

DISCUSSION
PAPER



INDIA GHG PROGRAM

Promoting profitable, sustainable
and competitive businesses.

MARCH 2018

Corporate Greenhouse Gas Emissions Reporting in India

Possibilities and Key Considerations for mandatory measurement, management and disclosure of emissions from the Corporate Sector



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About India GHG Program

The India GHG Program led by WRI India, Confederation of India Industry (CII) and The Energy and Resources Institute (TERI) is an industry-led voluntary framework to measure and manage greenhouse gas emissions. The programme builds comprehensive measurement and management strategies to reduce emissions and drive more profitable, competitive and sustainable businesses and organizations in India. More program details could be accessed at www.indiaghgp.org

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Discussion Paper Series from India GHG Program outline a set of key ideas germinating out of either Industry-led working group meetings, member consultations or expert interactions. The discussion papers are typically work-in-progress documents aimed at structuring follow-up conversations and feeding into overall business-policy dialogue. The program partners aim to pick-up ideas and key concepts outlined here to further advance the body of knowledge in the topic. Current outline for discussion within the paper has been prepared on the basis of secondary research, discussions with program partners, existing reporting platforms CDP, GRI, BSE etc. with a broader intention to further prepare concrete recommendations on mandatory reporting.

For queries or inputs regarding the discussion paper, contact Vivek P. Adhia (vadhia@wri.org) to engage on behalf of the India GHG Program Secretariat.

Table of Contents

***Background*..... 2**
***Motivations, Benefits and Challenges*..... 3**
***Review of Experiences & Learnings*..... 5**
***Building Blocks for Mandatory Emissions Reporting in India*..... 7**
***Next Steps*..... 15**

Background

Current Landscape of Mandatory Reporting.

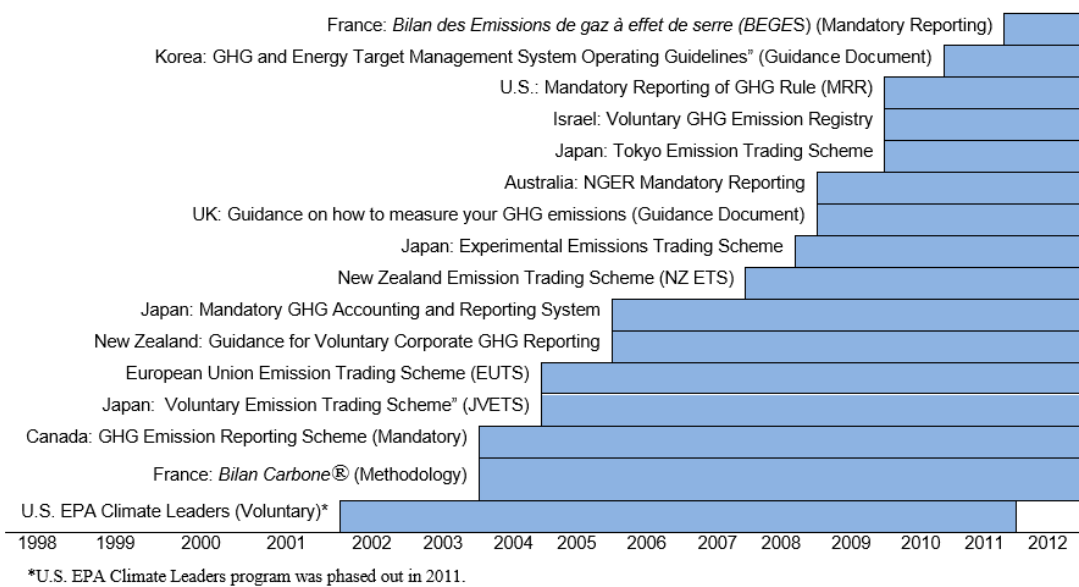
Over the past fifteen years number of national, regional and local governments have established mandates on emissions measurement and reporting. Broadly applicable to the corporate sector, mandatory emissions reporting allows policy makers to evaluate industry related climate impacts from time to time. With progress on the Paris Agreement commitments and enhanced domestic action – more than 40 countries are now relying on emissions reporting mandates to;

- Continuously track progress/emissions from key sectors
- Induce businesses to reduce emissions in line with nationally determined goals
- Provide key background for future market based mechanisms
- Access economy-wide climate risks and provide guiding framework for financial institutions

For India to explore the possibility of designing and implementing a mandatory emissions reporting scheme for corporates – this discussion paper outlines key considerations that can be made, based on learnings from other geographies on the benefits as well as challenges. The paper also attempts to outline building blocks for ensuring effective implementation of a mandatory reporting mechanism for corporates in India – based on successes and learnings existing mandates.

