GHG Platform INDIA

GHG Emission Estimates: 2005 - 2015

Riya Rachel Mohan, CSTEP

26 September 2019

GHG Platform India Workshop 2019 – The Claridges, New Delhi

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About GHG Platform India

2014 Conceptualisation → **2015** Inception → **2016** National Estimates → **2017** Sub-National → **2018+** State Policy/Action

Collective Civil Society Initiative

Independently analysing and tracking **GHG emissions trends**

Filling data **gaps** - national and state level

Improving data **accessibility** - web database

Facilitating policy dialogue and **decision-making**

Assisting with India's **climate mitigation goals**

Using publicly available information

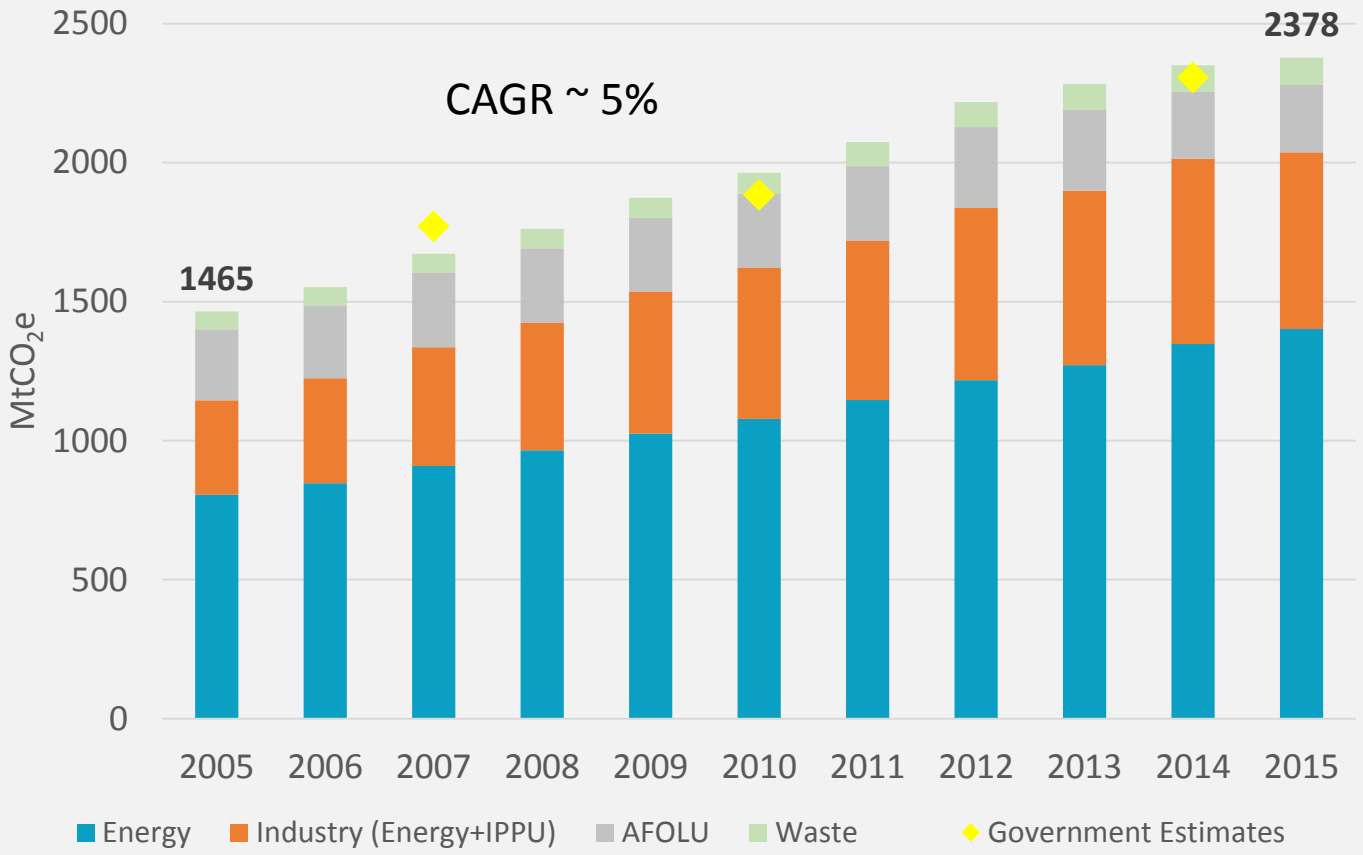
Recognized by the MOEFCC in India's Second Biennial Update Report

Source: GHG Platform India; Available at: http://www.ghgplatform-india.org/

Importance of GHG Inventories

- Identify and prioritise the activities/sectors responsible for GHG emissions
- Develop cost-effective mitigation policies
- Develop Monitoring, Reporting and Verification (MRV) protocols for each policy
- Monitor achievement towards a policy goal

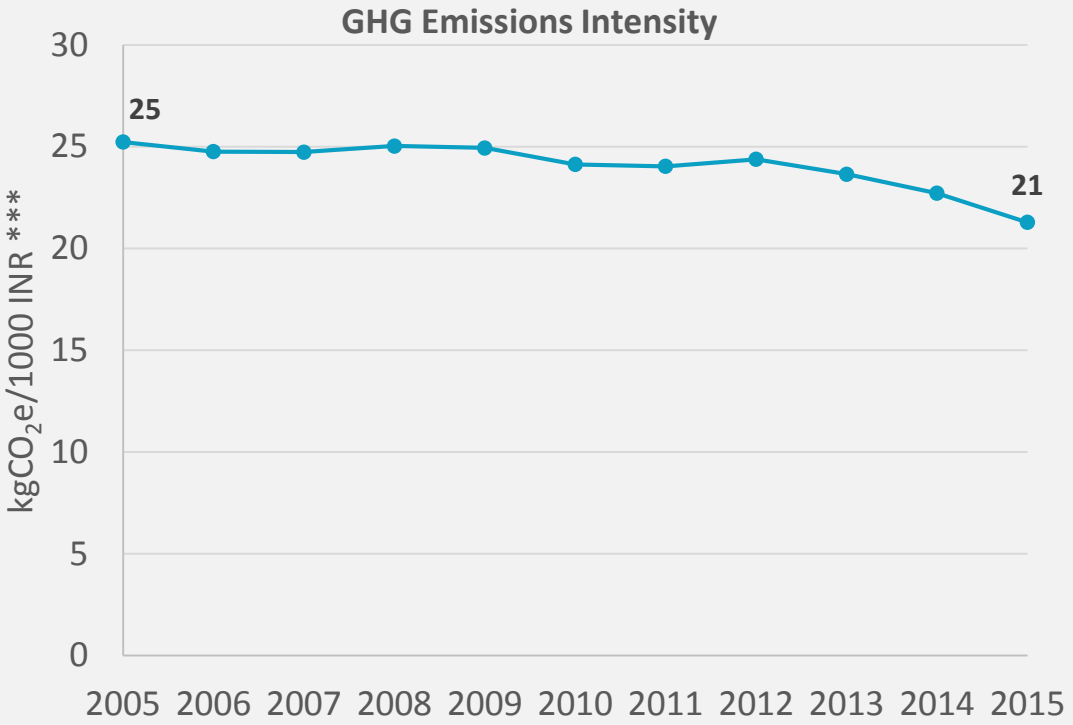
Economy-wide Estimates (2005-2015)

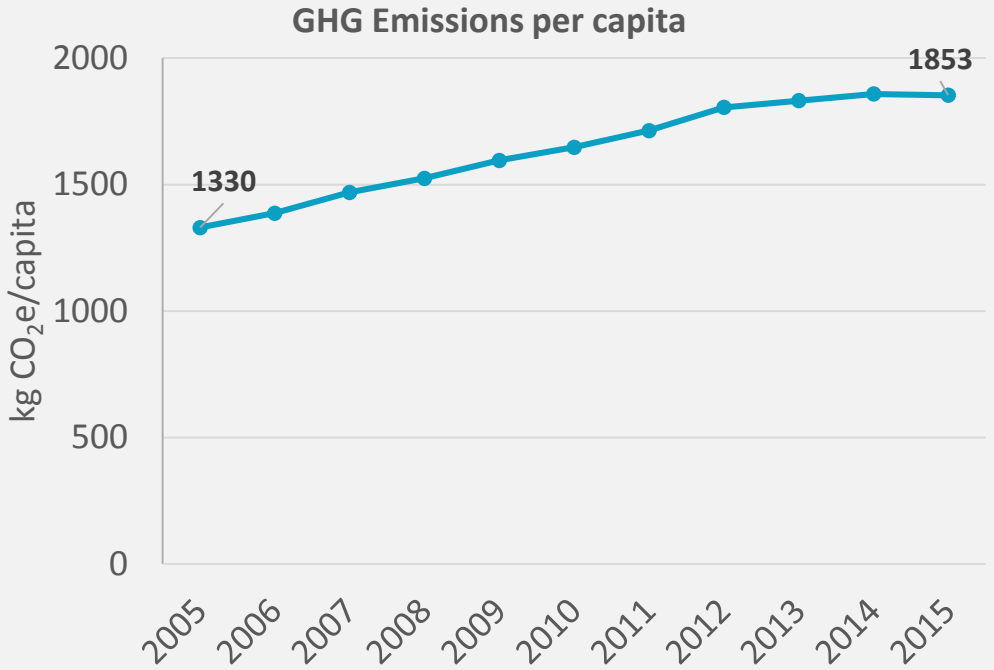


- Energy & Industry are key drivers
  - Energy share increased from **55%** to **59%**
  - Industry share increased from **23% to 27%**
- **2% differential with BUR II estimates**

Source: GHG Platform India Phase 3 estimates

Key Indicators





Voluntary targets (for reduction from 2005 levels):

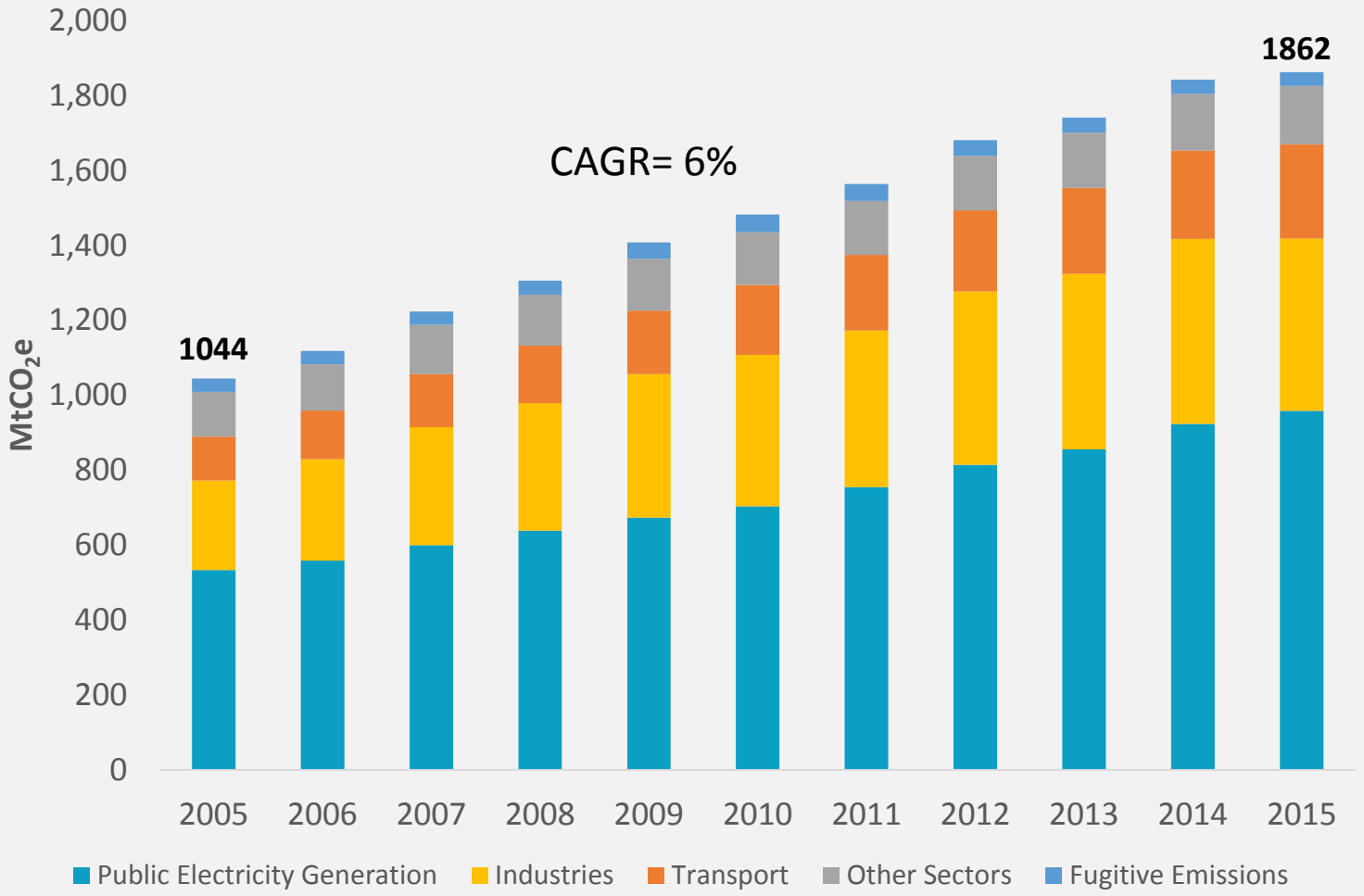
- COP 15 2020 target*: **20-25%**
- NDC 2030 target: **33-35%**

