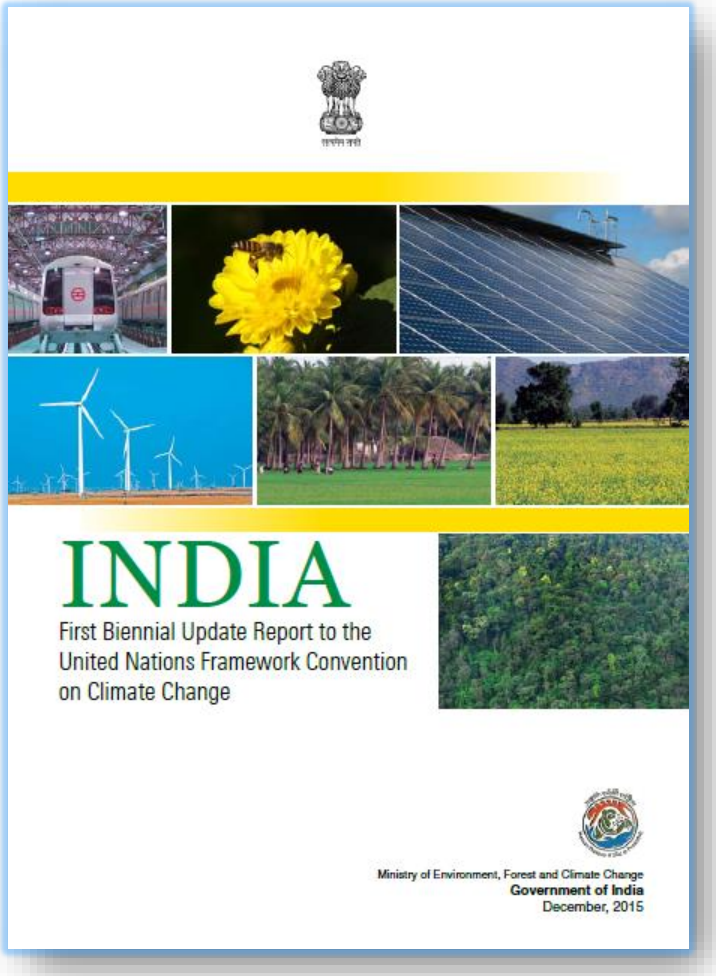
FACILITATIVE SHARING OF VIEWS - INDIA



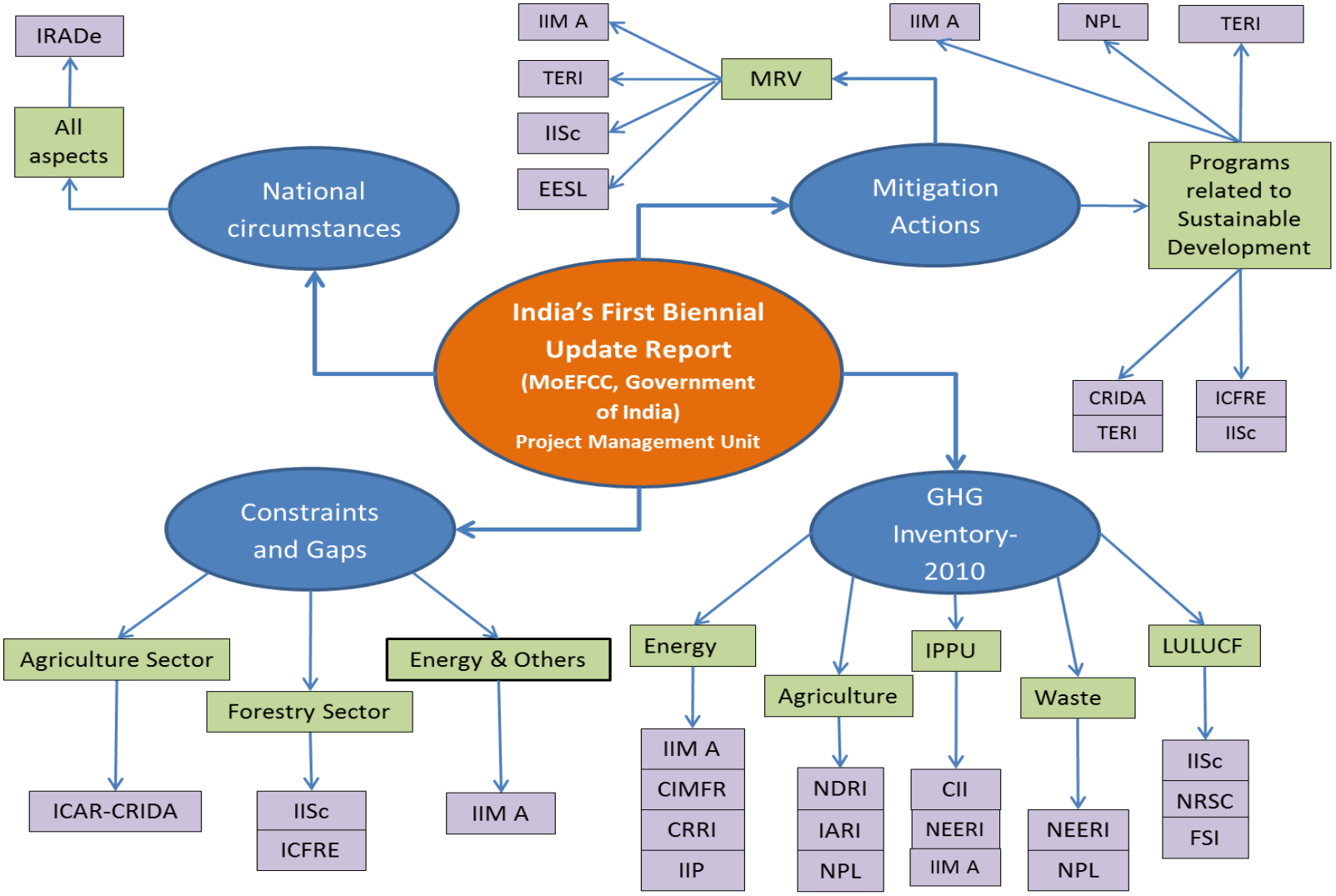
Part I: Summary of BUR and recent developments

National context

- India has 2.4% of world surface area and supports around 17.5% of the global population
- Annual mean temperature has increased by about 0.6^{o}C during 1901-2010.
- Forest and tree cover area in 2013 was over 24%, and is increasing steadily over time.
- Protection of Environment is central to India's sustainable and inclusive growth strategy.
- About 70% of rural households still depend on fuelwood for cooking. However LPG has been provided to additional 22 million households since last one year.
- 29.5% of population lives below the poverty line.