Since the late 1990's number of mandatory or voluntary government schemes have emerged, with reporting requirements either merged as a part of environmental or financial disclosures, separate policy instruments, listing requirement of stock exchanges etc. Figure 1, highlights timelines of GHG reporting schemes as implemented across a range of OECD countries

Figure 1: Emergence of GHG Reporting Globally



Source: OECD. *US EPA Climate Leaders Program was phased out in 2011.

More and more businesses are increasingly being exposed to emissions reporting legislations as governments step-up actions across geographies. Various statistics and research reports suggest – more than 11,000 installations reported their emissions within the EU, similarly 11,000 enterprises reported under the National scheme in Japan (covering half of the country’s emissions) while 6,700 entities reported within the United States (roughly covering 80% of the total US emissions) over 2009-2011 period.

Within India, reporting of greenhouse gas emissions from corporates has been driven by voluntary intent and progressive businesses incorporating the benefits of communicating progress with key stakeholders including consumers, investors and regulators. A number of approaches are being followed and pursued by businesses to report in a voluntary manner including CDP reporting and disclosure practices, reporting emissions within the overall sustainability reports based on GRI guidelines and now standards, integrated reporting as well as business responsibility reports as a part of stock exchange filings. 40+ of the top 200 companies in India by market capitalization have been consistently reporting their greenhouse gas emissions to CDP, a key partner for India GHG Program going forward. Post consistent reporting of emissions, 80% of the CDP reporting companies have also committed to one or more type of emission reduction goal, while 40% are committed to renewable energy targets. The total emissions reported from 51 companies disclosing information to CDP amount to 275.92 tonnes of carbon dioxide equivalent. Corroborating the trend, India GHG Program now has active memberships from 60+ largest companies in the country and emissions managed under the program amount to roughly 350-360 tonnes of carbon dioxide equivalent.

Motivations, Benefits and Challenges

Key considerations while evaluating mandates on emissions reporting.

It is important to clearly understand motivations, benefits and challenges for nodal agencies to take-up mandates on emissions reporting. Considering the landscape with ever increasing number of countries and sub-national regions adopting such mandates – benefits seem to far overweight the challenges. Mandates on emissions reporting have generally played a key role in developing policies, addressing market failures, fostering green-growth by added transparency on emissions hotspots, mobilizing corporate action and in general create the legwork for future carbon pricing schemes and national targets.

By implementing mandates on emissions reporting, governments are able to encourage actors to reduce emissions in general and to use energy, resources and fuel/materials efficiently. Increased transparency and awareness enables engagement across a wide range of actors including investors, civil society and others to further understand implications and long term sustainability. Mandates also enable consistency and clarity on the data/information shared by proactive institutions, as compared to ad-hoc voluntary reporting that may be carried out otherwise. Recent WRI paper¹ outlines major benefits of building mandates on corporate emissions reporting as

- Informing mitigation efforts:

¹ https://www.wri.org/sites/default/files/wri_ghg_inventories_final.pdf

- Managing Risk
- Supporting new industry/business development
- Recognizing corporate action and increasing accountability
- Building capacities and institutional expertise
- Supporting policy formulation and implementation.

Some of the international references and examples are noteworthy. In Japan’s mandate, one of the key aims is to “publicly announce and visualize information on GHG emissions to encourage and motivate general public and business operators to take voluntary actions”. Similarly reviews carried out by UK Government confirms use of the policy mandate on emissions reporting – acting as a key lever to drive corporate action. US EPA program defines data published in the GHG reporting mandate to “be used by communities to identify nearby sources of greenhouse gas emissions, help business track progress, identify cost-and-fuel saving opportunities as well as provide important information to financial/investment communities.

Most Government schemes start basic and request only greenhouse gas emissions related data at a macro level, while some others go deeper and ask additional information including climate change impacts, details of reduction projects and other related measures. Governments also develop carbon reporting provisions to compare and assimilate data, that is further used to inform future policies. For e.g. in Korea, the basic act on Low-Carbon Green Growth requires energy intensive companies and corporates emitting GHGs beyond a certain threshold to report emissions and energy consumption to the Government. Based on the information that is collected, the Government planned to decide over the cap of forthcoming carbon trading scheme and allocate emission limits². According to US EPA³, the GHG reporting mandate “serves as a useful tool to improve overall accuracy of the US GHG inventory”

In designing and structuring any mandate on emissions reporting, the major challenge is to find a right balance. There is always a pull to collect more meaningful and granular information, and a push to reduce the excessive burden on reporting entities as well as institutional bodies for compliance check. Furthermore, Governments need to ensure that the information provided by companies is timely, reliable and relevant, in order to be credible for further informing policies and/or necessary follow-up actions.