GHGPI progress estimation (till 2015): **16% reduction**

Emissions per capita increased by 40%

* Excluding agriculture **Source: World Bank ***GDP (factor cost) at 2011-12 prices from CSO

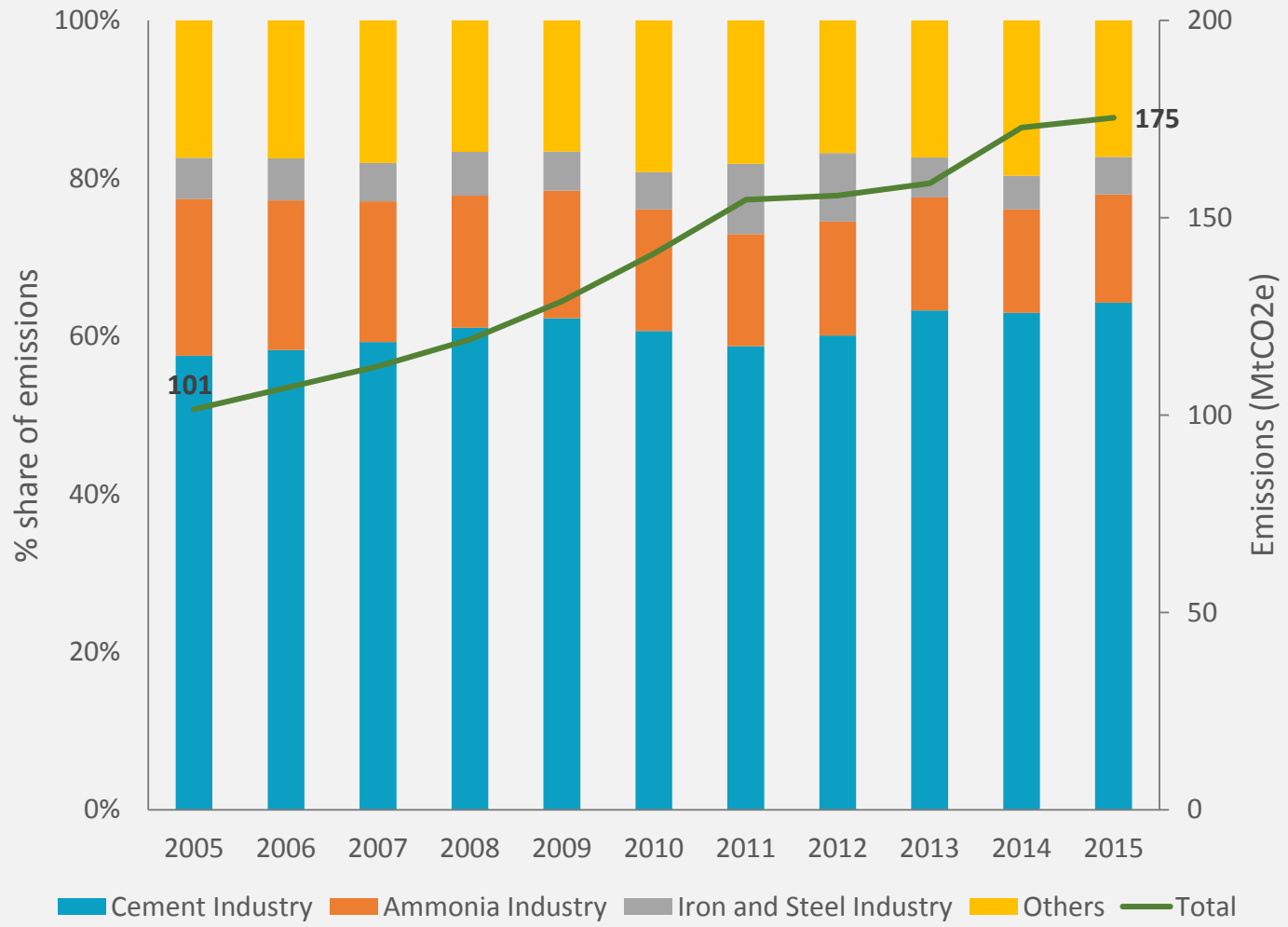
Energy Sector



- **Coal-dominated PEG** contributed to maximum share (51.5%)
- **Grid emission factor** reduced from 0.90 to 0.87 due to **increased RE share**
- LPG demand in cooking sector **doubled**
- Passenger vehicles grew **4 times;** increasing diesel and petrol demand
- Industrial energy-use emissions mainly contributed to by iron and steel industry
- Industrial energy intensity of GDP decreased by **24%.**

Source: Analysis by CSTEP and CEEW

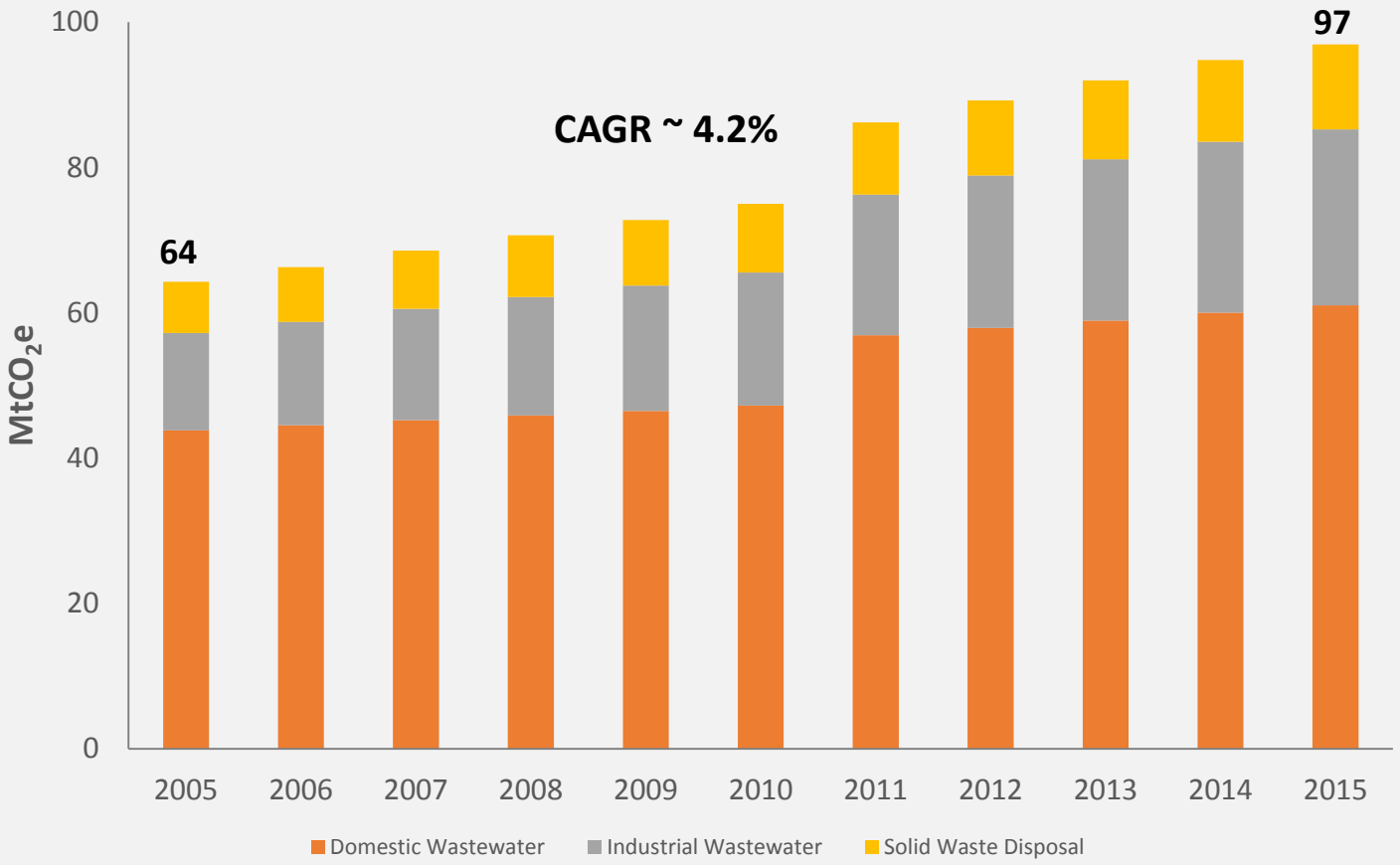
Industrial Processes and Product Use (IPPU) Sector



- Represents **28%** of total industry sector emissions
- Increased from **101** $MtCO_2e$ to **175** $MtCO_2e$ – CAGR of 5.6%
- Cement production is the highest contributor