- 33% households have no access to electricity. Target: Electricity for all by 2019
- Low per capita energy consumption (nearly one-fourth of global average)
- GDP, total energy consumption and GHG emissions are projected to grow and policy driven decoupling is happening.

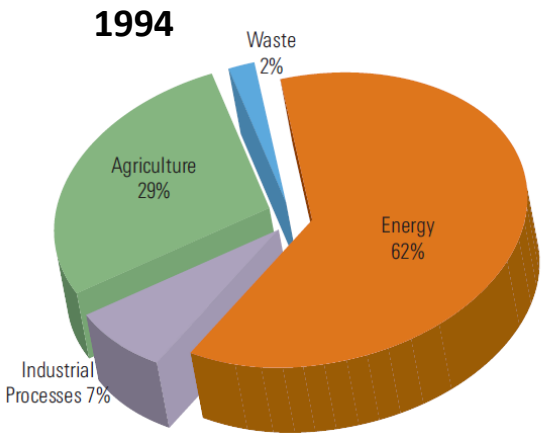
National context *contd..*

Institutional arrangements



GHG Inventory

- In 2010, India emitted 2136.8 million tonnes of CO_2 equivalent greenhouse gases (without LULUCF).
- Forest sector was a net sink and it neutralized 12% of emissions. Including sink action of Forest sector into consideration, net emissions for India were 1,884.3 million tonnes of CO_2 equivalent
- Per capita emissions in 2010 were 1.56 metric tonnes CO_2eq.