Any requirement or regulation adds to the overall costs – both to the businesses covered within the mandate, plus to the nodal agencies/government bodies for administering the same. Providing the right set of incentives or outlining clear penalty structure enables companies to comply with the reporting framework. The incentives or regulatory requirements, if ironed out appropriately – negate the risk of implementation failure or inadequate compliance. Regulatory impact studies and other related tools/studies are often being carried out before actual planning, implementation and roll-out.

Additionally, the approach warrants seamlessly achieving the necessary policy coherence and coordination of different pieces of legislation (e.g. integrating greenhouse gas emissions reporting with

² UNEP 2010

³ <http://epa.gov/climatechange/emissions/ghgdata/faq.html>

other statutory compliances. If there are pre-existing mandates on energy or fuel consumption reporting within exchanges or as a part of financial disclosures, these need to be fully integrated. For e.g. in India, companies already report a variety of information under the stock exchange disclosures, within the annual financial reporting, statutory reporting to the Annual Survey of Industries etc.

That said, there are number of learnings and experiences that India can gain, before embarking on a massive structural design of a potential mandatory reporting scheme for greenhouse gas emissions. Both international experiences in terms of what has worked in other geographies as well as local experiences can be reviewed appropriately.

Review of Experiences & Learnings

Experiences from other geographies in developing and implementing mandatory reporting schemes.

There is a wealth of knowledge available based on experiences of developing and implementing GHG reporting mandates across (but not limited to) Australia, Canada, France, Israel, Japan, New Zealand and United Kingdom. Some valuable lessons can be gathered from various countries experiences in implementing these reporting mandates and GHG programs. This discussion paper, attempts to classify various insights gained from international and regional programs into the following broader categories;

- **Underlying policy drivers**
 - o Linkages with national and/or international and regional goals

- **Scope and Coverage incl. (but not limited to)**
 - o Measurement practices
 - o Methodology and use of terminology
 - o Threshold

- **Reporting Framework/Practices**
 - o Platforms, Registry or Institutional Architecture
 - o Periodicity
 - o Need for Assurance / External Verification

France and UK have implemented additional GHG reporting mandates, complimenting the existing EU ETS requirements, given its limitation in terms of scope of information covered. While, currently EU ETS mainly covers direct emissions (Scope 1) from large emitters and energy intensive industries – France and UK, both seek to raise awareness and incentivize action from a wide spectrum. Accordingly, the policy drivers for the two countries overlap measures to bring smaller and midsize businesses onboard, with the mandatory reporting schemes being designed accordingly. The schemes also span indirect and other indirect emissions (Scope 2 and 3) from emitters, to broadly understand and include impacts.

In Australia, on the other hand – key underlying driver has been to build support for carbon pricing mechanisms and boost domestic trading market. Given the focus on carbon markets, and emphasis on outlining the right monetary value of emissions, the Australian reporting mandate builds on very stringent verification and assurance requirements. In Australia – additionally, the absence of an early commitment at a national level v/s. emergence of regional initiatives led to different reporting requirements across states, creating inconsistencies in design and adding to the costs (both to Government and Business). The federal scheme, therefore was a result of a broader strategy to deliver consistent regulation, reduce compliance and management costs, as well as tilt balance towards polluter pays.

There are important elements of convergence between reporting mandates put in place by different countries. Methodologies followed for emission calculations, use of terminology etc. more or less draw upon the GHG Protocol Suite of Tools put together by World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD). GHG Protocol based approaches including use of terminology Scope1, 2 and 3 have been mostly consistent across reporting mandates in different geographies. That said, number of variances, based on the policy driver and overall objective characterise design of various country schemes. For e.g. in terms of reporting periodicity, UK advises annual cycles, while France provides for a three-year period between turning-in inventories. This is linked to the fact for UK's heavy reliance on financial sector and investors driving climate action (thereby mapping the annual inventories to yearly financial reporting cycles). France on the other hand, rationales to provide a longer periodicity, enabling companies to achieve emission reduction goals between reporting cycles.

Most mandates on emissions reporting, do cover or put in place a minimum threshold, in terms of coverage. In Australia, under the National Greenhouse gas and Energy Reporting act (NGER), corporations emitting more than 125,000 tonnes CO₂e were amongst the initial ones to be covered under periodic reporting⁴. In Canada this threshold under the Canadian Environment Protection Act, all facilities emitting more than 50,000 tonnes CO₂e were covered⁵. Some countries go beyond just the greenhouse gas emission numbers to also include thresholds in terms of employee size, annual turnover etc. In France, the Law Grenelle II requires companies with 500+ employees to compile and report inventories under a special decree published in July 2011⁶. In Japan, under the Act on Promotion of Global Warming Counter Measures, companies with more than 20 full-time employees are required to report aggregate GHG emissions by type at each business site where emissions exceed 3000 tCO₂e⁷. In Korea the basic act on Low Carbon Green Growth includes mandatory rules to report GHG emissions and energy consumption over a certain amount that is decided/updated by the Government on a periodic basis⁸. UK Carbon Reduction Commitment mandates require some 5000 organizations to record and monitor their GHG emissions and an additional 15000 organizations to disclose their electricity usage⁹. US Environment