Source: Analysis by CEEW

Waste Sector



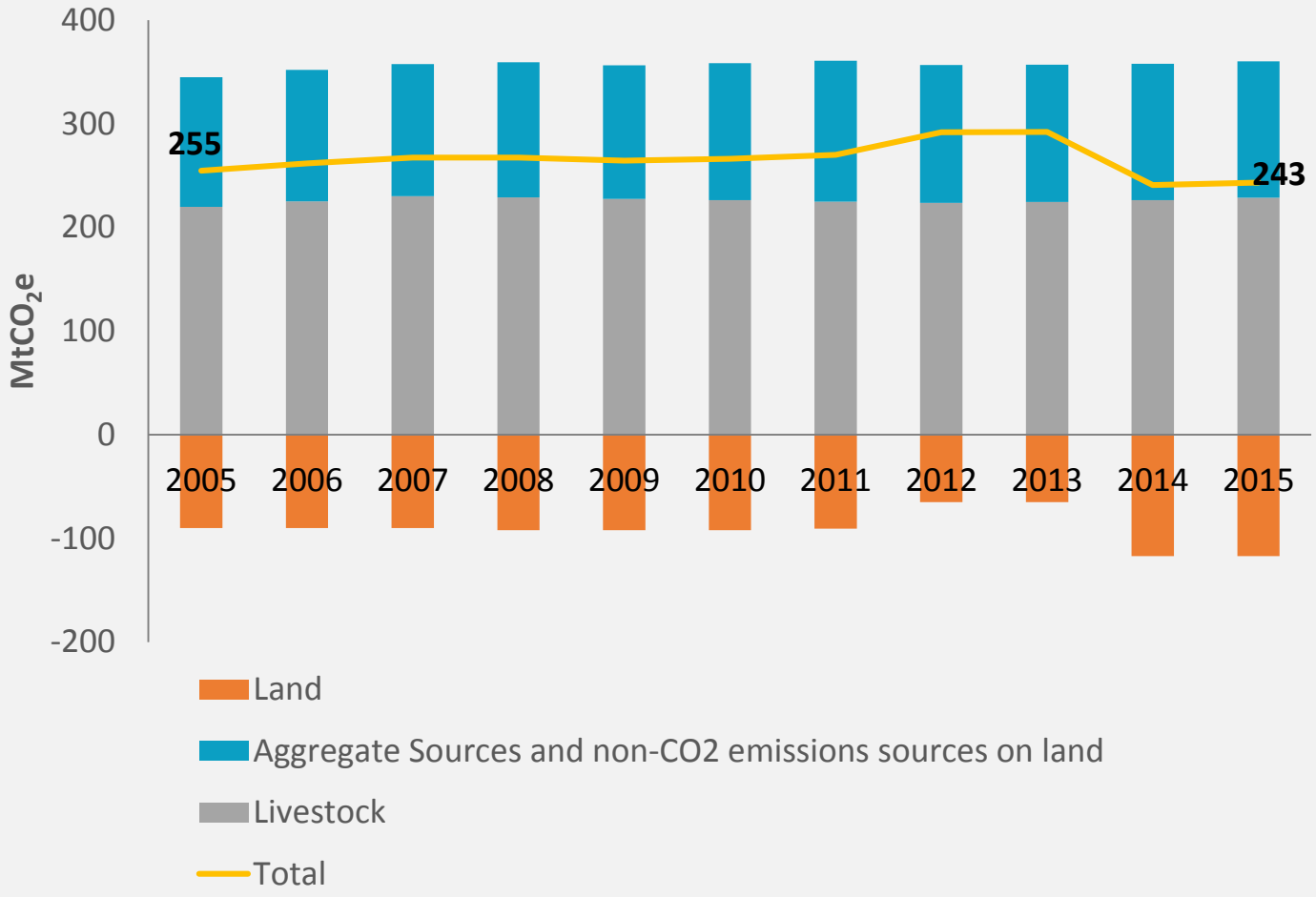
Domestic wastewater highest contributor (63%)

Key drivers:

- Domestic Wastewater: Septic tanks and untreated discharge of wastewater
- Industry Wastewater: Pulp & paper industry
- Solid Waste Disposal: Increasing per capita waste generation and low levels of solid waste processing (~12%)

Source: Analysis by ICLEI South Asia

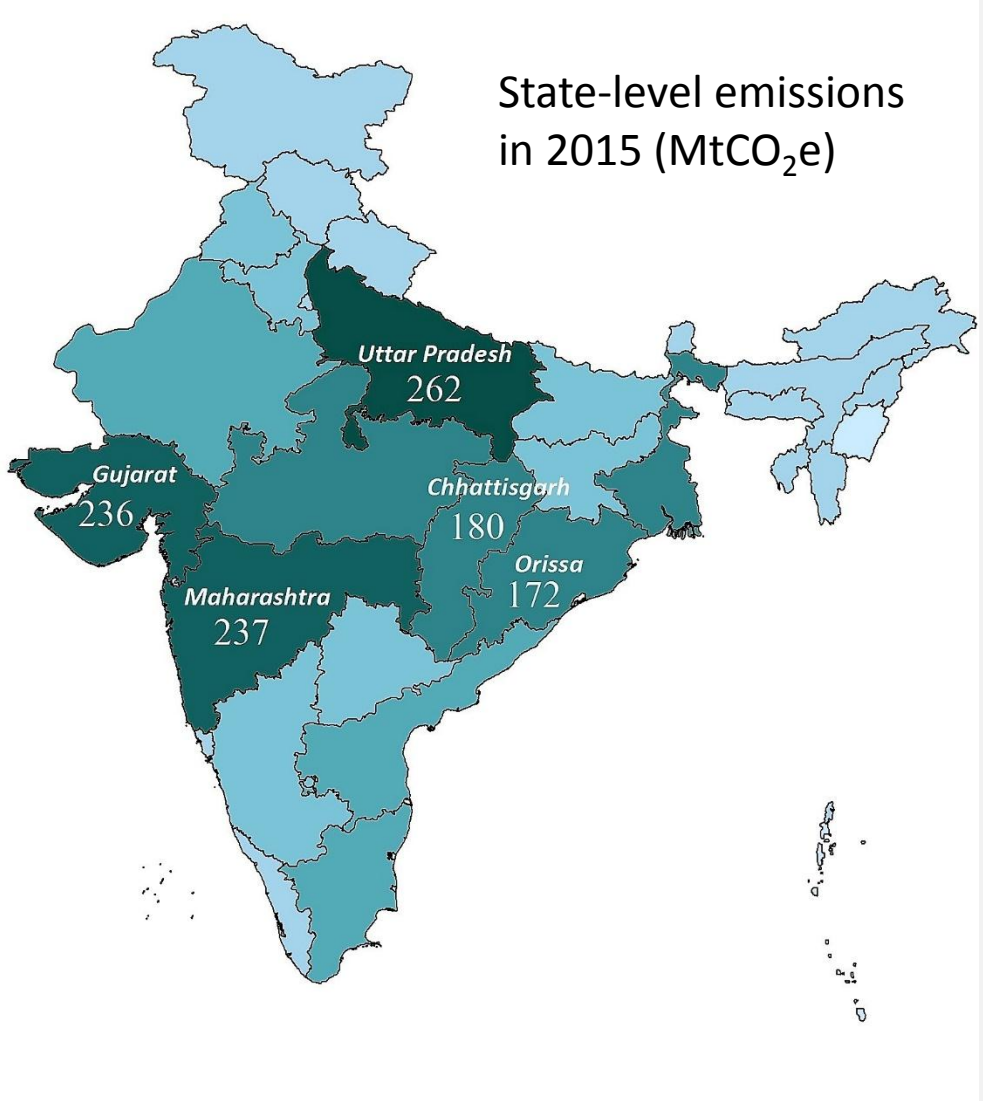
AFOLU sector



- Emissions declined at a CAGR of 0.47% Removals from land increased at a CAGR of 2.12%
- Enteric Fermentation in Livestock was a major contributor of emissions throughout the reference period.
- The removals were primarily governed by the fluctuations in forest area of the country

Source: Analysis by Vasudha Foundation

State-level Emission Estimates



Key drivers: Population and Industrialisation

Chhattisgarh: Electricity generation based emissions almost tripled (2005 – 2015)

Gujarat and Odisha: Industrial emissions increased by 2.5 times (2005-2015)

Lowest GHG emitting states: Kerala and North Eastern states

Net carbon sink state: Manipur

Source: GHG Platform India Phase 3 estimates

Way Forward

Robust inventories

- Collect disaggregated activity data and develop country-specific emission factors
- Periodic, streamlined, accurate reporting to capture on-ground developments and improvements

Climate policies

- Integration of climate action policies with development goals
- Capacity building at state-level to support implementation of GHG mitigation actions

Thank you!

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Potential GHG Impacts of Gujarat State's Policies

Nikhil Kolsepatil, ICLEI South Asia

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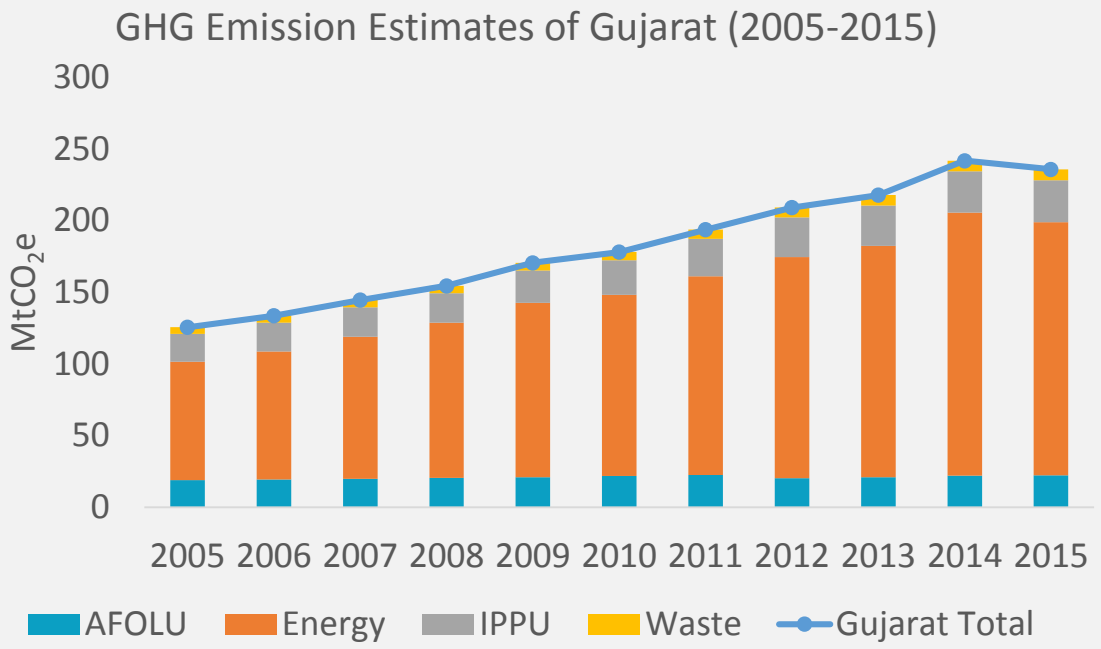
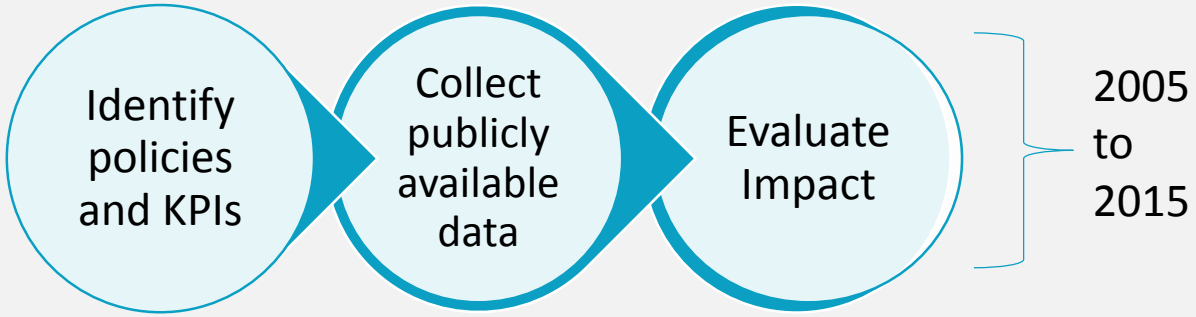
INTRODUCTION



Sector	Share (2015)	CAGR (2005-2015)
Energy	75%	7.9%
IPPU	12%	4.2%
AFOLU	9%	1.6%
Waste	3%	5.0%

