

# CGE Training materials - Mitigation Assessment

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Module E

Reporting on Mitigation

Consultative Group of Experts (CGE)



**United Nations**  
Climate Change Secretariat





- I. What are the guidelines for reporting on mitigation?
- II. Approaches to presenting the information
- III. Reporting on institutional arrangements

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## MODULE E1

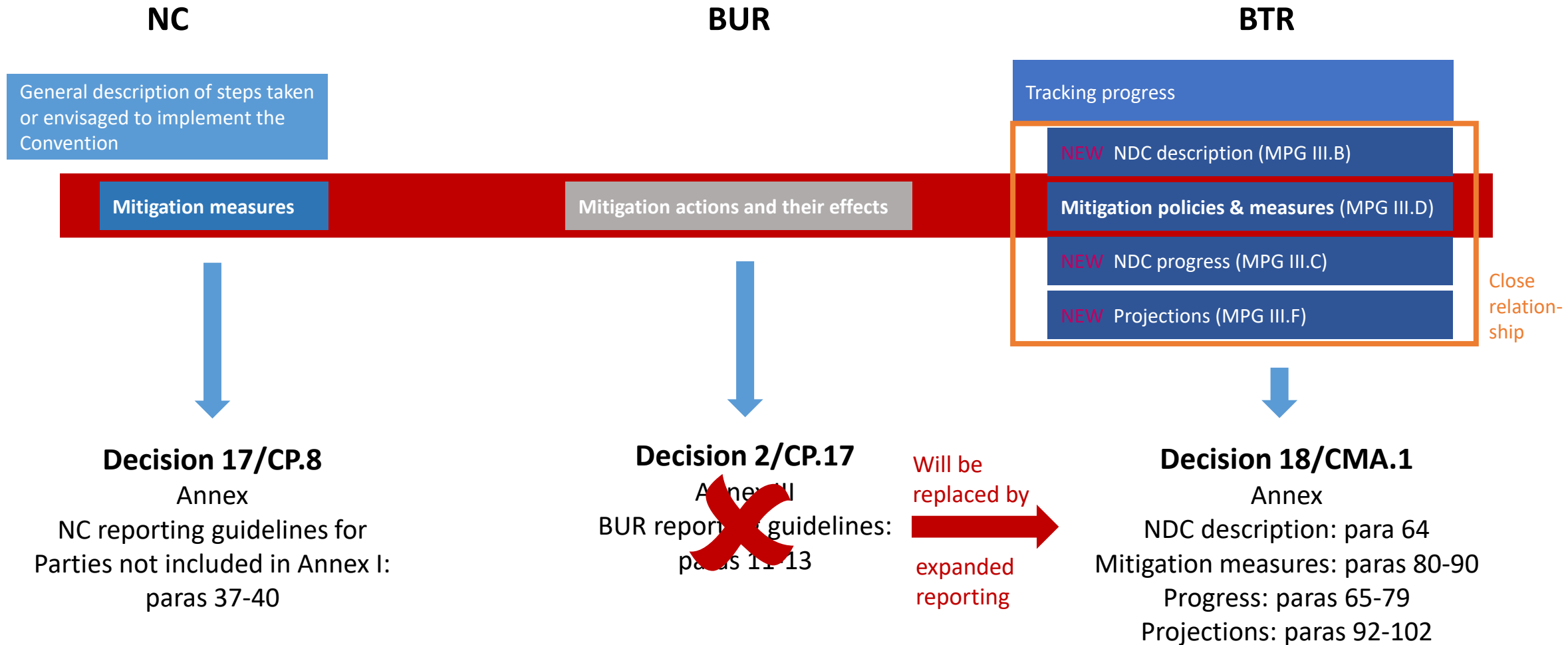
# WHAT ARE THE GUIDELINES FOR REPORTING ON MITIGATION?