⁴ www.cleanenergyregulator.gov.au/National-Greenhouse-and-Energy-Reporting/Pages/default.aspx

⁵ www.ec.gc.ca/ges-ghg

⁶ www.developpementdurable.gouv.fr/IMG/pdf/09003_PLAN_CLIMAT.pdf

⁷ www.japanfs.org/en/pages/026377.html

⁸ http://eng.me.go.kr/board.do?method=view&docSeq=9168&bbsCode=new_infocus

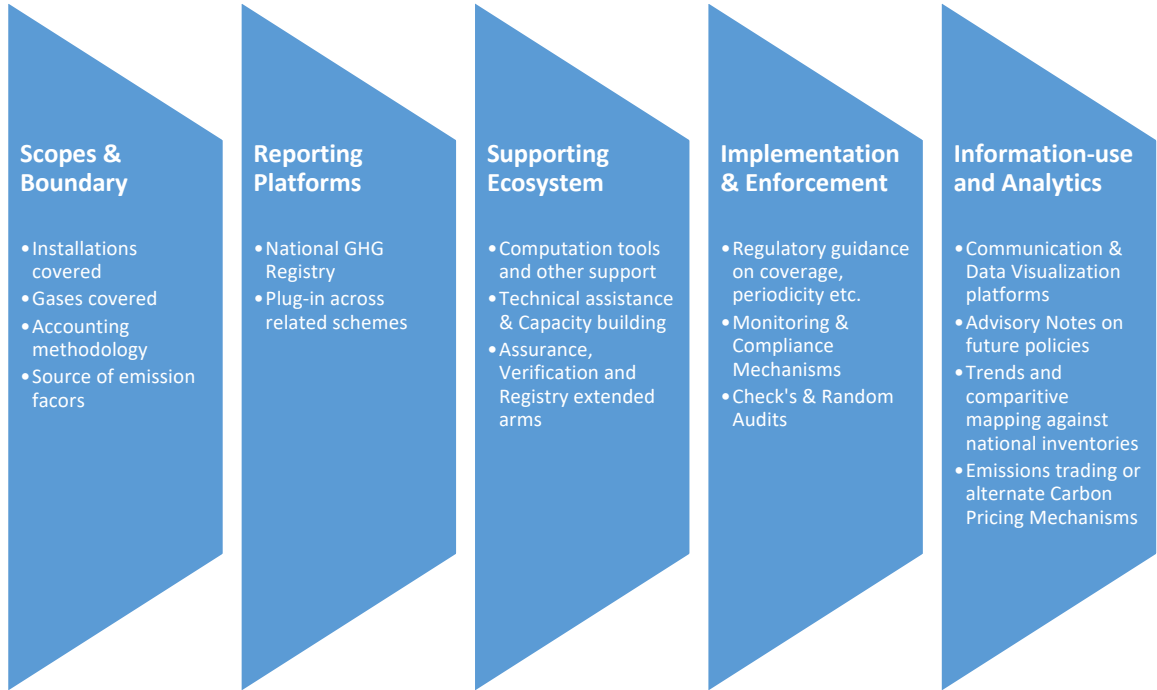
⁹ www.defra.gov.uk/environment/economy/business-efficiency/reporting

Protection Agency (EPA) in September 2009, issued a rule for mandatory reporting of GHG for suppliers of fossil fuels or industrial GHG, manufacturers of vehicles and engines and in general facilities that emit 25000 tCO2e or more¹⁰. Israel’s Ministry of Environment Protection established a mandatory pollutant release and transfer register that includes information on energy-use, pollutant and GHG inventories across 400 installations¹¹, identified by various in-country criteria. Denmark covers this broadly under its mandate on reporting of Corporate Responsibility. Under section 99A of the Danish Financial Statements Act, large companies with revenue over EUR 38 million, and more than 250 employees are required to report.

Building Blocks for Mandatory Emissions Reporting in India

Considerations on key components for implementing a potential mandatory reporting scheme in India.