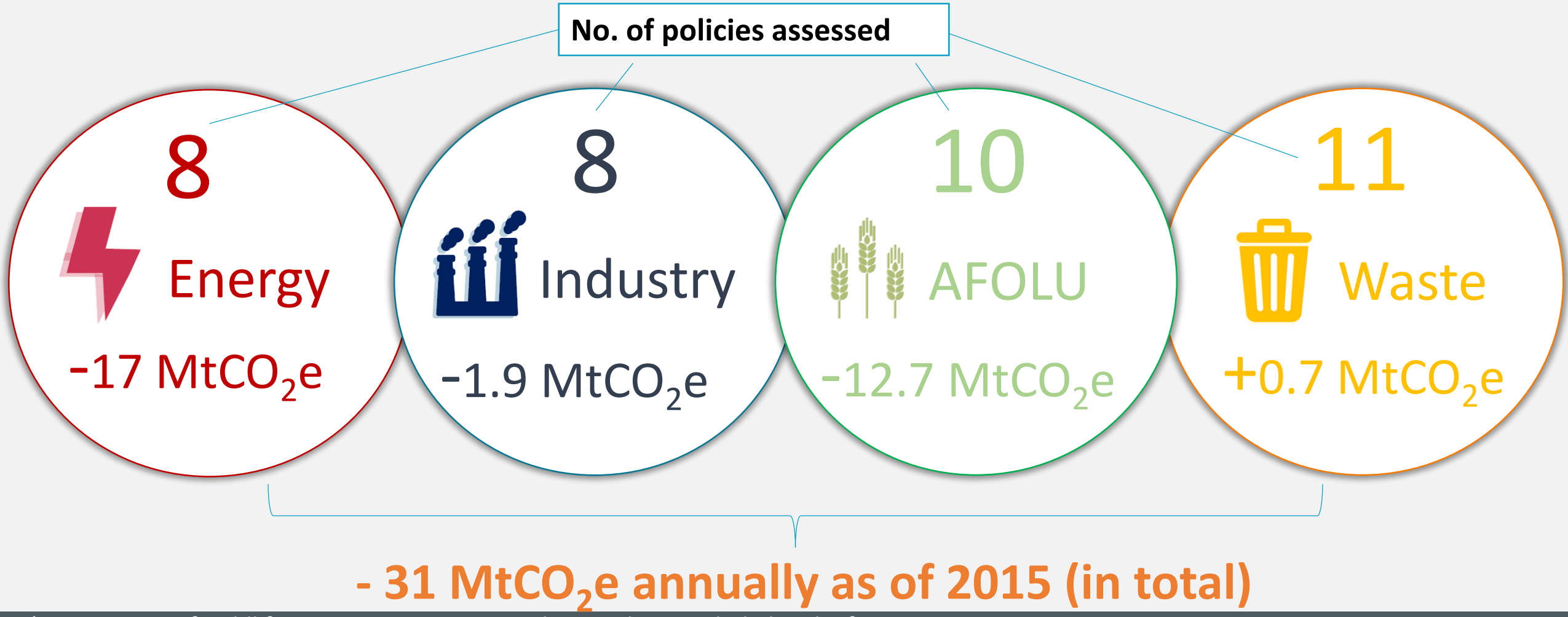
Methodology



Need for Policy Impact Evaluation

- Inform modifications and designs of existing as well as new policies & actions
- Identify the data needs for evaluation of climate impacts of policy action
- Strengthen vertical integration and reporting to better understand state contributions to Nationally Determined Contributions (NDC)

SECTOR-WISE SUMMARY OF POLICIES ASSESSED AND GHG IMPACT



- 31 $MtCO_2e$ annually as of 2015 (in total)

**GHG impact of Wildlife Conservation Act, 1972 has not been included in the figures*

ENERGY SECTOR: SNAPSHOT OF POLICIES ASSESSED

8 policies from supply and demand side helped reduce 54.5 $MtCO_2e$ (2005 – 2015)

Total emission reduction (including electricity generated from large hydro and nuclear) : 113 $MtCO_2e$ (2005 – 2015)

Policy/Action	Sub Sector	Duration Assessed	GHG Impact*
Solar Power Policy- 2009,2015 (2)	Power	2009-2015	4.4 MtCO2e ↓
Wind Power Policy-2007, 2009, 2013 (3)	Power	2007-2015	28.2 MtCO2e ↓
Subsidy Scheme for Residential Rooftop Solar Plants- 2015	Power	2015	0.1 MtCO2e ↓
UDAY Scheme, R-APDRP (2)	Power	2005-2015	7.5 MtCO2e ↓
PAT Scheme for Thermal Power plants -2012	Power	2012-2015	5.7 MtCO2e ↓
Bus Rapid Transit System (BRTS)	Transport	2007-2015	0.6 MtCO2e ↓
UJALA Scheme	Buildings	2007-2015	2.0 MtCO2e ↓
Standards and Labelling Programme	Buildings	2007-2015	6.7 MtCO2e ↓

**GHG impact figures presented are on a cumulative basis over the period of policy implementation*

ENERGY SECTOR: KEY INSIGHTS AND RECOMMENDATIONS

- Slow progress towards MNRE targets (2022) because of lower rate of installation of wind and solar projects
- Extensive open access mechanism, with long-term PPA for RE installation, needs to be facilitated
- Prioritise demand-side management policies and programmes
  - Implement Energy Conservation Building Code (ECBC) in state by-laws
  - Use energy efficient irrigation pumps and solar pumps in agriculture sector
  - Promote e-mobility and provide state level incentives for acquisition of electric vehicles

INDUSTRY SECTOR: SNAPSHOT OF POLICIES ASSESSED

- Only 4 policies with direct GHG mitigation linkage – RTS, PAT I, CDM, LNG Terminal
- Remaining 4 policies indirectly promote EE uptake by offering subsidies/assistance

Policy/Action	Duration Assessed	GHG linkages	GHG Impact*
Rooftop Solar Scheme 2012	2012-2015	Direct	0.022 MtCO2e
PAT Scheme (Phase I)	2012-2015	Direct	2.28 MtCO2e
Clean Development Mechanism	2004-2015	Direct	11.16 MtCO2e
LNG Terminal Policy 2012	2012-2015	Direct	Not estimated due to data gap
Interest Subsidy for Technology Upgradation	2004-2015	Indirect	Not estimated due to data gap
Subsidy for Quality Certification (ISO 9000)	2004-2015	Indirect	Not estimated due to data gap
Technology and Quality Upgradation Support to MSMEs (TEQUP)	2010-2015	Indirect	Not estimated due to data gap
Credit Linked Capital Subsidy Scheme (CLCSS)	2004-2015	Indirect	Not estimated due to data gap

**GHG impact figures presented are on a cumulative basis over the period of policy implementation*

INDUSTRY SECTOR: KEY INSIGHTS AND RECOMMENDATIONS

- Expanding and deepening PAT scheme for energy intensive sectors can accelerate mitigation impacts–*significant potential exists in textile and cement sectors*

- Incentivize industries to take up fuel switch and EE projects through PAT or other carbon reduction mechanisms–*represented only 9% of total registered CDM projects from 2005 to 2015*

- Targeted policy and regulatory instruments can enable Rooftop Solar uptake across industries**–***RTS in industry spiked from 48 to 146 MW in 2017-18, driven by Net Metering Regulations (2016) & prescription of timelines that helped fast-track RTS installation*

- Energy audit should be made mandatory for medium and small scale industries**–***programmatic approach will help policymakers identify bottlenecks and opportunities to intervene at scale*

- Fuel prices need to reflect the true cost of their environmental impact**–***revise existing taxation system to penalize polluting fuels and incentivize cleaner ones*

AFOLU SECTOR: SNAPSHOT OF POLICIES ASSESSED

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Policy/Action	Duration Assessed	GHG Impact*
Social Forestry Scheme	2005-06 to 2015-16	4.7 MtCO2e ↓
Soil & Moisture Conservation (SMC)	2015-16	8.3 MtCO2e ↓
Diversion of forests for non-forest purpose under the Forest Conservation Act, 1980	2005-06 to 2015-16	0.2 MtCO2e ↑
Wildlife Protection Act, 1972	2005-06 to 2015-16	121.3 MtCO2e ↓
National Food Security Mission	2007-08 to 2011-12	0.002 MtCO2e ↑
National Mission on Micro Irrigation	2005-06 to 2012-13	0.006 MtCO2e ↑
Pradhan Mantri Ujjwala Yojna	2016 to 2019	2.31 MtCO2e ↓

Limited information to assess GHG impact for Fodder and Feed Development Programme, Cattle and Buffalo Development Programme, and Soil Health Card

**GHG impact figures presented are on an annual basis*

AFOLU SECTOR: KEY INSIGHTS AND RECOMMENDATIONS

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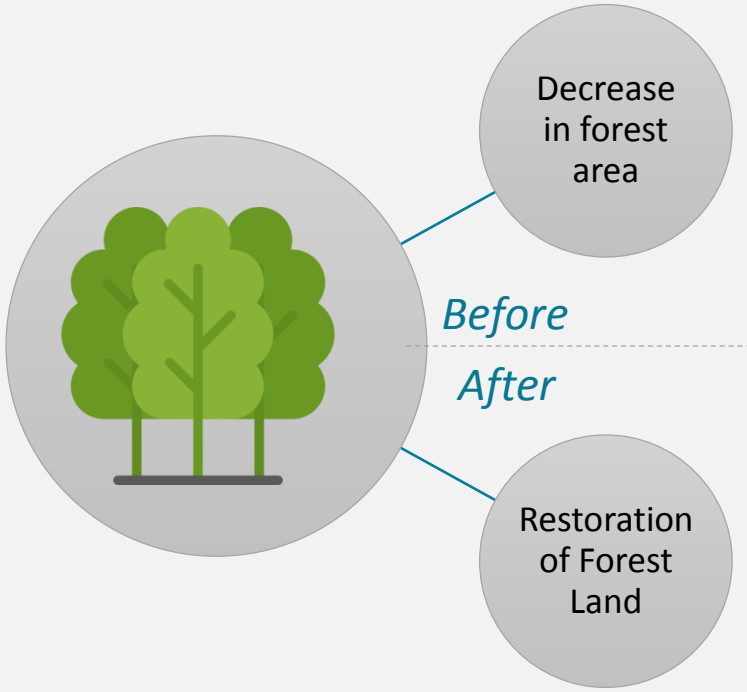
Opportunities from Afforestation Schemes



- Reduction in total biomass
- Decrease in net removals from forests

- Enhanced biomass and soil organic carbon
- Creation of an additional carbon sink of 13 MtCO2e

Key Recommendations

- Implementation of more vigorous efforts to enhance the existing carbon sink
- Develop strategies to increase livestock productivity and reduce livestock population
- Rationalized use of fertilizer
- Avoid indiscriminate use of irrigation facilities and not expand the area under crops such as paddy with high GHG emission footprint
- Promote the adoption of sustainable rice management practices in areas that grow paddy
- Wherever possible, switch to less emission intensive crops like millets
- Promote R&D to develop state specific emission factors

WASTE SECTOR: SNAPSHOT OF POLICIES ASSESSED

Policy/Mitigation Action	Duration Assessed
Municipal Solid Waste Management Project	2007-2015
Total Sanitation Campaign	2007-2010
Nirmal Bharat Abhiyan (Clean India Campaign)	2012-2014
Integrated Low Cost Sanitation Scheme	1980-2007
Nirmal Gujarat Sauchalaya Yojana	2008-2010
Pay and Use Toilet Scheme	2005-2015
Mahatma Gandhi Swachata Mission, Gujarat	2015-16
UIG and UIDSSMT Scheme	2005-2014
National River Conservation Programme (NRCP)	1995-2017
Swarnim Jayanti Mukhya Mantri Shaheri Vikas Yojana	2009-2015

Scale of Implementation

GHG impact*

Vermi-composting
+ 1167 tonnes per day
----> 0.0002 $MtCO_2e$ ↓

Household latrines
+ 3.8 million
Community latrines
+ 8,000
----> 0.31 $MtCO_2e$ ↑

