



## MRV Framework and GHG Reporting

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## Why MRV?

Global benefit  
towards preventing adverse impacts on climate and hence  
climate dependent systems

Locally  
Towards a safer immediate environment



## So we need to have a system that

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- Tracks emission trends comprehensively at regular intervals
- Tracks information on countries' policies towards mitigating CC and quantify the impact
- Quantifies impacts of
  - economic/ fiscal incentives
  - regulations
  - market based mechanisms
  - R&D initiatives
  - Capacity building



## Current reporting scenario – Annex 1

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- Annex-1 report total national, total sectoral and total category based emissions every year 1990 onwards to UNFCCC - through their National Inventory Reports (NIRs) submitted annually as well as National Communications submitted every 3 years
- These reports are reviewed by external review teams
- Installation based measurement, reporting & verifying done through the EU\_ETS mechanism by countries within the EU



## Current situation- non Annex 1

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- Non-Annex 1 countries report only through their NATCOMs to UNFCCC the total national, total sectoral and total category based emissions for years based on COP decisions (1990/1994 & 2000)
- Non Annex-1 indeed do project based reporting through the CDM mechanism

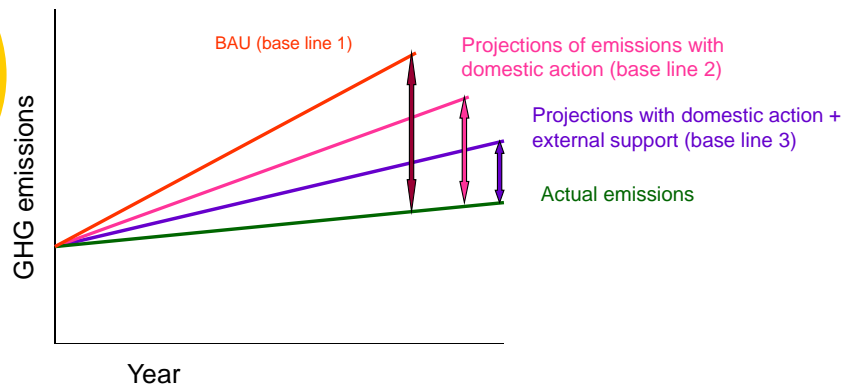


## Identifying target sectors for MRV (non-Annex 1)

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- Will require tracking GHG inventory across years for each sector at national level
- The NATCOM process initiated can take care of annual reporting
- Annual reporting will identify
  - key sectors and categories which together constitute 95% of the total national emissions
  - categories growing at an exceptionally fast rate
  - categories with sequestering potential;
- These then can be targets of measurability and hence reporting

## Measurability



### Uncertainties

- Methodologies used for projections (Assumptions applied)
- Methodologies used for actual emission estimates (IPCC vs others)

## Reporting at What level

The domestic GHG emission reporting can be

- At National level for each sector
- At Category level
- Point source/ dispersed source level (categories within sectors)
- Groups within categories (highly to medium polluting)
- If the methodology for identified sector is not available either in IPCC/ WRI/ISO, some new reporting formats may need to be established.



## Verifiability

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- verification could be conducted by a third party such as
  - an accredited body, or
  - by teams of experts co-ordinated by the focal point CC in GOI
- it is also possible that verification could be less stringent in developing countries where capacity building and development needs significantly outweigh mitigation priorities.