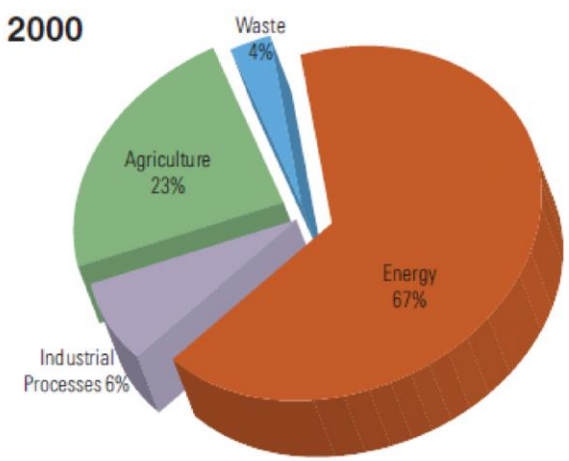


Without LULUCF

1214.24 Mt

With LULUCF

1228.54 Mt

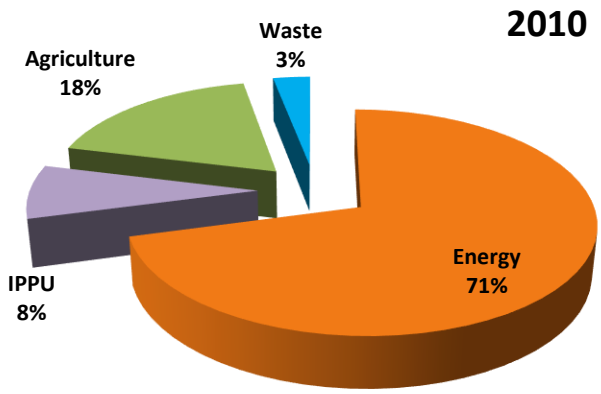


Without LULUCF

1523.77 Mt

With LULUCF

1301.20 Mt



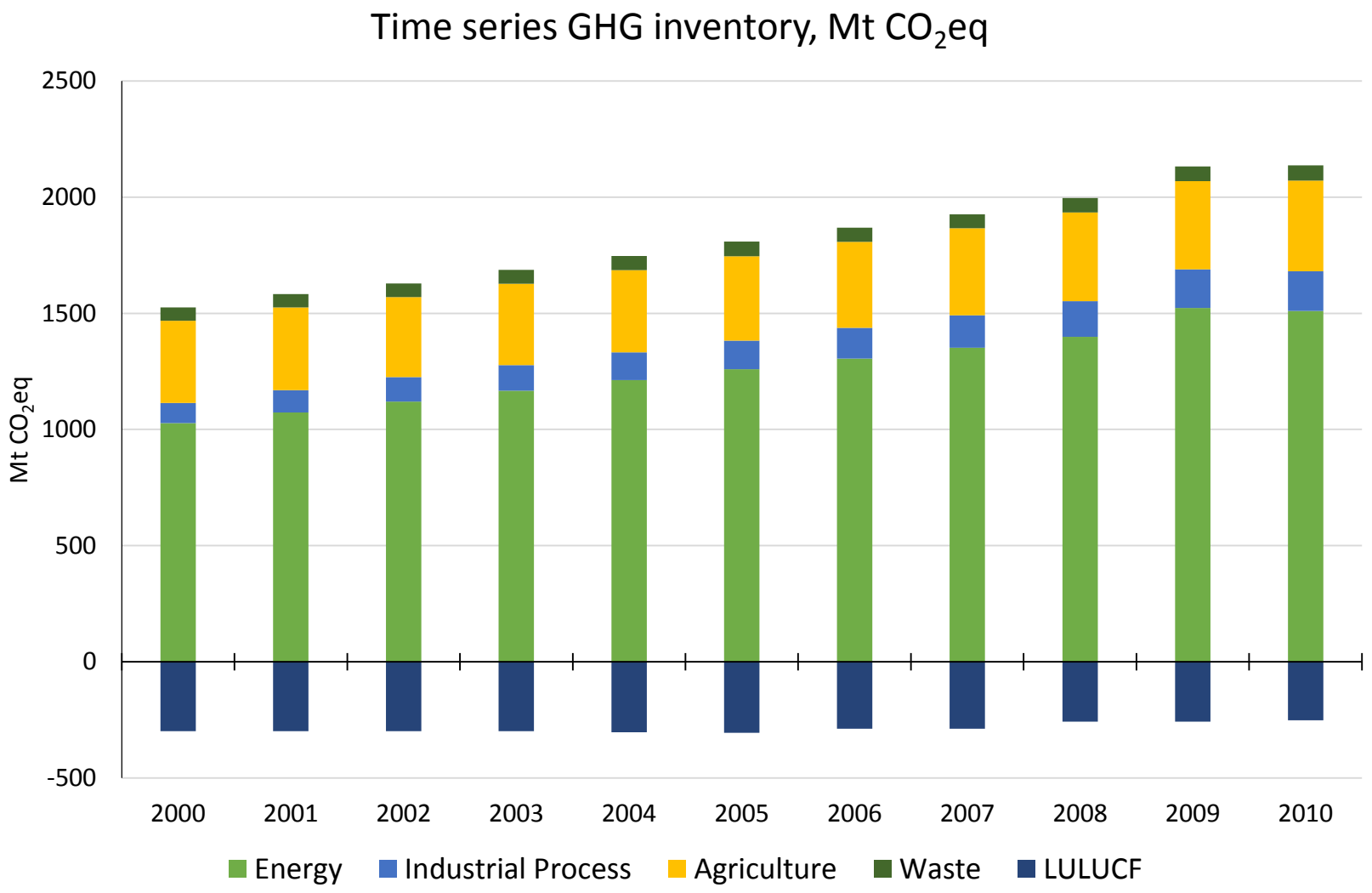
Without LULUCF

2136.84 Mt

With LULUCF

1884.30 Mt

GHG inventory



Mitigation actions and their effects (indicative list)

Renewable energy-

- Increased target of renewable energy capacity of 175000 MW by 2022 (100000 MW Solar)

  Renewable Energy Certificate (REC) to promote renewable energy and facilitate Renewable Purchase Obligations (RPOs)
- National Clean Environment Fund created; Clean Environment cess: Rs. 400/ metric tonne coal produced and imported into India

Energy Efficiency

Perform Achieve & Trade (PAT) for 8 energy intensive sectors (expanded to 11 now), 5635 MW energy demand avoided and 31 Mt CO_2e mitigated during 2012-15

Star rating of appliances / Super Efficient Equipment Programme

Promotion of Super critical coal technology and Advanced Ultra super critical technology. Generation capacity of 39710 MW based on super critical technology already installed as in April 2017.

Mitigation actions and their effects (indicative list)

Building, Transport and Waste Sectors

Dedicated Freight Corridor project

Mass Rapid Transit System (MRTS): New Metro rail networks under construction in 15 cities

Energy Conservation Building Code (ECBC)

National Programme for LED based home and street lighting (234 million incandescent lamps have been replaced since May 2014, mitigating 246 Mt CO_2e)

National Mission on Electric Mobility initiated

Agriculture

- National Initiative on Climate Resilient Agriculture (NICRA)

National Mission on Micro Irrigation, promotion of solar water pumps

Expanding area under System of Rice Intensification

Forestry

- Green India Mission (GIM)

National Afforestation Programme

Mitigation actions and effects
Results achieved

NDCs

- To reduce the emissions intensity of GDP by 33-35% by 2030 from 2005 level.
- To achieve about 40% cumulative electric power installed capacity from non-fossil fuel based energy resources by 2030 with the help of transfer of technology and low cost international finance including from GCF

➢ 12% reduction in emission intensity has been achieved between 2005 and 2010.