Learning from international experiences and standardized approach followed by various countries in setting-up mandates for GHG reporting, a consistent pattern of building blocks is generally followed during planning and implementation. Following is an illustration of generalized “Building Elements” that are outlined for most reporting mandates;



¹⁰ www.epa.gov/climatechange/emissions/ghgdata/index.html

¹¹ www.sviva.gov.il/Enviroment/Static/Binaries/ModulKvatzim/IL_GHG_Registry_Synopsis_Report_12-2011_1.pdf

Key considerations, scenarios and possibilities can be established for India – by mapping out learnings across the “building blocks” that were used to build similar greenhouse gas reporting mandates across other regions globally. An overview of some international regulation and reporting schemes is provided below, mapping different interventions within the key building blocks.

Scheme & Date	Legal Framework	Authority	Mandatory / Voluntary	Content, Scope and Boundaries	Calculation Methods	Verification /Assurance	Reporting
Australia National GHG & Energy Reporting 2009	National GHG and Energy Reporting (NGER) Act of 2007		Mandatory	Geographical Scope: Australia Content: 6 GHGs of the Kyoto Protocol Boundary: Activities under direct control of corporations Reporting Threshold: 50,000 tCO ₂ e or production/ consumption of more than 200TJ of energy Scope of Emissions: Scope 1 and 2 mandatory. Scope 3 optional	Methodology: NGER Measurement Technical Guidelines 2009, GHG Protocol, ISO 14064-1 Emission factors for Australia provided		Methodology: NGER Reporting and Technical Guidelines Platform: Online system for comprehensive Activity reporting (OSCAR) Frequency: Annual
Canada Environment Canada GHG Emissions reporting Program (GHGRP) 2004	Canadian Environmental Protection Act 1999, (CEPA 1999) - Section 46 “GHG Emissions Reporting Scheme”	Statistics Canada	Mandatory	Geographical Scope: Canada Content: All Kyoto Gases Reporting Entities: Large Industrial GHG emitters Boundary: Facility level Threshold: 50000 tonnes CO ₂ e per facility Scope of Emissions: 1	Methodology: Technical Guidance on GHG Emissions reporting, published by the Government of Canada, based on IPCC guidelines and good practice documents. Source of Emission Factors: GHG Emissions Quantification guidance provides sector specific guidance manuals, national	No specific requirements for a facility to have its emissions verified by a third party. Information should be “verifiable”	Recipient of Information: Statistics Canada. Platform: Electronic Data Reporting (EDR) system on the GHG reporting website.

					emission factors, global warming potential, conversion factors and electricity intensity tables.		
Israel Voluntary Reporting Scheme 2010		Ministry of Environmental Protection	Voluntary	Geographical Scope: Global emissions of Israel companies. Scope: 1 and 2 mandatory. Scope 3 optional	Methodology: Israel GHG Protocol Source of Emission Factors: IPCC 2006 guidelines for national inventories		
France "Bilan d'émissions de GES" 2011	Law "Grenelle II" n 2010-788 of 12 July, 2010 (Article 75)	Ministry of Environment	Mandatory	Geographical Scope: Within borders of France Reporting Entities: All companies over 500 employees, subnational governments over 50,000 inhabitants, and public bodies over 250 employees. Threshold: no Scope of emissions: 1 and 2.	Methodology: Bilan d'émissions de GES, strongly inspired by ISO 14064-1 and GHG Protocol. Source of emission factors: ADEME database	No verification requirements	Recipient of the information: regions prefect Platform: Information not published Frequency: Every 3 years
Japan Mandatory GHG Accounting & Reporting System 2006	Japan act on Promotion of Global Warming Counter Measures	Ministry of Environment. Ministry of Economy, Trade and Industry	Mandatory	Geographical Scope: Japan Content: All Kyoto gases depending upon particular thresholds Reporting entities: Large emitters Boundaries: All business establishments Thresholds:	"Calculation and Reporting Manual". Calculation approaches and emission factors are provided.	No specific requirements, however the information should be verifiable.	Recipient of Information: Competent ministers that compile the reported information and notify the Environment Minister and The Minister of Economy, Trade and Industry. Platform: The Environment Minister and the Minister of Economy,

				For reporting of energy derived CO2 – annual energy consumption of at least 1500 KL. For other companies, total emissions of each type of GHG at least more than 3000tons and at least 21 full time employees			Trade and Industry publish aggregated information. Specific information may be disclosed upon request and by discretion. Frequency: Every year until end-July
New Zealand Emissions Trading Scheme 2008		Environmental Protection Authority (EPA)		Reporting Entities: Forest, Energy, Transport, Emissions intensive industrial Processes, Agriculture, fishing etc. Scope: 1,2 and 3			
UK Guidance on how to measure and report your GHG emissions 2009	Climate Change Act 2008	DEFRA	Mandatory	Geographical Scope: Global emissions of UK companies Content: All Kyoto Gases Reporting Entities: Public and Private Organizations, all size, all sectors Threshold: none Boundary: None specified. Those defined by the GHG Protocol are suggested Scope 1 and 2	Updated Annually		
US Mandatory Reporting of GHG Rule (MRR) 2009	In response to the FY2008 Consolidated Appropriation Act (HR 2764: Public Law 110-161), EPA issued the Mandatory reporting of	EPA	Mandatory	Geographical Scope: US Reporting Entities: Fossil fuels or industrial GHGs, manufacturers of vehicles and	Methodology: General Reporting Protocol (GRP)	Optional: Self certification by designated representative who must certify and submit.	Recipient of the Info: US EPA Platform: US EPA website. Frequency: Annual