## In the developing country context - Domestic Policies and Measures

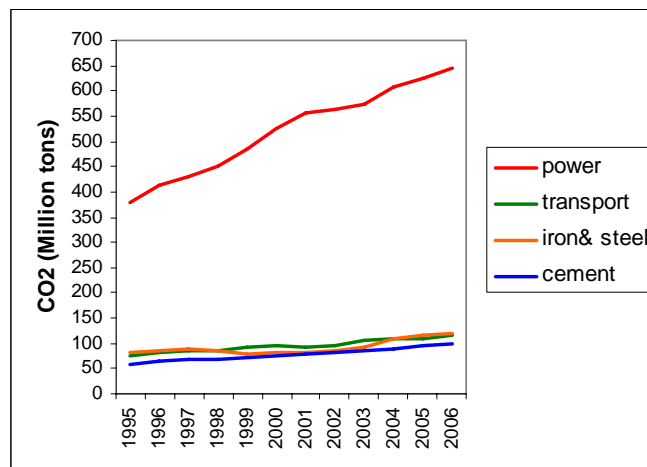
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- Domestic policies and measures (PAMs) could also include NAMAs (Nationally Appropriate Mitigation Actions) established for various purposes, implemented in different sectors and can also take a variety of forms.
- Many different methods/approaches of measuring, reporting and verifying the effects of domestic GHG mitigation actions are also possible

Type of PAM	Example	Monitoring/reporting metric	Type of metric
General economic/fiscal measures	Phasing out subsidies	Date and/or subsidy amount; change in consumption of subsidised energy	Input, Intermediate output
	CO <sub>2</sub> tax	\$/t CO <sub>2</sub> ; evolution of tax revenues for the taxed products	Input, Intermediate output
Targeted economic/fiscal measures	Landfill tax	\$/t landfill, m <sup>3</sup> CH <sub>4</sub> collected	Input, GHG
	Feed-in tariffs for renewables	\$/MWh; MW installed capacity; MWh generated	Outcome Input, Intermediate output
Regulations/standards	Appliance standards	Energy consumption standards; X% of appliances on market meeting new standards	Input, Intermediate output
	Electricity market regulations	MW installed capacity; %RES in production	
	Biofuel standards	X% biofuel/litre	
Market-based measures	Green certificates (renewables)	\$/certificate; GWh produced	Input, Intermediate output
	Emissions trading	t CO <sub>2</sub> -eq (emitted, not reduced)	GHG Outcome
Industry/sector agreements	Performance standards	GJ/t cement, PFC emissions per tonne of aluminium - X% emissions of Y/t production	Intermediate output
Goals/targets	Increased forested area	Hectares forest land	Intermediate output
Information, education, capacity development	Public awareness campaigns Capacity for implementing agents	Number of requests for funding/tools/information; hits on sites; actual expenditures Number of researchers (etc); funding	Input, Intermediate output
R,D&D	R&D for low-C technologies Demonstration/pilot projects	\$/; number of patents Number of projects; Funding leveraged; Project-specific metric (MW; emissions)	Input, Intermediate output

## Emerging trends of CO<sub>2</sub> emission of major emitting sources - india

- Power
- Transport
- Iron & steel
- Cement





## Reporting in power sector in India

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- The CEA reports 65 different types of data for plants over 1MW, 28 of which relate to GHG emissions, including generation, generation capacity, fuel consumption, losses, fuel supply, thermal efficiencies of power plants, plant-specific information on absolute (t CO<sub>2</sub>) and relative (CO<sub>2</sub>/MWh) emissions
- Some of these reports are annual, others are monthly or even daily
- Efforts are on for reporting by plants through an on line system
- Based on the data collected, the Indian government has been able to track a reduction in average GHG intensity in electricity production, from 0.85 t CO<sub>2</sub>/MWh in 2002-03 to 0.79 t CO<sub>2</sub>/MWh in 2007-08.



## Example - contd

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With advent of new policies such as enhanced fuel combustion efficiency, C sequestration measures etc,

- Projections of emissions wrt to the domestic policy and additional assistance to be reported
- Reduction in GHG emissions will be the difference between the projections and the actual emissions

## In conclusion – MRV framework for Developing Countries

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Track GHG emission trends by sectors and categories

Identify key emitting sources and key sinks for sequestration

Device domestic policies / seek Financial & technology support

Estimate base line projections of expected output targets

Monitor/ Report/ Verify actual input & output targets on regular intervals

Quantify GHG reduction achieved and get verification done by 3<sup>rd</sup> Party

Domestic: economic/fiscal/market based /regulatory/ capacity building & R&D based incentives

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**Thank you**