Description of domestic MRV

- Currently no MRV for GHG emissions and mitigation, but have arrangements for MRV of other parameters such as specific energy consumption in 478 plants under PAT, energy consumption reporting for 21 types of industries, forest area monitoring by latest remote sensing techniques etc.

- Appropriate institutional mechanisms and capacity building required for establishment of integrated domestic MRV arrangements with international support

- Establishing an integrated domestic MRV system for GHG mitigation actions is a capacity building need for India.

Obstacles and barriers

- Emissions estimation from sub-categories such as energy consumption in unorganized sectors, Food and Beverages, Non-Metallic Minerals, Glass and Ceramics require further refinement because of lack of availability of relevant and reliable data sets.
- Emission factors for some key source categories need to be measured to enhance country specificity, such as coal consumption in power, steel and cement sectors, methane emissions from enteric fermentation, CO_2 from road transport etc.
- Methodologies have to be deepened to higher tier methods for more key sources. Training and capacity building of national teams are needed for this.
- Quantification of emission reductions from mitigation measures for reporting in the BUR is a capacity building need.

Support received and needed (finance, technology, capacity building)

- "Preparation of Third National Communication (TNC) and Other New Information to the UNFCCC" is also one of the approved projects with project tenure of five years and with total outlay of USD 9 million as grant from GEF.
- Adaptation related public spending in India is around 12% of budget in 2013-14 (*i.e.* ~2% of GDP).
- Around USD 90 billion needed for solar capacity target
- About USD 21 billion required for grid infrastructure for renewable power
- Technology, finance and capacity building needs for sectors like Renewable Energy, Clean coal technology, hydro power, shale gas, nuclear power and transport
- Sustained and timely international support for finance and technology needs are critical to sustain and strengthen NDCs and National Inventory Management System.

Part II: Experience and lessons learned in participating in the ICA process

Preparing for the ICA process

- Participation in the ICA process has raised the profile of climate actions at the domestic level:
  - *Enhanced reporting of actions from various government departments and state agencies*
  - *Initiation of the process of conceptualizing a sustainable National Inventory Management System (with the help of international support)*
- BUR preparation has enhanced domestic coordination/ domestic MRV in providing climate related information:
  - *New institutions have been identified and included in the NATCOM process.*
  - *Awareness level has risen in various departments and state governments on the matters related to national communication and BUR processes.*

Enhancing transparency of reporting and areas for improvement

- The Secretariat has been cooperative, facilitative and supportive during the process of Technical Analysis.

- Technical analysis process helped collating and consolidating capacity-building needs.

Part III: Response to questions received

Country and subject	GHG Inventory	Mitigation	MRV	General (such as Capacity needs)	Other information	TOTAL
United States of America	1	1				2
France					1	1
Switzerland	1					1
New Zealand	2					2
European Union	3	1	1	2		7
TOTAL	7	2	1	2		13