United Nations  
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# Mitigation elements and reporting guidelines





# Format of reporting on mitigation

## In NCs

- No format requirements – at the discretion of the Party

## In BURs

- Tabular format

## In BTRs

- Narrative AND tabular format
- Organised by sector:

- Energy
- Transport
- Industrial processes and product use
- Agriculture
- LULUCF
- Waste management
- Other

Mitigation Measures	GHGs	Target	Indicator	Methodology of GHG reduction calculation	Mitigation policy	Assumptions	Achieved outcome	GHG Reduction (MtCO <sub>2</sub> e)		
								2016	2017	2018
1. Electricity Generation from Natural Renewable Energy (RE)	CO <sub>2</sub>	Increase the ratio of electricity generation from RE to 20% of total electricity generation by 2036	GWh of electricity generation from RE	Calculated from GWh of electricity generation from RE multiplied by grid emission factors	Promote RE to generate electricity under the Alternative Energy Development Plan (AEDP2015)	Natural renewable energy includes solar, wind and hydropower	13,747 GWh of electricity was generated from solar photovoltaics, wind power and hydropower in 2018	3.99	5.53	7.27
2. Electricity Generation from Bio-Renewable Energy (Biomass and Biogas)	CO <sub>2</sub>	Increase the ratio of electricity generation from RE to 20% of total electricity generation by 2036	GWh of electricity generation from bio-renewable energy	Calculated from GWh of electricity generation from bio-renewable multiplied by grid emission factors	Promote RE to generate electricity under AEDP2015	Bio-renewable energy includes biomass, biogas and waste	20,983 GWh of electricity was generated from biomass, biogas and waste in 2018	9.86	9.95	11.10
3. Heat Generation from Natural Renewable Energy (Solar)	CO <sub>2</sub>	Increase the ratio of heat production from RE to 30-35% of heat demand by 2036	ktoe of heat generation from RE	Calculated from ktoe of heat generation from RE multiplied by CO <sub>2</sub> emission factor of heat generation from the manufacturing industry	Promote RE to generate heat under AEDP2015	Heat from renewable energy includes solar thermal	10.10 ktoe of heat was generated from solar thermal energy in 2018	0.02	0.03	0.03
4. Heat Generation from Bio-Renewable Energy (Biomass and Biogas)	CO <sub>2</sub>	Increase the ratio of heat production from RE to 30-35% of heat demand by 2036	ktoe of heat generation from bio-renewable energy	Calculated from ktoe of heat generation from bio-renewable energy multiplied by CO <sub>2</sub> emission factor of heat generation from the manufacturing industry	Promote RE to generate heat under AEDP2015	Heat from bio-renewable energy includes biomass, biogas and waste	7,909 ktoe of heat was generated from biomass, biogas and waste in 2018	23.46	24.04	26.55

**FIFTH NATIONAL COMMUNICATION**

Singapore has met our 2020 pledge of reducing emissions by 16% below 2020 BAU<sup>1</sup> levels. Building on our 2020 pledge, Singapore has also enhanced our 2030 NDC to reduce emissions to around 60 MtCO<sub>2</sub>e in 2030 after peaking our emissions earlier.



Singapore has one of the world's largest floating solar panel farms, about the size of seven football fields.

**Singapore's Approach to Reducing Emissions**

Energy is a strategic resource for Singapore. As an alternative energy-disadvantaged country, Singapore is highly reliant on imports for our energy needs. Recognising the energy is a scarce resource, Singapore allows for market pricing of heat and electricity without any direct subsidy. This results in firms and households making appropriate energy consumption choices, such as minimising energy wastage and over-consumption, which contributes to emissions reduction.

Singapore has also moved towards a cleaner fuel mix for electricity generation, switching from fuel oil to natural gas, which has a lower carbon content per unit of electricity generated.

However, there are limits as to how much more emissions we can reduce by switching fuels, since natural gas already constitutes 95% of our fuel mix for electricity generation in 2016. To further decarbonise the power sector, as part of our energy transition, we will harness and tap on the "Four Switches": natural gas, solar, regional power grids, and emerging low-carbon technologies. While we invest actively in research on low-carbon technologies, there are also limits to the deployment of alternative or renewable energy sources in Singapore.

Energy efficiency is a core carbon emissions mitigation strategy. This will require our households and businesses to be more energy-conscious and make adjustments to their daily activities, choices and processes.

As an open economy without natural resources, we need to reduce carbon emissions in a cost-effective way. Hence, the Government has identified the following areas as part of a comprehensive strategy to promote energy efficiency in Singapore:

- Promoting the adoption of energy-efficient measures and technologies by addressing market barriers to energy efficiency.

<sup>1</sup>Projecting from 2005, Singapore's BAU emissions are expected to reach 7.2 million tonnes (Mt) in 2020.