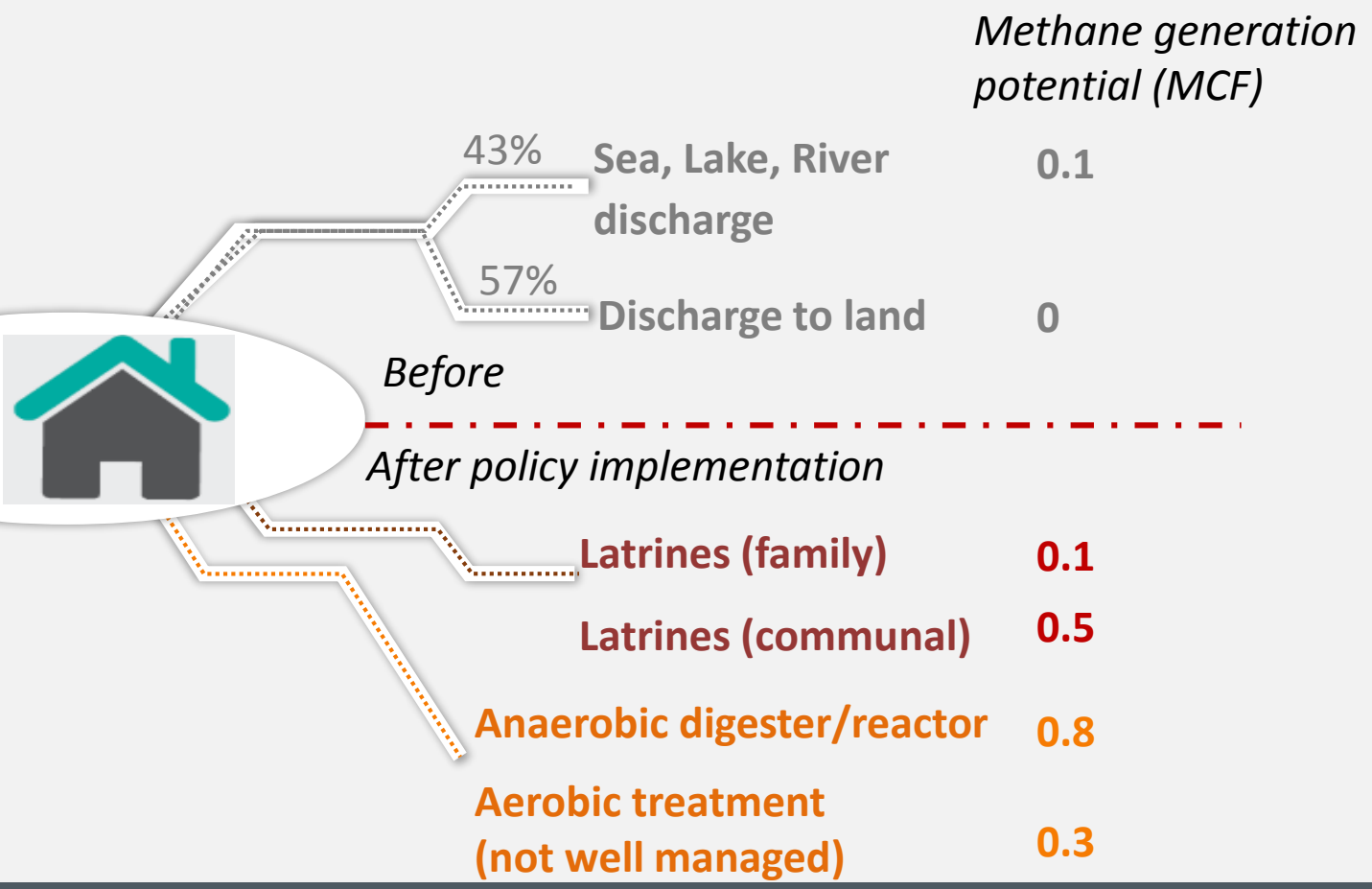
Centralized sewage treatment capacity
+ 1500 Million lit. per day
----> 0.35 $MtCO_2e$ ↑

No information available on policies impacting industrial wastewater

**GHG impact figures presented are on an annual basis*

WASTE SECTOR: KEY INSIGHTS AND RECOMMENDATIONS

Higher methane generation from improved sanitation offers an opportunity



Key Recommendations

- Policy actions deliver improvements in sanitation and social benefits and lead to carbon-lock in as well
- Significant potential to integrate low carbon solutions during infrastructure creation
  - Adoption of methane recovery systems in centralized and decentralized anaerobic treatment
  - Improved performance management of aerobic STPs

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Madhya Pradesh Mitigation Action Plan (2021-2030)

Presented By

Deepa Janakiraman

CEEW

26 September 2019

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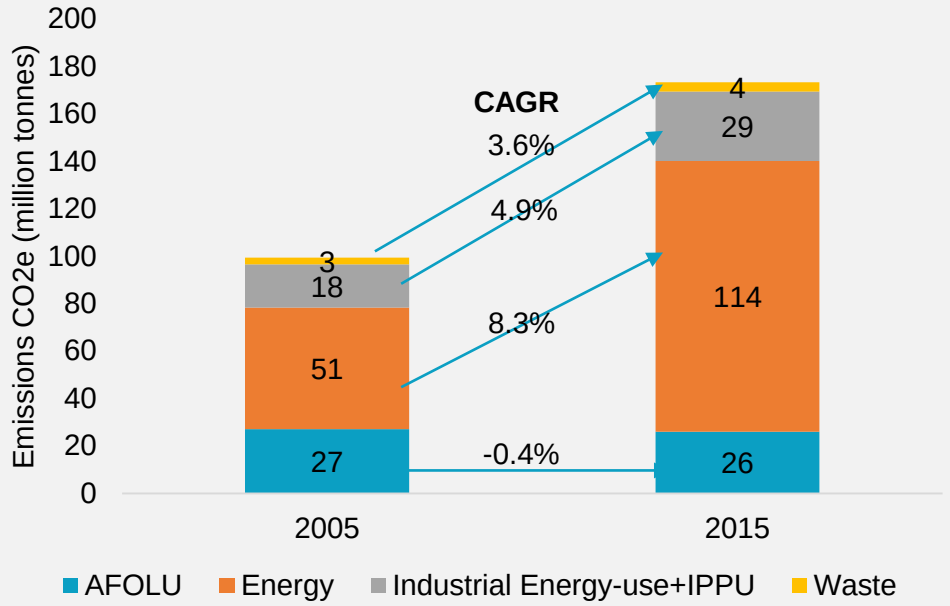
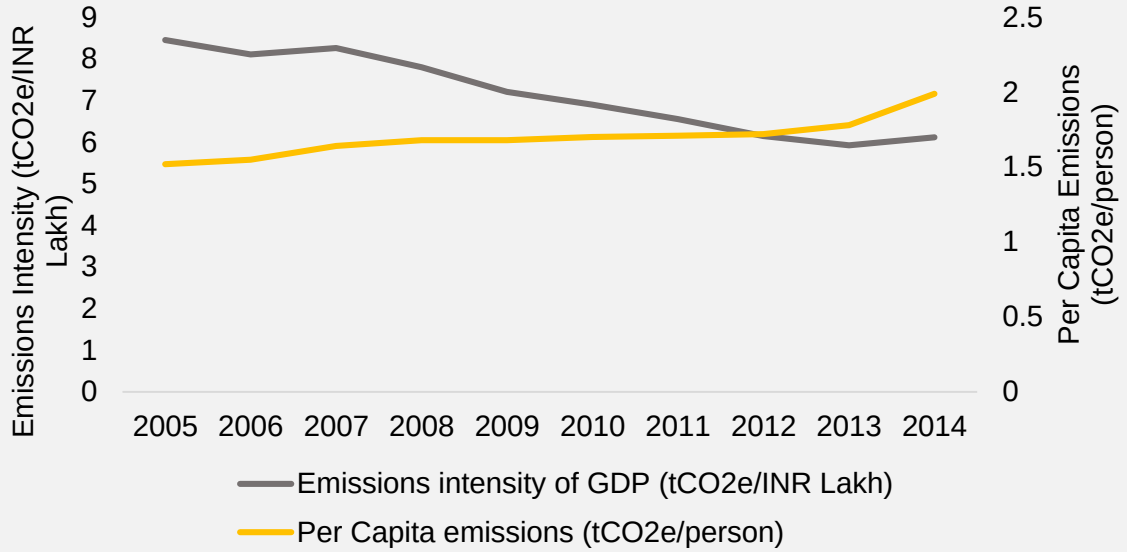
MADHYA PRADESH DISPLAYS THE FOURTH HIGHEST GROWTH RATE IN GDP

Key economic drivers of GDP

- Agriculture and mining – 47%
- Manufacturing – 8%
- Services (with construction) – 45%



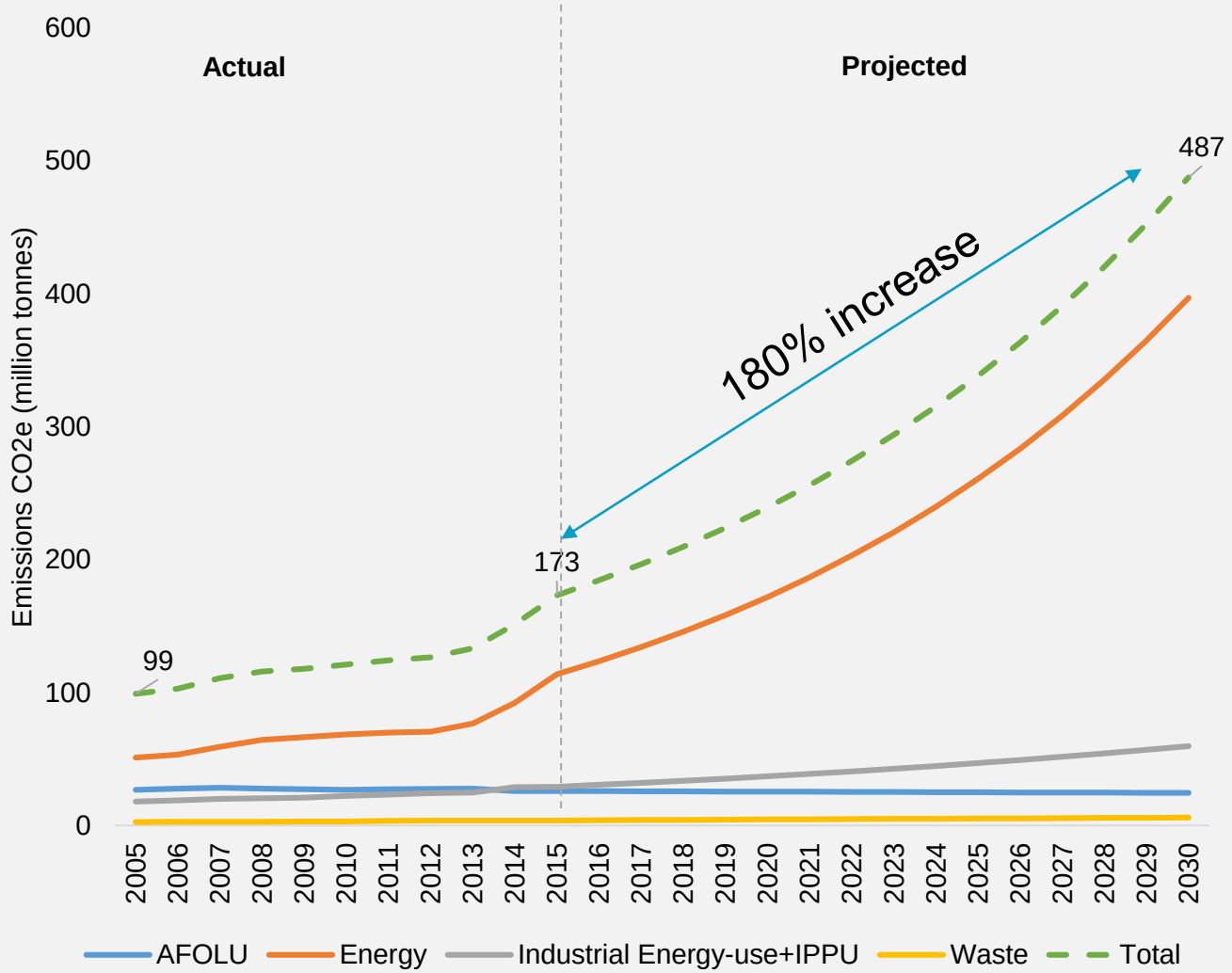
Emissions increased from 99 MTCO2e in 2005 to 173 MTCO2e in 2015 at a CAGR of 5.7%



- Emissions intensity (tCO2e/INR lakh) shows a downward trend reducing at a CAGR of 3.5% between 2005 and 2014
- Per capita emissions displays an increasing trend at 3% CAGR between 2005 and 2014