	Greenhouse gases rule.			engines, other facilities. Content: 6 Kyoto GHGs, HFCs and other fluorinated Gases. Boundary: at Installation level Threshold: In general 25,000 metric tons or more GHG emissions per year Scope 1 and 2			
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This discussion paper based on learnings from international experiences and local landscape - attempts to put together the following deliberations for India to adopt mandatory policies on compilation of greenhouse gas emissions inventories, reporting and disclosures. An illustration can be listed out below**;

Scheme & Date	Legal Framework	Authority	Mandatory / Voluntary	Content, Scope and Boundaries	Calculation Methods	Verification /Assurance	Reporting
India National GHG & Energy Reporting 2020**	National Energy Conservation Act. Air Quality & Management Act	Ministry of Environment, Forests & Climate Change	Mandatory**	Geographical Scope: Emissions of businesses within the country** Content: All GHGs covered Kyoto Protocol Boundary: Activities under direct control of corporations Reporting Threshold: 10,000 tCO ₂ e Scope of Emissions: Scope 1 and 2 mandatory. Scope 3 optional	Proposed India GHG Program Technical Guidelines, BEE PAT reporting Template, GHG Protocol, ISO 14064-1 etc. Emission factors: CEA data base for Scope 2, rest IPCC or at source	No verification needed to start with	Methodology: GHG Protocol based Programs, PAT learnings, etc. Platform: Online system for comprehensive emissions reporting Frequency: Annual coinciding with financial reporting

The above table is an illustration and a starting point for further discussion. It is by no means a comprehensive recommendation by any sorts, but aimed to serve at stimulating further deliberations in this regard.

The possibilities for India to adopt emissions reporting from the corporate sector can be further explored by looking at “building blocks” or components prescribed above; in greater detail as below

- **Plausible Legal or Regulatory Frameworks**

Legal authority to develop and implement national GHG measurement and management lies predominantly with the central government, but states might be able to also play a significant role for building regional mandates¹². General environment protection legislation provides the legal framework for regulating greenhouse gas emissions from its sources in India. Additionally, key regulations with possible implications for GHG measurement and management across activity or sectoral areas include Indian Forests Act of 1927, The Forest (Conservation) Act of 1980, the Air (Prevention and Control of Pollution) Act of 1981, Environment (Protection) Act of 1986, the Motor Vehicles Act of 1988, Energy Conservation Act of 2001 and Electricity Act of 2003. These laws authorize several state and central agencies to take actions – for further exploring mandates on GHG emissions compilation and reporting.

For India to have a mandate, it is envisaged that Ministry of Environment, Forests and Climate Change – the nodal agency for planning, coordination, oversight and implementation of India’s environment, forests, climate change and related programs would have a significant and central authority/role. Additionally, separate departments/divisions (climate change division etc.) within the Ministry may take a lead on drafting and planning the mandates in line with overall goals. Building on recommendations based on studies commissioned by the Government (Low Carbon Expert Group, Planning Commission, MOEFCC etc.) and independent analysis (incl. recommendations from Partnership for Market Readiness etc.) the following institutional architecture needs to be in place (as a key starting point)¹³

- A National Greenhouse Gas Inventory Management Authority to track GHG trends from point source levels and compare/contrast submissions from bottom-up mandatory reporting. This could be housed under INCCA but operationalized under the Ministry of Environment, Forests and Climate Change.
- A National GHG Management System for archiving, updating and communicating information on GHG emissions, activities and removals.
- Mechanisms/Templates to be circulated encouraging disclosure of GHG emissions from public sector and government undertakings to start with.