## Facilitating improved reporting and transparency over time

- Areas of improvement identified by the Party and the technical expert review team
  - How the Party is addressing or intends to address areas of improvement
  - Identification of reporting-related capacity-building support needs and progress made
  - For Parties using flexibility: areas of improvement related to the flexibility provisions used
- 
- ➔ Domestic plans and priorities about improved reporting are not subject to technical expert review
  - ➔ Information may inform discussions on areas of improvement and identification of capacity-building needs





## Backwards looking

## Forward looking

Some reporting elements aim to understand the past and progress to date: they are **backwards looking**

Other reporting requirements aim to understand potential future progress: they are **forward looking**

The description of indicators, definitions and methodologies is a prerequisite for both

Reporting format for the description of a Party's NDC (CMA.3 Annex II, appendix)	
1. Description of selected indicators	
2. Definitions needed to understand the NDC	
3. Methodologies and accounting approaches	11. Key underlying assumptions and parameters of projections
4. Tracking progress	10. Projections of key indicators
5. Mitigation policies & measures: impact achieved	5. Mitigation policies & measures: impact expected
6. Inventory summary (only with stand-alone inventory report)	7. Projections 'with measures' scenario
	8. Projections 'with additional measures' scenario
	9. Projections 'without measures' scenario

Legend

Definitions & methods

Data: backwards looking

Data: forward looking

## Appendix to Annex II: Description of a Party's NDC

	Description
Target(s) and description, including target type(s)*, as applicable	
Target year(s) or period(s), and whether they are single-year or multi-year target(s), as applicable	
Reference point(s), level(s), baseline(s), base year(s) or starting point(s), and their respective value(s), as applicable	
Time frame(s) and/or periods for implementation, as applicable	
Scope and coverage, including, as relevant, sectors, categories, activities, sources and sinks, pools and gases, as applicable	
Intention to use cooperative approaches that involve the use of ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement, as applicable	
Any updates or clarifications of previously reported information, as applicable	

➔ *This table is to be used by Parties on a voluntary basis, however information items are shall*

- Parties with both unconditional and conditional targets in their NDC may add a row to the table to describe conditional targets
- This information overlaps with NDCs to ensure consistency and explain changes/updates