Source: GHG Platform India analysis (draft)

PROJECTED EMISSIONS (BAU) INDICATE AN INCREASE OF 7% ANNUALLY BETWEEN 2015 AND 2030



- Energy sector emissions to increase more than three-folds between 2005 and 2015
  Key driver – Power generation

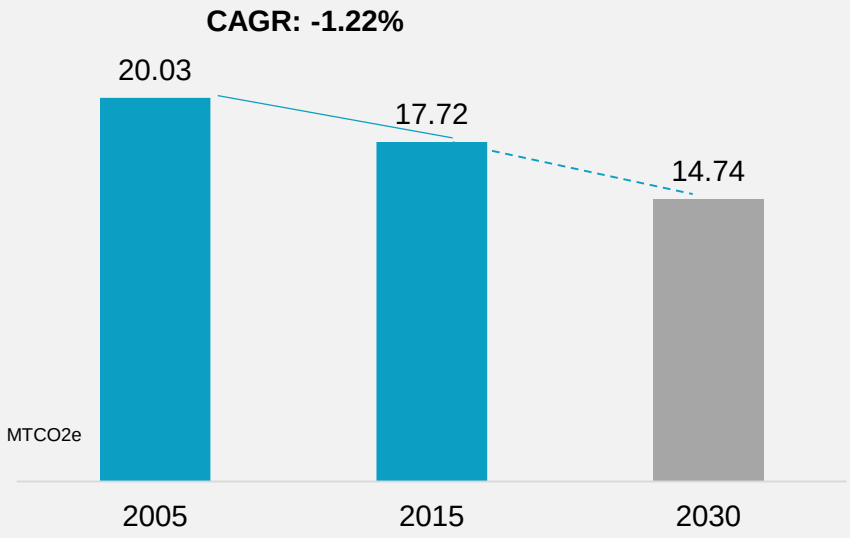
- Industrial energy-use and IPPU emissions are projected to increase two-folds by 2030 from 2015 levels
  Key drivers – Cement, Aluminium and Refining

- AFOLU is the only sector that displays a negative trend, emissions will reduce by 5% between 2015 and 2030
  Key drivers – Livestock (positive emissions)
  Forestry (Negative emissions)

- Waste sector emissions are projected to increase by 1.5 times in 2030 from 2015 levels
  Key driver – Domestic Wastewater and Solid Waste

Source: GHG Platform India analysis (draft)

AFOLU Sector: Livestock



Emission drivers (2005-2015)

- Enteric Fermentation in bovine animals, mainly cattle.

Existing State Actions

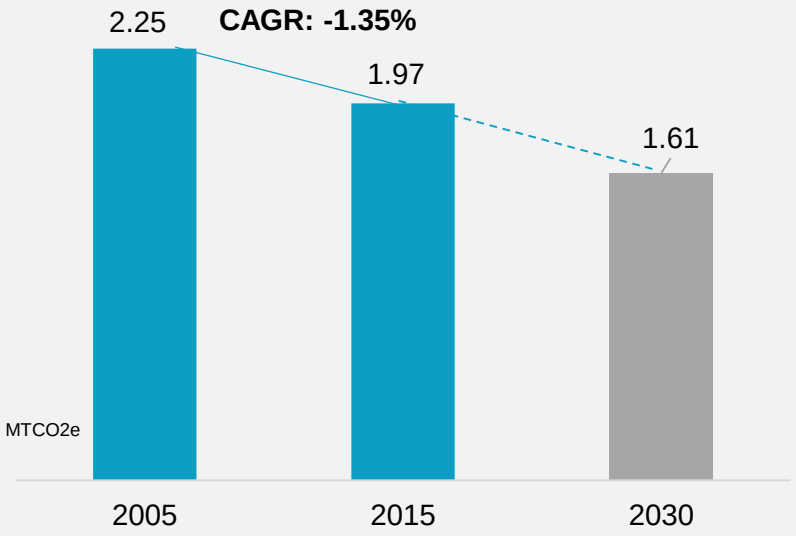
3 policies viz. (Breed Improvement, Accelerated Fodder Development and Vats Palan Yojna) could have a bearing on emissions from the Livestock Sector

Mitigation Opportunities

- Feed Improvement
- Increased productivity and reduced population
- Quantifying the mitigation potential of the proposed actions is uncertain due to inadequate data

Source: Vasudha Foundation analysis (draft)

AFOLU Sector: Land



Emission drivers (2005-2015)

- Diversion of forest land for non forest purposes

Existing State Actions

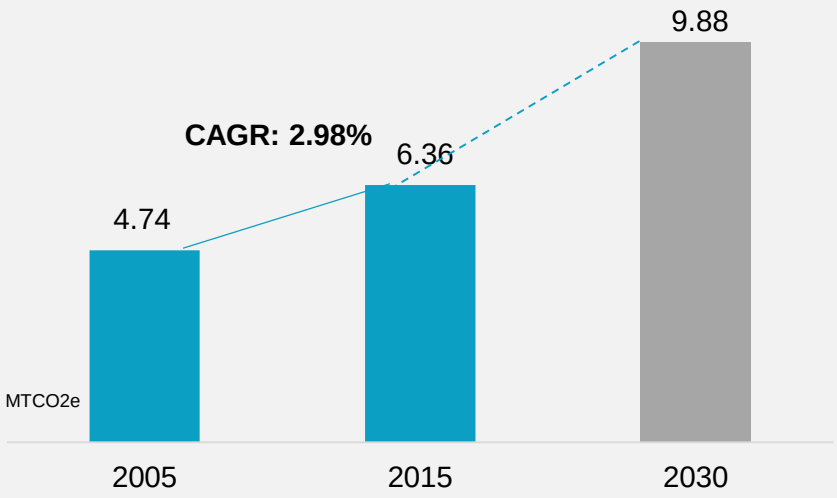
Current policy impact evaluation – A total of five policies were found to reduce **14.28 MTCO2e** per annum (excluding Wildlife Protection Act)

Mitigation Opportunities

- Minimizing diversion of forest land
- Expand protected area network
- Maximize afforestation on non forest land through social forestry schemes.
- Implementation of these actions has a mitigation potential of **138.26 tCO2e/ha/annum**

Source: Vasudha Foundation analysis (draft)

AFOLU Sector:
Aggregate Sources and non-CO_2 emissions sources on land



Emission drivers (2005-2015)

- Rice Cultivation
- Agriculture Soils

Existing State Actions

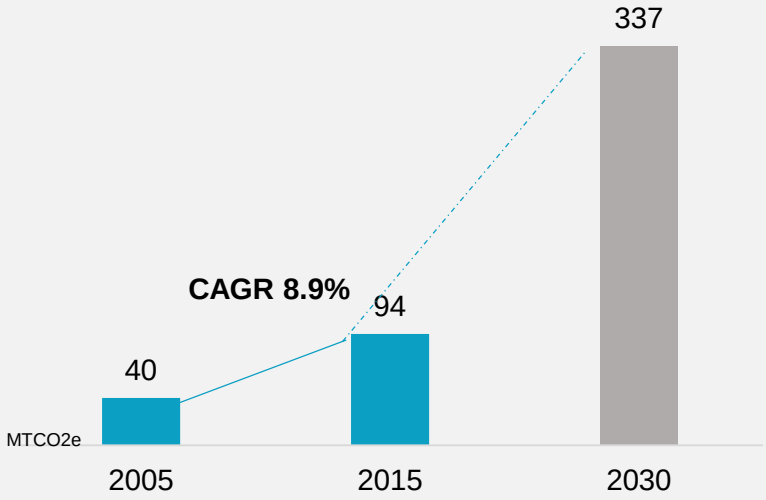
- Current policy impact evaluation – 3 policies viz. (National Food Security Mission, Soil Health Card and National Mission on Micro Irrigation) have a bearing on emissions from the Agriculture sector.
- However, quantification of impacts of these policies is uncertain due to inadequate data

Mitigation Opportunities

- Regulation of area under rice
- Rationalization/ Minimization of fertilizer usage
- More efficient methods of rice cultivation can lead to mitigation of approximately **4.88 MTCO2e** per annum. Minimized fertilizer consumption could further lead to emission reduction.

Source: Vasudha Foundation analysis (draft)

Energy Sector: Public Utilities



Emission drivers (2005-2015)

- Coal based electricity generation forms almost the entirety of emissions from power generation in the state.
- Installed capacity of coal fired plants increased from 4 GW in 2005 to 8 GW in 2015

Existing State Actions

- State specific RE policies accelerated RE installations
- MP Policy for Decentralized Renewable energy -2016 and RESCO model: Increased RTPV installations
- RE installations increased from 36 MW in 2005 to 2,647 MW in 2015 (12% share of total installed capacity in 2015)
- Rewa Ultra Mega Solar (RUMS) project accounting for 750 MW is the first project to break the grid parity barrier
  - Reverse bidding in RUMS resulted in tariff of INR 2.97/kWh
- RE installation (2.6 GW in 2015) led to highest amount of CO_2 savings
- T&D loss reduced from 43.48% to 26.01% between 2005-15

Total CO_2 savings in power sector between 2005-15 is **95 MTCO2e**

Proposed Mitigation Actions

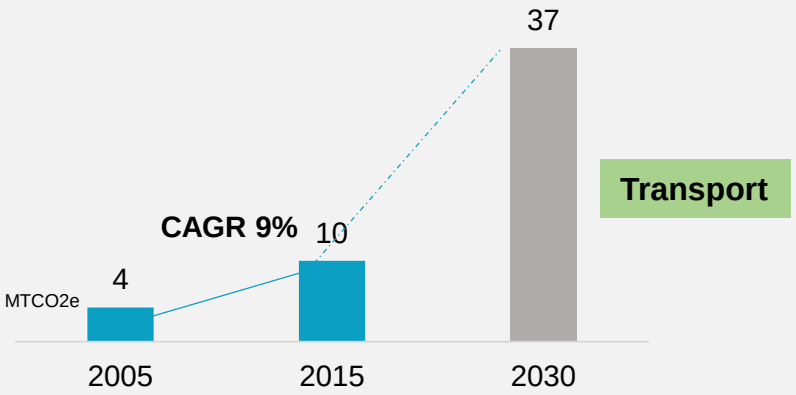
- Increase RE installed capacity at rate of 1.6 GW per year
  - Extensive open access mechanism with long term PPA to accelerate RE installation
- Reduce T&D loss by to 13% by 2030
  - With smart meters
  - Introduce High Voltage Distribution System (HVDS)

Total emissions mitigation potential (2019-2030) – **268 MTCO2e**

Total mitigation from T&D improvement alone (2019-2030) – **14 MTCO2e**

Source: CSTEP analysis (draft)

Energy Sector: Transport and Buildings



Emission drivers (2005-2015)

- Diesel and motor spirit use in transport is the key driver of emissions from the sector
- Residential use of kerosene and LPG is the key driver for emissions in the buildings sector

Existing State Actions

- UJALA scheme and Standards and Labelling scheme are the major mitigation action in buildings
- Key mitigation action in transport is Bus Rapid Transit System (BRTS)