Thank You

Category	Question	Response
National GHG inventories	We commend India for using elements of the 2006 IPCC Guidelines in preparing its GHG inventory. What are India's plan for incorporating more of the 2006 Guidelines in the future?	To the extent our capacities permit, the elements of 2006 guidelines have been used including methodologies and some default emission factors. A wider adoption would require training of inventory preparing teams. These capacity building needs were reflected in the BUR and Technical Analysis Report.
Mitigation actions and their effects	India thoroughly identified and described a wide range of mitigation actions across economic sectors. What steps have you taken (or do you intend to take) to quantify or estimate emission reductions for mitigation actions?	India has planned to quantify emission reductions in the sectors where reliable data is available. Quantification of emission reductions from mitigation measures for reporting in the BUR was constrained by the gaps indicated in Table 4.1. Continued international support is necessary to arrive at reliable estimates.
Any other information	India's BUR outlines the framework for the 'Perform, Achieve, Trade' scheme under the Energy Conservation Act on page 76. Can India provide more information on the implementation of the scheme?	Information on PAT is also made available on page 88 and 121 of BUR. The second phase of the scheme is currently under implementation. Central Electricity Regulatory Commission, on 14th Feb 2017, has approved Procedure for Transaction of Energy Saving Certificates (ESCerts), tradable units generated from PAT.
National GHG inventories	(i) On what basis (activity data) has the reported figure been derived? (ii) Could India provide quantitative information on the shares of the different types of biomass included in the figure reported? (iii) Could India give its appreciation of the extent to which the state and trend of CO2 emissions from the use of biomass fuels is considered to be sustainable?	(i) The emissions have been estimated based on the biomass consumption values including fuelwood, agriculture crop residue & dung cakes. (ii) The data is at different levels and aggregation. CO_2 emissions were calculated using Indian specific energy content for each fuel (to the extent possible) and default IPCC emission factors. (iii) Only 27.14% firewood comes from forests, other from farmland, community land, homestead, roadside, canal side and other wastelands. Around 76% of rural households depend on biomass for cooking. India is moving to cleaner fuels for cooking, such as LPG.

National GHG inventories	What capacity-building needs, has India identified to enable the development of a time-series of emissions and removals?	To enable the development of a consistent time series of emissions and removals, following capacity building needs have been identified: (i) Establishing a long-term institutional and operational system for periodic, continuous and enhanced GHG emission estimation for national reporting under various UNFCCC reporting requirements (a national inventory management system (NIMS)); (ii) Enhancing the GHG inventory to higher-tier levels in all sectors using key category analysis; (iii) Refining energy sector data for reference and sectoral approaches, including non-commercial and other sectors; (iv) Estimating country-specific emission factors for key categories (level and trend) for all sectors and gases; (v) Collecting and mapping data on individual industrial processes and product use plants and micro, small and medium enterprises; (vi) Collecting agricultural data, including for the establishment of country specific emission factors for fruit tree systems, for allometric equations and biomass expansion factors for horticultural species, and for enhancing and refining data on livestock dung production and collection; (vii) Establishing an inventory system for estimating GHG emissions from municipal solid waste and industrial wastewater; (viii) Establishing a national forest inventory system; (ix) Adopting the IPCC approach 3 for activity data on areas under different land categories and conversions; (x) Geo-referencing areas under different land categories and areas subjected to change for the GHG inventory by using remote sensing and global information systems; (xi) Modelling for tier 3 estimation of carbon stock changes in forests, plantations and land area subjected to mitigation actions; (xii) Estimating carbon stocks and collecting data on changes in baseline carbon stocks for the estimation of mitigation potential; (xiii) Identifying carbon sequestration rates for different forest types and plantations; (xiv) Additional finance for designing and implementing afforestation/reforestation projects; (xv) Strengthening local capacity to collect LULUCF data at the regional level; (xvi) Capacity-building for data collection from primary sources in the forestry sector; (xvii) Coordinating the dispersed technical and institutional capacity for REDD plus; (xviii) Enhancing capacity in forest resource assessment and improving the process at the state and local levels; (xix) Enhancing resolution of forest data generated through satellite imagery; (xx) Capacity-building at all levels (including state- and district-level forest departments, research organizations and non-governmental organizations) to enable the design, and implementation of REDD-plus mechanism. India considers, in line with the reporting guidelines, the Baseline year of reporting as the year of inventory reported in previous National Communications. Reporting time series back from 1990 is not required by the guidelines.