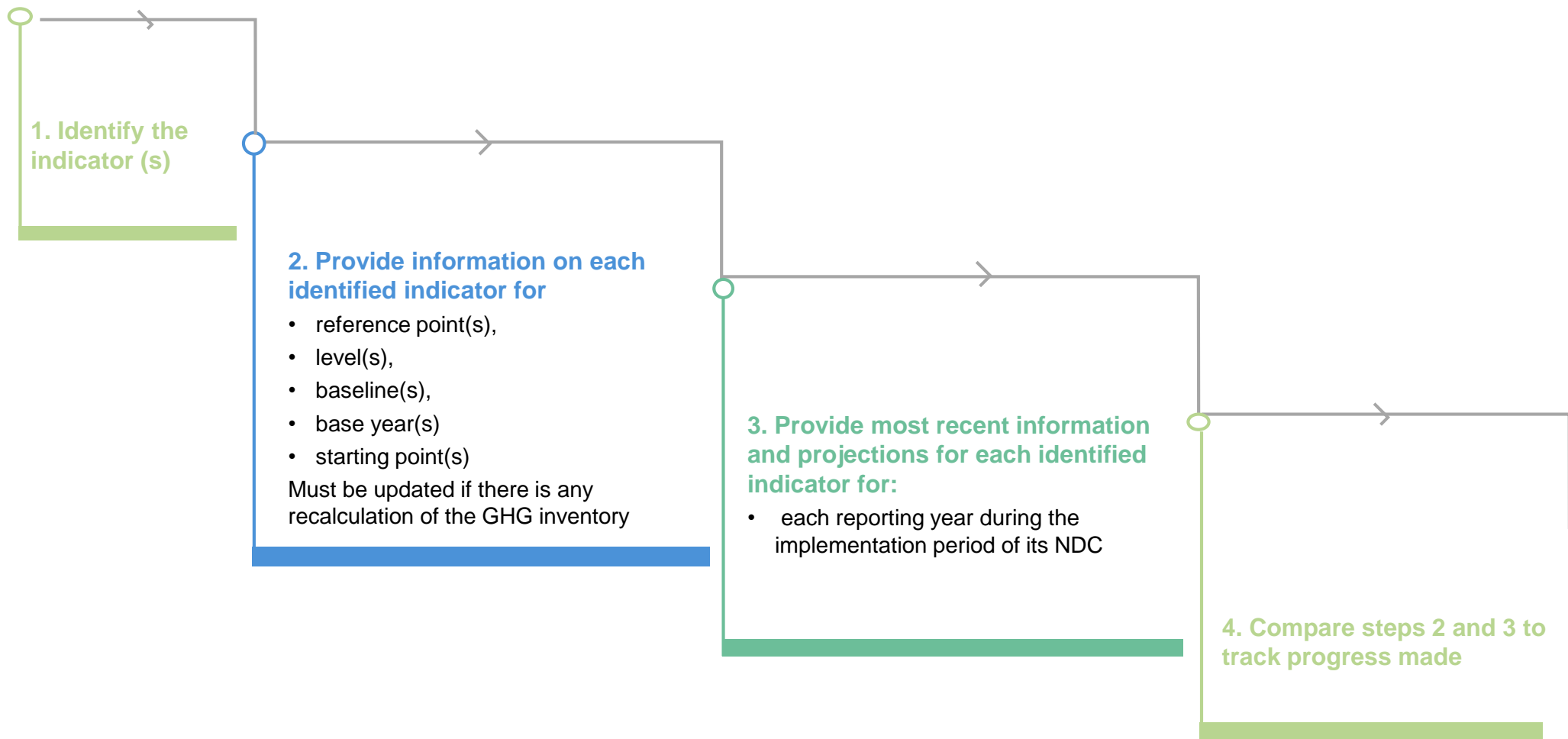


For target types see module C2





## Recap: General approach for tracking progress



- ➔ For the first BTR that contains information on the end year of NDC, provide an assessment of whether the target is achieved.

## 1. Description of selected indicators

Indicator(s) selected to track progress	Description
{Indicator}	
	Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate
	Updates in accordance with any recalculation of the GHG inventory, as appropriate
	Relation to NDC

## 2. Definitions needed to understand the NDC

	Description
	<i>Definition needed to understand each indicator:</i>
{indicator}	
	<i>Any sector or category defined differently than in the NIR:</i>
{Sector}	
	{Category}
	<i>Definition needed to understand mitigation co-benefits of adaptation actions and/or economic diversification plans:</i>
	{Mitigation co-benefit(s)}
	<i>Any other relevant definitions:</i>
	{...}

Table 1 **describes** the indicators, table 2 provides additional **definitions**, table 4 tracks **achieved progress** and table 10 provides **projections** on expected future development of these indicators

## 4. Tracking progress

	Unit	Reference level	Implementation period of the NDC					Target level	Target year	Progress made (comparison of most recent and ref. level)
			Year 1	Year 2	...	...	End year			
{Indicators}										
Total GHGs, consistent with NDC coverage										
Contribution from LULUCF sector, as applicable										
ITMOs										
.....										
Assessment of the achievement of the NDC:										
→ Restatement of the target										
→ Information for reference level										
→ Final information for the indicator at the target year										
→ Comparison										
→ Achievement of NDC (Y/N, explanation)										

see next slide for details

## 10. Projections of key indicators

Key indicator(s)	Unit, as applicable	Most recent year in the NIR, or the most recent year for which data is available 20XX	Projections of key indicators		
			20X(0)(5)	20X(0)(5)	20X(0)(5)

Projections are reported in 5-year steps – same as for GHG projections



# Tracking progress made in implementing and achieving the NDC



## 4. Tracking progress

	Unit	Reference level	Implementation period of the NDC						Target level	Target year	Progress made (comparison of most recent and ref. level)
			Year 1	Year 2	...	...	...	End year			
{Indicators}											
Total GHGs, consistent with NDC coverage	➔									<i>Where the goal is an economy-wide emission reduction target, data from GHG inventory</i> <i>Where the goal covers a subset of the economy, data will be a subset of the GHG inventory</i>	
Contribution from LULUCF sector, as applicable	➔									<i>May not be applicable to all NDC goal types if the NDC does not cover the LULUCF sector</i>	
ITMOs ....	➔									<i>May not be applicable, if ITMOs will not be considered towards the NDC goal</i>	
Assessment of the achievement of the NDC: → Restatement of the target → Information for reference level → Final information for the indicator at the target year → Comparison → Achievement of NDC (Y/N, explanation)	➔									<i>To be reported in the first BTR that contains information on the end year of NDC</i>	