Total emissions mitigation (2012-2018) – **14 MTCO2e**

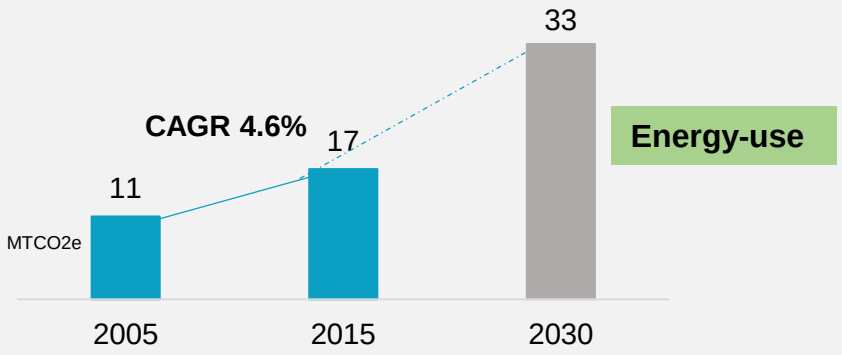
Proposed Mitigation Actions

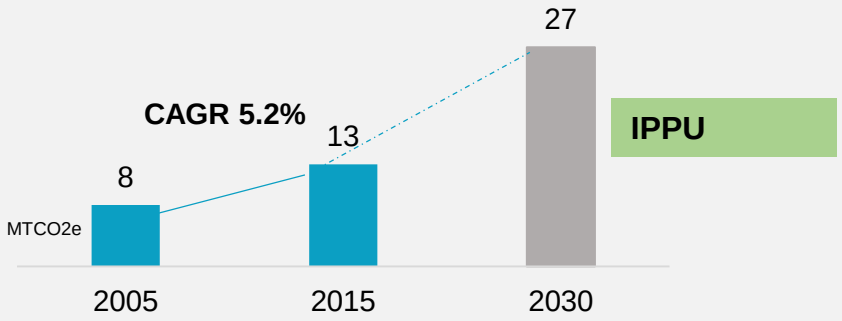
- Introduction of Energy Conservation and Building Code (ECBC) in residential and commercial sector
- Continue UJALA scheme and Standards and Labelling scheme
- Expand BRTS and metro system

Total emissions mitigation (2019-2030) – **150 MTCO2e**

Source: CSTEP analysis (draft)

Industrial Energy-use and IPPU





Emission drivers (2005-2015)

- 3rd largest producer of cement in India, caters to 13% of national demand
- Aluminium production and petroleum refining
- Coal and lignite contributes to more than 80% of fuel combustion emissions

Existing State Actions

- **Total Emissions Mitigated (2005-2018): 6.72 MTCO2e**
  - 2016 Policy for Rooftop Solar **0.07 MTCO2e**
  - PAT – Cycle I **1.03 MTCO2e**
  - PAT – Cycle II **1.46 MTCO2e**
  - Clean Development Mechanism **4.16 MTCO2e**

- **Schemes with indirect impact on emissions mitigation**:
  - Technology Upgradation Fund Scheme
  - Technology and Quality Upgradation Support (TEQUP) for MSMEs
  - Credit Linked Capital Subsidy Scheme (CLCSS) for technology upgradation
  - Zero Defect, Zero Effect (ZED) scheme
  - ISO 9000/14001

Source: CEEW analysis (draft)

Industrial Energy-use and IPPU

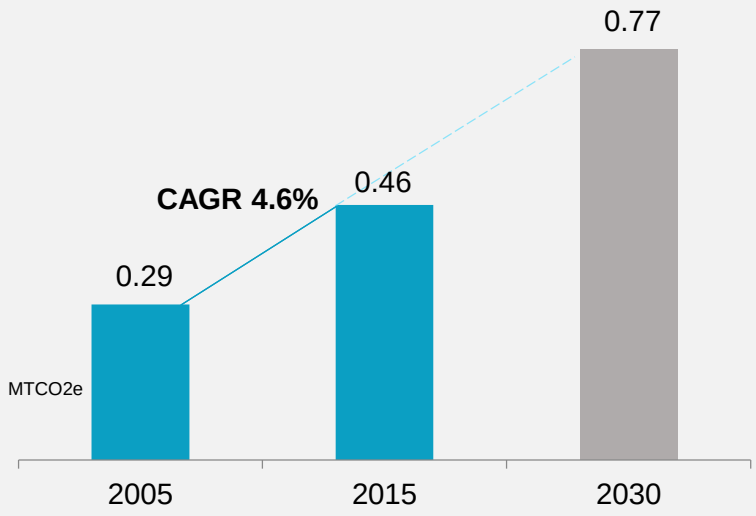
Mitigation opportunities

	High	Medium	Low
Actions	• Waste derived fuels in cement sector • State awards on emissions intensity improvement by industries	• Promote biogas in select sectors • Promote industrial rooftop • R&D technology and demonstration centers • Mandatory energy audits	Awareness and training on energy monitoring/conservation
Emissions Mitigation	• RDF – 2.27 MTCO2e • State awards – Not estimated	• Biogas – 0.54 MTCO2e • Industrial rooftop – 1.18 MTCO2e • R&D – 2.28 MTCO2e • Energy audits – Not estimated	Training – Not estimated

Total mitigation (by 2030):
6.67 MTCO2e

Source: CEEW analysis (draft)

Waste Sector: Solid Waste



Emission drivers (2005-2015)

- Rising per capita waste generation rates
- Low levels of solid waste processing (~12% in 2015) leading to high MSW volumes going to disposal

Existing State Actions

- **M.P. Action Plan on MSW Management, 2018**: cluster-based approach for integrated MSWM and waste to energy & composting in 26 clusters (378 ULBs) with PPP focus- *driving improvements in MSW*
- Treatment/processing (2018) : 31.5%
- 6 disposal sites converted to scientific landfills
- MSW processing facilities operational in 3 clusters (900+ TPD capacity)
- Recognized as best performing state for MSW in Swacch Survekshan

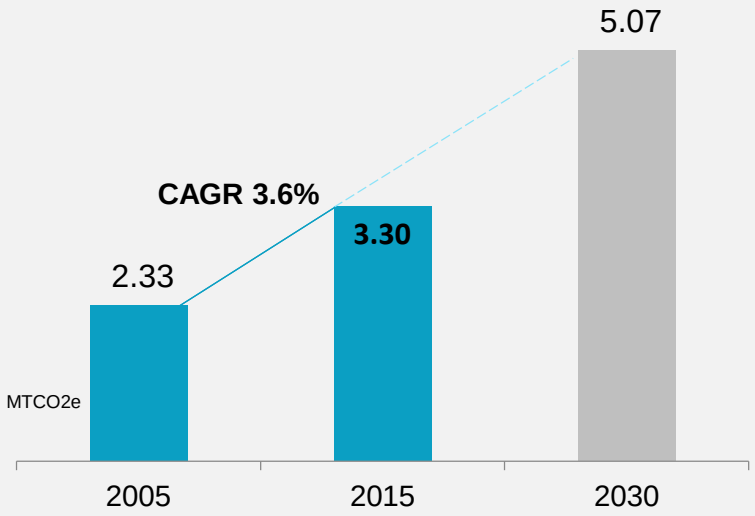
Mitigation Opportunities

- Fast-track setup of proposed waste to energy and compost plants in all 26 clusters
- 100% segregated door to door waste collection
- Scientific closure of dumpsites, construction of sanitary landfills
- Processing existing legacy waste in dumpsites
- Regulate and manage construction and demolition (C&D) waste, plastic waste, and recyclables

0.51 ↓ MTCO2e per year (as on 2030)

Source: ICLEI South Asia analysis (draft)

Waste Sector:
Domestic Wastewater



Emission drivers (2005-2015)

- Septic tanks and untreated discharge of wastewater are primary emission sources
- Low sewer network coverage (~11% in 2015 in urban areas)
- Inadequate sewage treatment (15% of total generation in 2015)

Existing State Actions

- Improved sanitation and treatment capacity from 2005 -2015:
  75 lakh household latrines ↑ 424.15 MLD of treatment ↑
- M.P. Policy for Wastewater Recycling and Faecal Sludge Management, 2017
- AMRUT targets 50% sewer network coverage by 2020
- Large treatment capacity augmentation underway (~1500 MLD under construction)
- Increase in emissions of **2.2 MTCO2e** observed between 2005 and 2015

Mitigation Opportunities

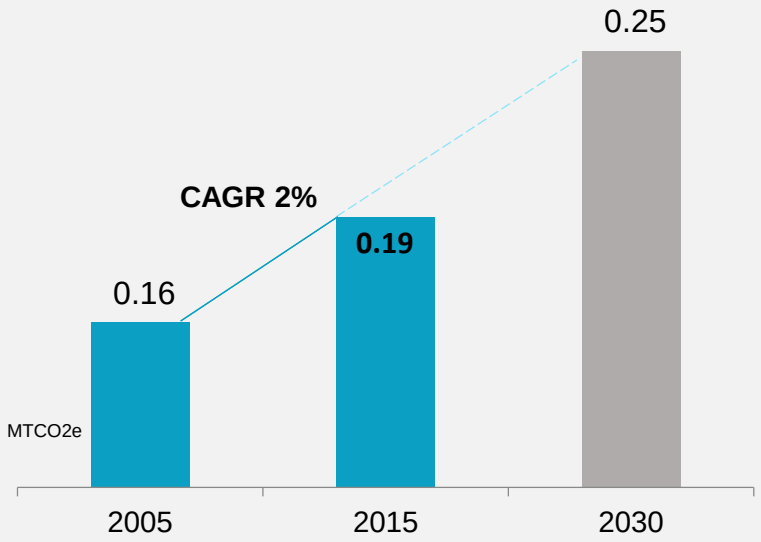
- Adopting methane recovery in anaerobic treatment STPs
- Improved management of aerobic STPs
- Expand sewer network in sync with treatment capacity augmentation
- Promote decentralized treatment solutions
- Connect septic tanks to sewer network
- Promote recycling/reuse of wastewater

1.79 ↓ MTCO2e per year (as on 2030)

MLD- million liters per day

Source: ICLEI South Asia analysis (draft)

Waste Sector: Industrial Wastewater



Emission drivers (2005-2015)

- Pulp and Paper and Fertilizer industry with high organic wastewater volumes (~90% of emissions)

Existing State Actions

- Industrial Promotion Policy, 2014
  - Offers capital subsidy for wastewater management, water conservation solutions
  - Promotes common effluent treatment facilities with private sector participation
- Adoption of zero liquid discharge solutions sought by MPPCB

Mitigation Opportunities

- Methane recovery from anaerobic systems
- Reduction of process wastewater generation at source (pre-effluent treatment)
- Prioritize actions in Pulp and Paper and Fertilizer units
- Expand to Dairy, Meat, Sugar and Tannery units afterwards

0.45 ↓ MTCO2e per year (as on 2030)

Source: ICLEI South Asia analysis (draft)

CONCLUSION

- **AFOLU** – Effective implementation of policies will aid in maintaining a similar forest cover over the years from 2019 to 2030 – it will mitigate 45.1% of the emissions in 2030 (BAU). Further reduction is possible by reducing the headcount of non-productive livestock. Efficiency in cultivation of paddy will lead to further reductions.

- **Energy -** Schemes towards promotion of RE, reduction of T&D losses, ECBC, expansion of Ujjala, and BRTS will mitigate 9% of emissions from the energy sector in 2030 (BAU)

- **Industry Energy-use and IPPU -** Increased usage of alternate fuels, alternate cement (LC3), and energy efficiency measures will result in mitigation of 11% of manufacturing emissions in 2030 (BAU)

- **Waste -** Enabling setting up of waste to energy and compost plants, methane recovery in anerobic treatment STPs, and promoting reuse of wastewater among other measures will help in mitigating 45% of waste sector emissions in 2030 (BAU)

ALIGNING WITH SUSTAINABLE DEVELOPMENT GOALS

GHG Platform INDIA

GHG Platform INDIA

CEEW THE COUNCIL

CIMMYT International Maize and Wheat Improvement Center

STEP CENTER FOR STUDY OF SCIENCE, TECHNOLOGY & POLICY

ICLEI Local Governments for Sustainability

VASUDHA FOUNDATION Green ways for a good earth!

