Former Advisor: Hon'ble Chief Minister's Office	Government of Sikkim

22.	Ms Niveta Jain		
23.	Mr Rana Pujari	Program Officer- South Asia	The Climate Group
24.	Ms Ruchi Mishra		
25.	Dr Vijeta Rattani	Expert- Environment, Climate Change and Natural Resource Management Programme	GIZ India
26.	Ms Pujarini Sen	South Asia Government Relations Manager	The Climate Group
27.	Mr P Sreenivasa Raju	General Manager	ACC Limited
28.	Ms P Bhanumati	DDG (SSD)	Ministry of Statistics and Programme Implementation (MoSPI)
29.	Ms Kajal Jain	Director	Ministry of Statistics and Programme Implementation (MoSPI)
30.	Ms Riya Mohan	Research Scientist	Center for Study of Science, Technology and Policy (CSTEP)
31.	Dr Nisha Mendiratta	Scientist G and Associate Head, Climate Change Programme	Department of Science & Technology, Govt. of India
32.	Mr Vaibhav Gupta	Manager - Energy & Mines	Cement Manufacturers Association (CMA)
33.	Mr Hemant Mallya		CEEW
34.	Rajesh Vijayavergia	Consultant	Steel Research & Technology Mission of India (SRTMI)
35.	Vivek Kumar	Senior Advisor	Norwegian Embassy
36.	Mr Suresh Krishna I P	Chief Manager, Sustainability	ACC Limited
37.	Aastha Makhija	Program Officer- Climate & Business	WWF India
38.	Tirtha Biswas	Programme Lead, Industrial Sustainability & Competitiveness	Council on Energy, Environment and Water (CEEW)
39.	Dr. Mukesh Kumar	Director	Steel Research & Technology Mission of India (SRTMI)
40.	Ms Poonam Sandhu	Financial Sector Specialist & India Head Consultant	Natural Resources Defense Council (NRDC)
41.	Ms Madhura Joshi	Lead Energy Access and Climate Policy Consultant	Natural Resources Defense Council (NRDC)

42.	Mr Karan Mangotra	Associate Director	TERI
43.	Ms Neha Pahuja	Fellow	TERI
44.	Mr Shanmuganathan K	Associate Fellow	TERI
45.	Ms Aishwarya Raj	Research Associate	TERI
46.	Ms Vani Rijhwani	Research Associate	TERI
47.	Mr Gaurav Phore	Project Associate	TERI
48.	Ms Pankhuri Sekhon	Project Associate	TERI
49.	Ms Sachi Vohra	Project Associate	TERI
50.	Ms Madhur Bhargava	Project Associate	TERI
51.	Ms Jalpa Mishra	Project Associate	TERI
52.	Ms Rhea Puri	Project Associate	TERI
53.	Ms Mekhala Sastry	Project Associate	TERI
54.	Ms KY Valsa	Manager	TERI

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