# Methodologies used for tracking progress

## 3. Methodologies and accounting approaches

Reporting requirement	Description or reference to the relevant section of the BTR
<i>For the first NDC under Article 4:<sup>a</sup></i>	
Accounting approach, including how it is consistent with Article 4, paragraphs 13–14, of the Paris Agreement	
<i>For each NDC under Article 4:<sup>c</sup></i>	
<i>For the second NDC, optionally for the first NDC, information consistent with decision 4/CP.9, paragraph 41 of the Paris Agreement</i>	<i>Accounting for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the Parties to the Paris Agreement</i>
Explain how emissions and methodologies used for accounting under Article 13, paragraph 1(a), of the Paris Agreement have been avoided used for accounting under Article 4/CMA.1	Striving to include all categories of anthropogenic emissions or removals in the NDC and, once a source, sink or activity is included, continuing to include it (para. 3 of annex II to decision 4/CMA.1):
Explain how any GHG accounting indicator used for accounting under Article 13, paragraph 1(a), of the Paris Agreement has been avoided used for accounting under Article 4/CMA.1	Each methodology to assess target(s): Explain how all categories of anthropogenic emissions and removals corresponding to their NDC were accounted for (para. 3(a) of annex II to decision 4/CMA.1)
Explain how any GHG accounting indicator used for accounting under Article 13, paragraph 1(a), of the Paris Agreement has been avoided used for accounting under Article 4/CMA.1	Each methodology for the calculation of the indicator: Explain how Party is striving to include all categories of anthropogenic emissions and removals in its NDC, and, once a source, sink or activity is included, continue to include it (para. 3(b) of annex II to decision 4/CMA.1)
Explain how any GHG accounting indicator used for accounting under Article 13, paragraph 1(a), of the Paris Agreement has been avoided used for accounting under Article 4/CMA.1	If the methodology used to calculate the indicator describes the use of mitigation outcomes for international mitigation purposes other than achievement of its NDC: Provide an explanation of why any categories of anthropogenic emissions or removals are excluded (para. 4 of annex II to decision 4/CMA.1)
Any conditions associated with the use of ITMOs	Each Party that participates in cooperative approaches that involve the use of ITMOs towards an NDC under Article 4, or authorizes the use of mitigation outcomes for international mitigation purposes other than achievement of its NDC
	Provide information on any methodologies associated with any cooperative approaches that involve the use of ITMOs towards an NDC under Article 4 (para. 75(f) of the MPG)
	Provide information on how each cooperative approach promotes sustainable development, consistent with decisions adopted by the CMA on Article 6 (para. 77(d)(iv) of the MPG)

Information can be reported in the common tabular format or a reference to the relevant section of the BTR can be provided:

- Methodologies and accounting approaches
- Metrics and IPCC guidelines
- Assumptions, key parameters, definitions, data sources, models
- Consistency (communicated and implemented NDC; accounting for NDC and GHG inventory)
- Changes (corrections, improvements, updates)
- Inclusion of all relevant categories, and exclusions
- Information associated with any cooperative approaches that involve use of ITMOs, if applicable