¹² https://www.wri.org/sites/default/files/wri_workingpaper_india_final.pdf

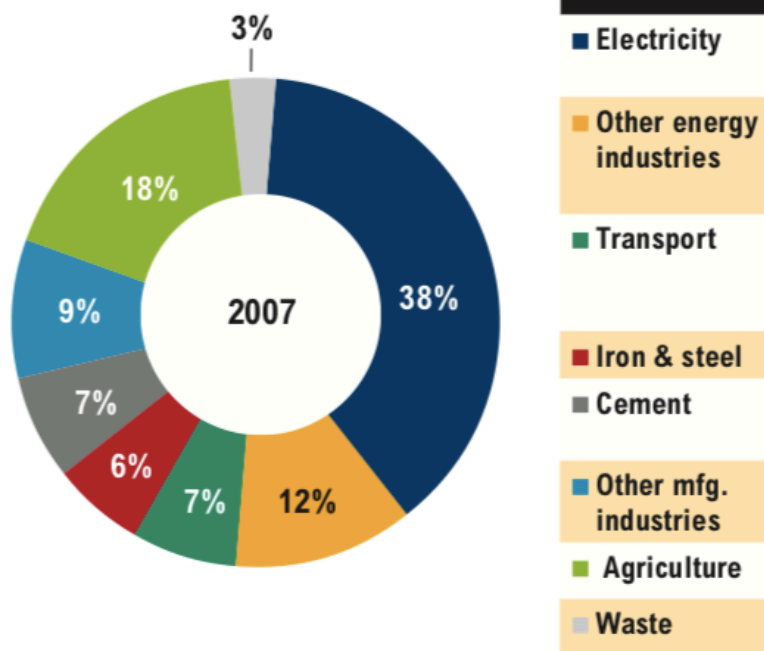
¹³ As also outlined in India’s proposal to Partnership for Market Readiness.

- **Scope & Boundaries**

To ascertain the scope and boundaries, it is important to estimate contributions and influence from the corporate sector. Scope and boundaries could be further mapped out on the basis of installation or industry sector coverage, scope of emissions, gases covered etc.

Industry/Sectoral

Coverage: Based on INCCA, National Communications and WRI



assessments, the adjacent break-up seems to be representative of the overall emissions in India. Given that electricity, energy industries, transport, iron & steel, cement and other manufacturing industries account for most of the overall emissions, it may be worthwhile to explore mandates starting with these sectors. At the same time, it would also be important to consider overlaps of existing regulatory and voluntary mechanisms including the Perform Achieve and Trade Scheme (PAT), renewable energy certificates/purchase obligations, voluntary disclosures under the India GHG Program, CDP or GRI, Integrated reporting, Reporting as per SEBI/Stock Exchange Requirements etc – to avoid duplication, adding layers of complexity and increasing the administrative burden. GHG Plug-ins across reporting templates for some of these mechanisms may help bring more consistency as well as help provide relevant information in an efficient manner.

Direct and/or Indirect Emissions Coverage:

Most of the current regulations cover Scope 1 emissions, and in some cases Scope 2. The mandate on GHG reporting in the country may therefore expand upon some of the existing approaches and at the same time allow for capture of information that is relevant, robust, credible and traceable. Most of the reporting under PAT covers Scope 1 and Scope 2, disclosures under the Annual Survey of Industries cover Scope 1, Scope 2 and parts of Scope 3 relevant activity data etc. Annual filings with exchanges and registrar of companies covers reporting of activity level information responsible for again Scope 1 and Scope 2 emissions. As can be mapped out, fair amount of maturity exists in measuring and tracking information that is in direct control of the entity and has high visibility. Scope

1 and 2 emissions reporting under a probable mandate should be therefore manageable with basic readiness in place by way of voluntary corporate action and relevant policy instruments in place.

Gases covered:

While most greenhouse gas emissions inventories and reporting mandates closely link to national and regional goals and thereby cover all six/seven Kyoto gases, or in some cases only cover gases that are significant in terms of materiality i.e. CO₂, CH₄ and N₂O. India's national communication, INCCA reports and BUR submissions provide very important and relevant insights on materiality of emissions/gases that are relevant for overall inventories, and therefore the mandate can draw upon coverages identified or outlined in these important national documents for coverage of gases.

- **Calculation Approaches**

As can be seen above in the comparative table across geographies, most mandates on GHG emission calculations and reporting are based on the GHG Protocol and/or the ISO14064 guidance. Most mandates further build more granularity and consistent templates in terms of local specificity that include recommendations on the use of appropriate emission factors whether international or national defaults v/s building-up of site specific values. In India, the India GHG Program, Central Electricity Authority (CEA) and few others have outlined locally relevant and country specific emission factors. CEA data-base is the most widely used recommendation on grid electricity based emission calculation, while there are country specific emission factors mapped out by various independent programs and agencies including transport emission factors mapped out by India GHG Program in coordination with Indian Railways, Airlines, Airports etc.