National GHG inventories	What processes, if any, is India considering to put in place to be able to report emissions and removals estimates for the calendar year no more than four years prior to the submission date of its next BUR?	All sectoral experts and institutions involved in the inventory preparation process have been sensitized about the requirement of inventory year being not more than four years prior to the submission year. The QA/QC processes have been designated to complete well within time.
General (Capacity building needs identified in the technical analysis)	Are the capacity-building needs identified in the technical analysis report of your first BUR mirroring your own priorities? Has the country identified priority needs that could be addressed in the short term (i.e. to be implemented in time for the submission of BUR2)?	Capacity-building is a dynamic process and new needs continue to emerge with time. Prioritization for a vast developing country like India may not be possible, especially as its needs are dynamic and evolving. India considers all capacity-building needs equally important. India is continuously striving to improve its capacity.
Mitigation actions and their effects	From the information reported in the BUR it was not clear which is the status of implementation of mitigation actions in the country. Which are the difficulties and constraints encountered in monitoring the progress with the implementation of these mitigation measures or with calculating their effects?	Status of implementation of mitigation actions have been provided in Chapter 3 and Tables 3.9 to 3.14 of BUR. Chapter 4.1 and 4.4 of BUR, and para 71 (a and b) of Technical analysis of BUR-1 provide detailed difficulties and constraints encountered, and capacity building needs in monitoring the progress and calculating effects of mitigation measures.
National GHG inventories (Methodologies)	India has developed and used tier 3 methodologies for estimation of emissions from several key categories. Could you provide some information on the processes to enable the data collection & application of higher tier method for key sectors? What are the gaps and remaining challenges of moving to higher tier methodologies for other key emission sectors?	Information on processes to enable data collection and application of higher tier methodologies for key sectors is provided in Chapter 4.1. Information on gaps and remaining challenges of moving to higher tier methodologies for other key emission sectors have been given in Chapters 4.1 and 4.4 of BUR, and para 71 (a and b) of Technical analysis of BUR-1.

National GHG inventories (GHG Inventory Data)	Could you provide some insights on how the country prioritises addressing the data gaps and whether there is already a plan of such improvements including for example institutional and financial resource needs?	Possible solutions for data gaps include designing consistent reporting formats, data depths to be improved, conducting more measurements for emission factors, especially for key sources of GHG inventory. Establishing a robust NIMS would require continued financial support from international resources. India considers capacity-building as a dynamic process and new needs continue to emerge with time.
Information on domestic measurement reporting and verification	What are the main challenges encountered in developing a country-wide MRV system? What are the specific related capacity building needs and what are the priority steps identified by the country in order to build a MRV system?	India has reported that establishing an integrated domestic MRV system for GHG mitigation actions is a capacity-building need (BUR page 120). India acknowledges that appropriate institutional mechanisms and capacity-building are required for the establishment of an integrated domestic MRV arrangement. In addition, paragraph 71(b) of Technical Analysis report may also be referred which highlights the capacity building needs.
National GHG inventories (IPCC guidelines)	Could India provide more information on your experience of using IPCC 2006 guidelines? Could you also clarify whether in a near future you are planning the implementation of 2006 IPCC guidelines for the other sectors? What are the opportunities and constraints?	To the extent our capacities permit, the elements of 2006 guidelines have been used including methodologies and some default emission factors. Our experience with the use of 2006 Guidelines has been good so far. However a wider adoption would require training of inventory preparing teams, enhancing our national systems, and institutional and individual capacity building. These capacity building needs were reflected in the BUR and Technical Analysis of BUR-1 of India, and financial support provided for these will drive implementation of our plans.
General (BUR guidelines)	What are experiences and lessons learned with the application of the BUR guidelines? In the preparation of the BUR, did you find any areas of the guidelines not sufficiently clear or detailed? Which areas should or could be improved in your view?	On non-mandatory requirements, for which Parties are encouraged to provide information; the extent of reporting depends on the support received and capacities. The year of reporting for mitigation actions may be specified since there is a time gap in the implementation of an action/ group of actions and availability of data to report the impacts. More clarity is required on the extent of information to be provided, methodologies guidance for the calculations of emission reductions. The reporting date for BUR may be changed from Dec 31 to January 1 so as to align with that of BR of Annexe-1 Parties.