# Which mitigation actions need to be reported in BTRs?



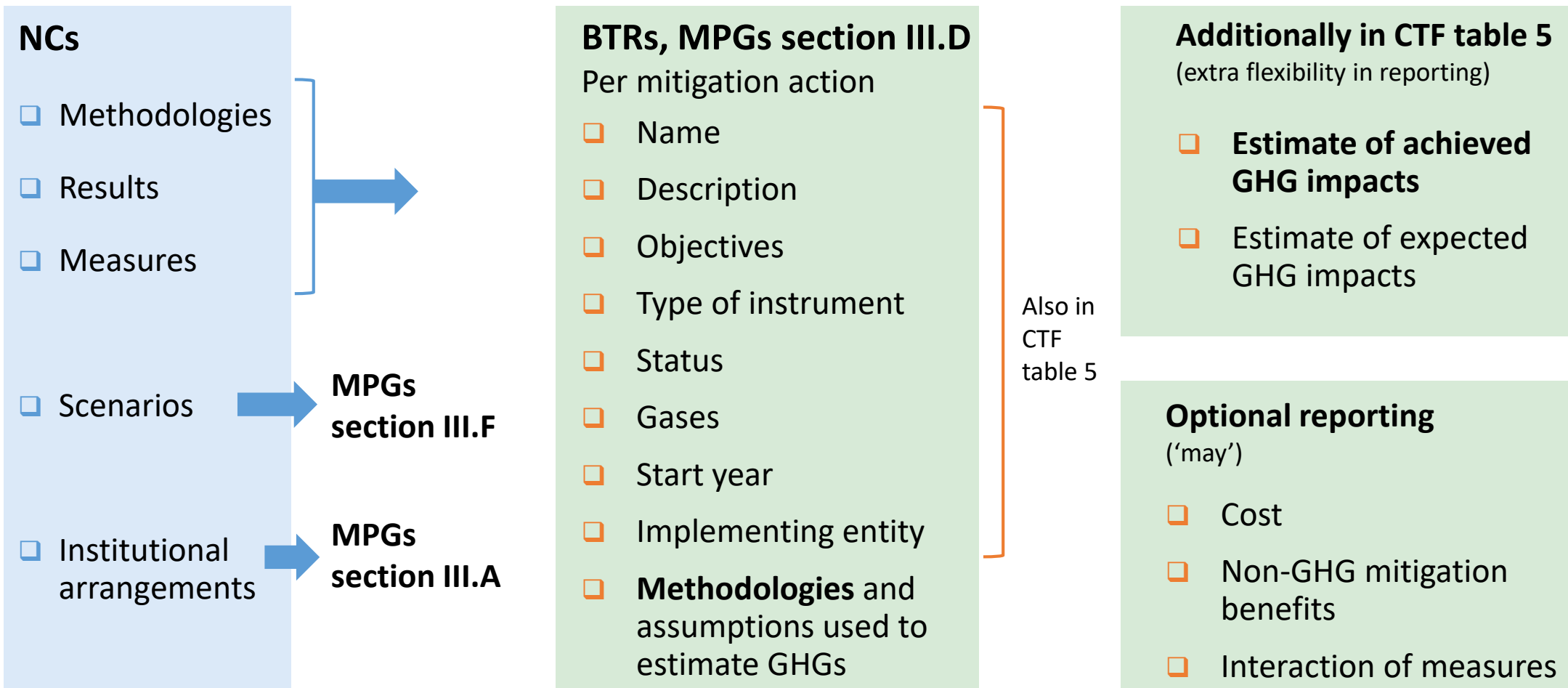
- ➔ Those that have “the most significant impact on GHG emissions or removals”
- ➔ Those that impact key categories in the national inventory
- ➔ Mitigation co-benefits of adaptation actions, if included in the NDC
- ➔ Actions that influence international transport

Consistency of reporting is important, and steps can be taken to minimise the risk of duplication of effort in joint NC/BTR submissions. The BTR will need to be more detailed (see details in module E)



Information can be copied or a reference to the corresponding section in the BTR





# BTR CTF table 5: Mitigation policies and measures



## 5. Mitigation policies and measures, actions and plans, including those with mitigation co-benefits resulting from adaptation actions and economic diversification plans, related to implementing and achieving an NDC

Name*	Description**	Objectives	Type of instrument <i>(i.e. regulatory, economic instrument or other)</i>	Status <i>(i.e. planned, adopted or implemented)</i>	Sectors affected <sup>^</sup>	Gasses affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emissions reductions (kt CO2 eq)	
									Achieved	Expected

\* Parties may indicate whether a measure is included in the ‘with measures’ projections.

\*\* Parties may/should, to the extent possible, provide information including, costs, non-GHG benefits, interactions, those influencing international transport, how PAMs are modifying longer term trends in GHGs.

<sup>^</sup> Energy, transport, industrial processes and product use, agriculture, LULUCF, waste management or other.



Many developing country Parties already report on mitigation measures in similar tables in BURs and NCs. The reporting is now more closely tied with NDCs. Country will need to collect and provide information from all levels of government.