- **Verification and Assurance**

GHG reporting mandates can employ various measures to enhance quality along the entire chain of data collection, quantification, monitoring, reporting and verification. Appropriate design of data management systems and undertaking compliance assistance activities such as training and capacity building programs, certification and empanelment programs, enlisting of appointed firms etc. generally go a long way in supporting effective implementation of any reporting mandate. Countries typically have required reporters to submit self-certified information, or have nodal agencies conduct sample/random level of review, and in general require verification by third party providers. Factors that influence most of these decisions include review of broader objectives for these mandates, implied costs and administrative burdens, inhouse capacity and resources available etc. India has had experiences across most choices of verification – whether self-certified or declared information as submitted in the Annual Survey of Industries, Audited results built in by BEE Certified Energy Managers for PAT schemes or independent third party assurance and validation for various voluntary initiatives by Indian businesses on CDP reporting, ISO14064 certification et. al. The GHG mandate on reporting emissions could leverage experiences of benefits, challenges and opportunities across these and various other options to earmark the best possible arrangement to start with.

- **Reporting and Communications**

Generally mandates on GHG emissions reporting rely on robust data management systems as identified above. Reporting requirements can range from simple spreadsheet based formats (mostly manual) to sophisticated web-based systems (that are automated)¹⁴. Appropriate systems selection is typically guided by a number of factors, including the number of reporting entities, periodicity of reporting, time and resources/cost estimates, associated training needs for template mapping, security and data protection features, and potential to scale-up or expand (include more reporters, GHGs or emission sources). Added clarity on what information would be disclosed publicly helps build in more trust and easier reporting. While planning for public disclosures, mandatory guidance should seek balance between promoting transparency, protecting confidentiality (within the bounds of local and national regulations) and optimizing reporting/evaluation costs. Again a number of experiences within the PAT scheme on spreadsheet or data template based reporting, continuous reporting of air pollutants to CPCB etc. outline various ways in which businesses in India are already submitting key information. With most parallel analogies drawn to the PAT scheme, and also with businesses being able to mature their internal processes on template/spreadsheet based reporting, coupled with a potential reporting requirement (that could be started with a three year period), it may be worthwhile for India to start simple and improvise over a period of time.

Next Steps

Summary of considerations and recommendations.

As broadly outlined above, this discussion paper identifies considerable benefits for India to come-up with a guidance or mandate on GHG emissions measurement and reporting. More than 190 large companies in India¹⁵ are already measuring and mapping their greenhouse gas inventories. Most public sector undertakings including oil and gas majors have started mapping out and compiling their greenhouse gas emissions on a periodic basis.

However before full-fledged planning, roll-out and implementation it is important to look at the existing laws and regulatory structure. It is also recommended to build-upon existing guidance and mandates that businesses are already exposed to – such as the PAT scheme reporting requirements, exchange or listing requirements, annual financial reporting and integrated reports or via self-declaration approaches followed within the official annual survey of industries (ASI). All of these provide key starting points on the scope, gases covered, threshold for installations, coverage of industrial sectors, reporting periodicity and use-case for further policy mapping.

This discussion paper, further encourages review of various possibilities but also recommends close linkages to cover key sectors (that are already within the PAT scheme and/or plan to be included; and include fast growing sectors such as telecom, aviation, information technology etc.). Direct emission sources from major facilities need to be included i.e. Scope 1 and 2 emissions, while the reporting requirements can blend into the existing institutional architecture that is planned under the Paris

¹⁴ WRI Guide for Designing Mandatory Greenhouse Gas Reporting Programs.

¹⁵ CDP, WRI, GRI and BSE insights

Agreement implementation requirements as well as the market measures planned under PMR partnership. Major learnings from international and other geographical mandates do advise keeping a minimum threshold for inclusions – to balance the granularity of information needed and reduced cost of managing/administering the mandate.

The nodal entity, also proposed as the key agency to play the role of central coordination agency in the paper i.e. Ministry of Environment, Forests and Climate Change could explore possibilities to further engage across departments and ministries to

- Internally review regulatory set-up and avenues available (for example, engagement with the Bureau of Energy Efficiency can help expand its existing programs under taken within the Energy Conservation Act and PAT Scheme to initiate key emission intensive sectors.)
- Align on the scope, coverage, reporting periodicity, boundaries etc. based on the eventual goal or plan in place. (taking forward the BEE example, the scope and boundaries could be restricted to fuel and electricity consumption i.e. direct and indirect emissions, leaving aside the rest. A simple PAT plug-in could initiate most organizations reporting within the PAT framework to also share their emissions info.)
- Build in avenues for a multi-registry/national portal (possibility within the purview of its existing plans under the Partnership for Market Readiness scheme) to enable appropriate accounting, tracking, registering and communication of progress.
- Engage on a series of specific consultations with key stakeholders to build bottom-up buy-in and build capacity for greater compliance in the first go itself.
- Explore possibilities of data visualization and analytics to further engage with a wider set of stakeholders including civil society, businesses, researchers and policy makers enabling both ambitious bottom-up action and better regulatory planning support.