WRI INDIA

An initiative supported by

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WRI INDIA

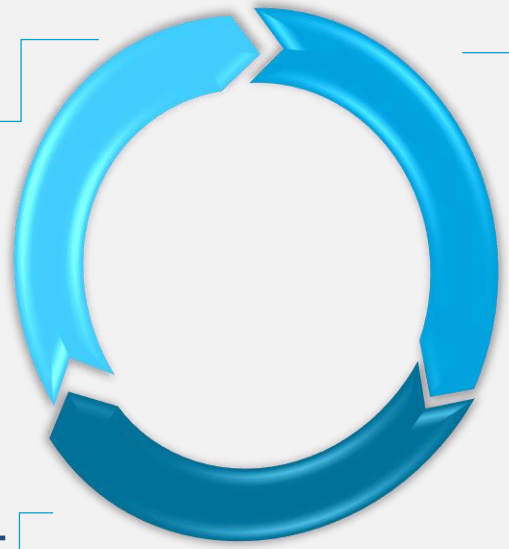
OVERVIEW OF METHODOLOGY AND PEER REVIEW PROCESS

Date: 26 Sep 2019

ABOUT WRI INDIA & ITS APPROACH

WRI INDIA

WRI INDIA is a research organization that turns big ideas into action at the **nexus of environment, economic opportunity and human well-being.**



Count It

Collect Data and Analyze Findings

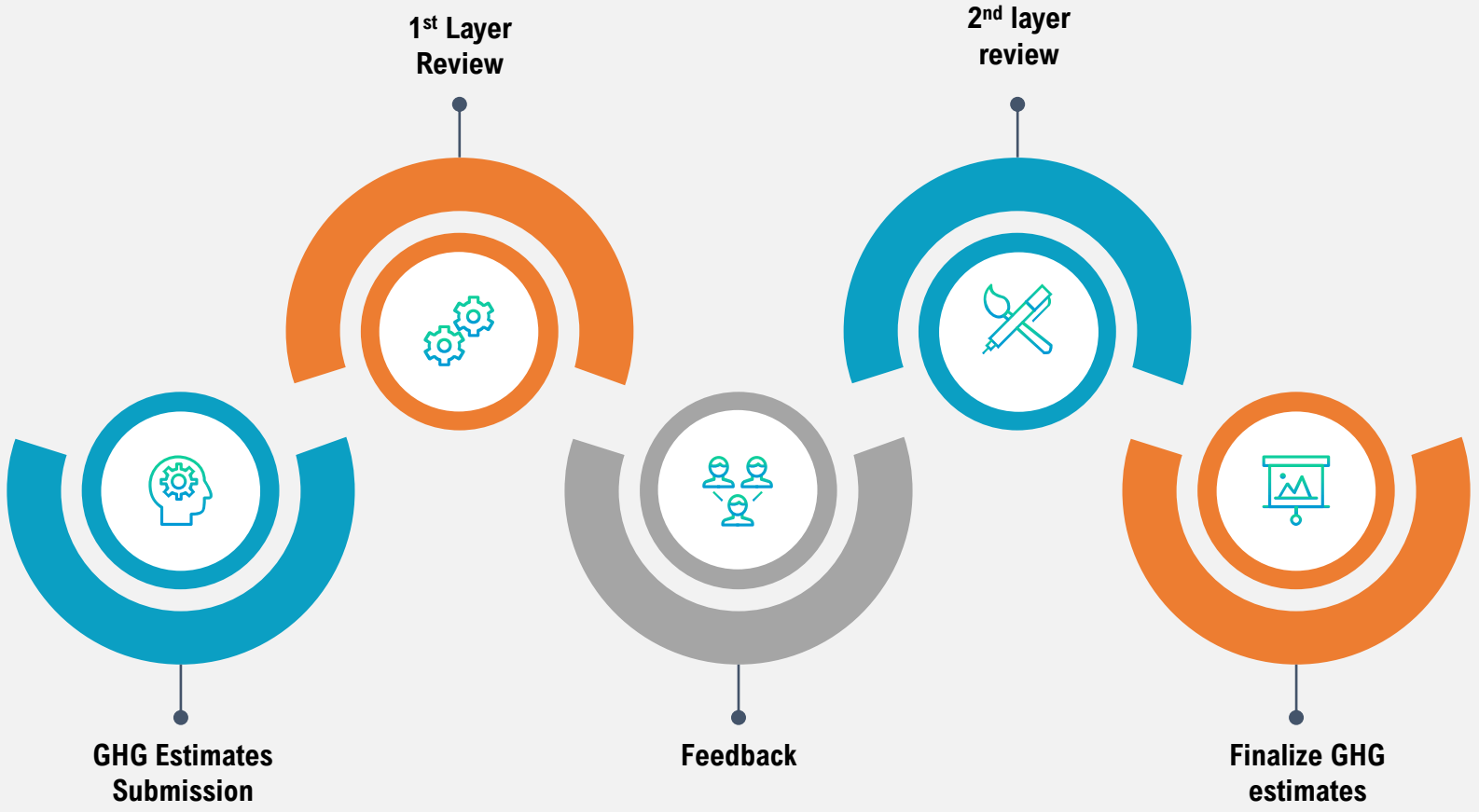
Scale it

Leverage partnerships

Change It

Propose solutions and demonstrate pilot

TECHNICAL REVIEW PROCESS



QUALITY CHECK BENEFITS

WRI INDIA

- GHG estimates prepared under the platform informs the national process which can help meet the reporting requirements internationally e.g. National inventory prepared in accordance with the relevant COP decisions (e.g., 17/CP.8);
- To ensure continuity through the development of national capacities and capabilities;
- To ensure the sustainability of the GHG preparation process;
- Will also help with the regular preparation of biannual reports in accordance with relevant decisions under the UNFCCC process;
- To foster consistent estimation approaches;
- To coordinate responses to requests for information;
- To ensure high quality and objective emissions estimation information.

BROADER OVERVIEW: GHG ESTIMATES

WRI INDIA

1 Background sectoral information

Context, Coverage (GHGs, time series and geographical), Institutional background, Assessment of completeness,, Data collection and Archiving process

2 GHG emission trends

Aggregated GHG emissions trend; Trend in GHG emissions by type; Key drivers.

3 State-wise GHG emission estimates

Sectoral assessment of GHG estimates for all the states,

4 Identification of key source categories

Following 2006 IPCC guidelines for national GHG inventories

5 Sectoral QC/QA

Quality control checks implemented (sector-wise) and generally as per 2006 IPCC guidelines for national GHG inventories

6 GHG estimates calculation

Detailed methodology to calculate emissions with focus on sources of AD, EF, etc. and sample calculation for ease of understanding

7 Comparison with National GHG estimates

Comparison of GHGPI estimates with national GHG emission numbers like BURs

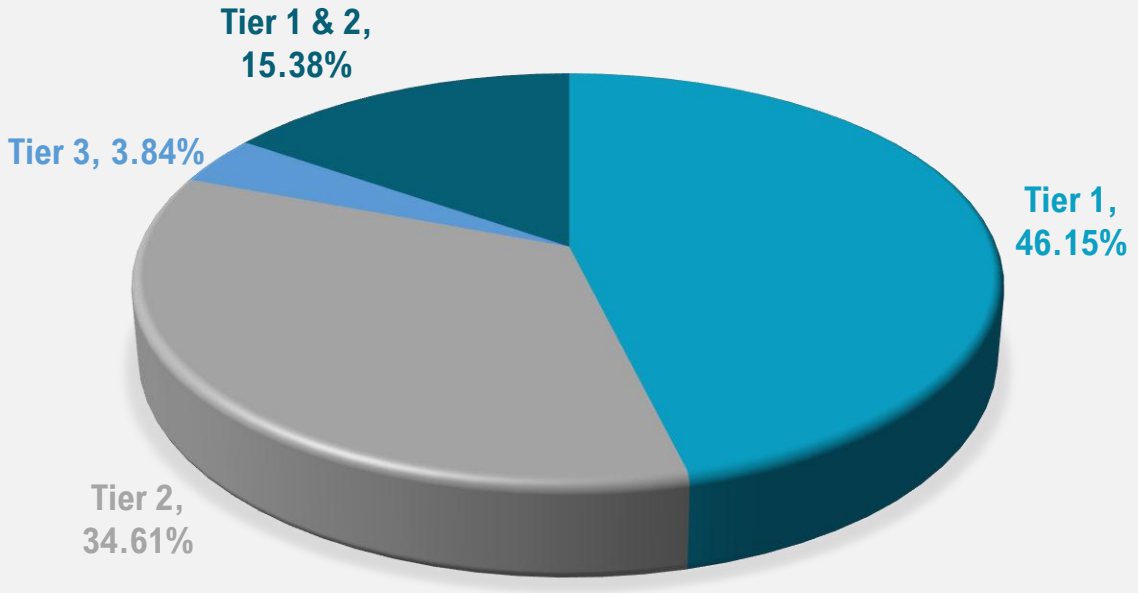
8 Sectoral recommendation

The sectoral partners provide recommendations as to how the GHG estimates could be further improved.

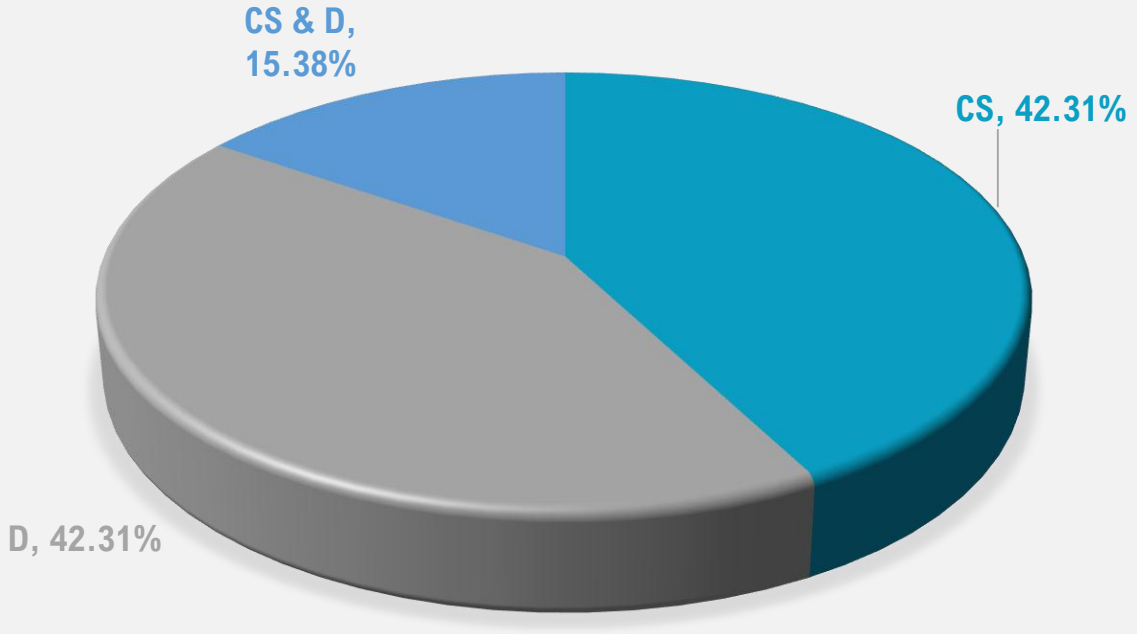
FEW OBSERVATIONS FROM REVIEWERS

WRI INDIA

ACTIVITY DATA



EMISSION FACTOR



RECALCULATION

- As GHG estimation capacity and data availability improve, the methods used for preparing GHG estimates is also refined;

- **34%** of the identified key source categories witnessed recalculation;

- Main reasons:
  - Use of updated AD/EF;
  - Change in the approach of methodology.

SAPCC FRAMEWORK DEVELOPMENT

Research & Development

Desktop Research of available standard; guidance and SAPCCs
Finalizing on the components of SAPCC framework (mitigation component only)

Consultation

Extensive consultation with various stakeholders
Understanding the expectation and requirement of states

Finalization

Took into account, all the inputs and suggestion received;
Comprehensive framework – ready-to-use by any state

SAPCC FRAMEWORK: COMPONENTS

WRI INDIA

The framework for revising the SAPCC has been designed by referring internationally accepted standards like Mitigation Goal Standard, Policy and Action Standard and guidelines issued by Ministry of Environment, Forest and Climate Change to State Nodal Agencies

01

State Circumstances

02

State emission profile

03

Assessment of existing climate policies

04

Proposal for new mitigation actions

05

Generic roadmap for potential financing options

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