## ‘Should’ be reported

- Identification of actions no longer in place
- How actions modify longer-term trends
- Assessment of economic and social impacts of response measures (CTF table 12)



### 12. Information necessary to track progress on the implementation and achievement of the domestic policies and measures implemented to address the social and economic consequences of response measures

<i>Sectors and activities associated with the response measures</i>	<i>Social and economic consequences of the response measures</i>	<i>Challenges in and barriers to addressing the consequences</i>	<i>Actions to address the consequences</i>





## 6. Summary of GHG emissions and removals

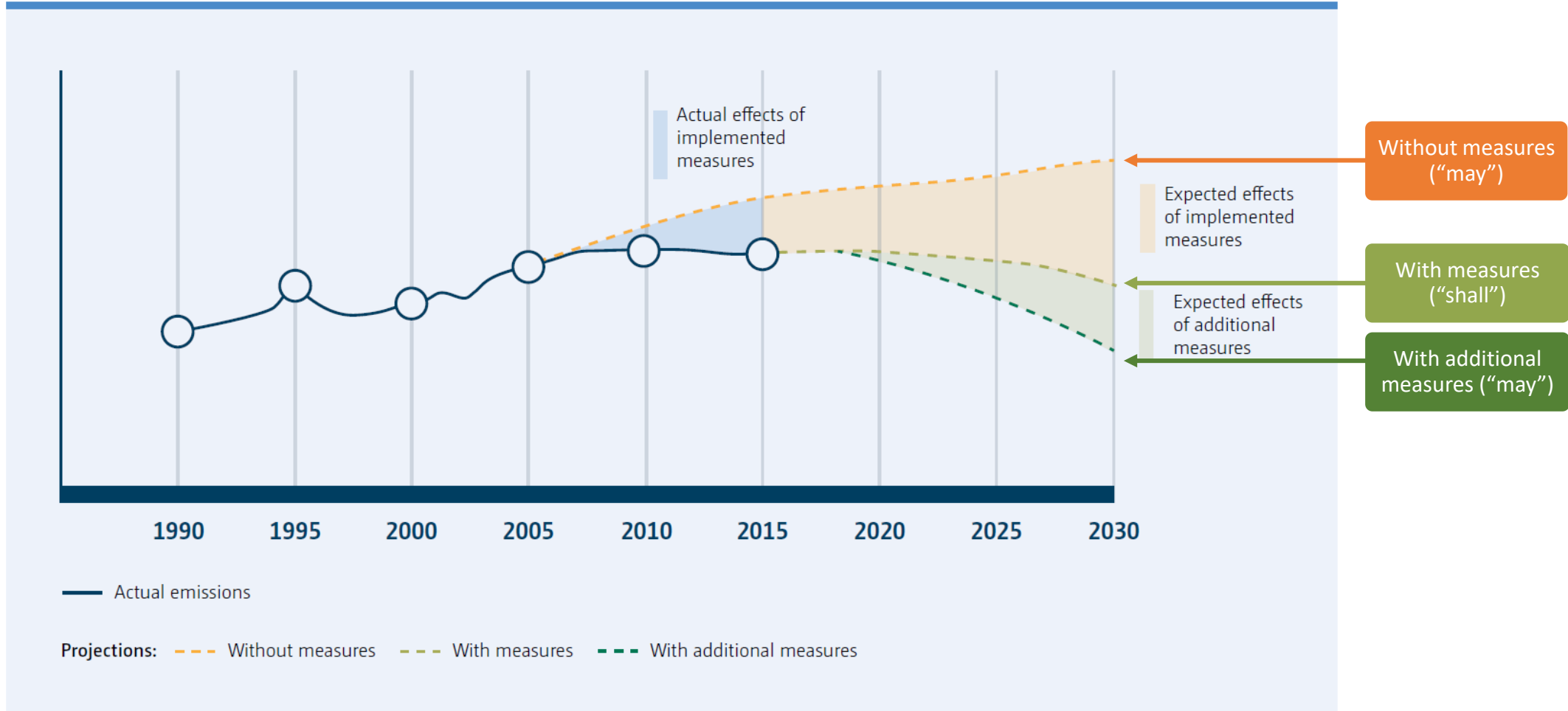
GREENHOUSE GAS EMISSIONS AND REMOVALS	Reference year/period for NDC <sup>(1)</sup>	Base year <sup>(2)</sup>	1990 <sup>(1)</sup>	(Years 1991 to 2019)	(Years 1991 to 2019)	2020	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	Change from [1990][base year][reference year][period] to latest reported year (%)
CO <sub>2</sub> equivalents (kt) <sup>(3)</sup>										
CO <sub>2</sub> emissions without net CO <sub>2</sub> from LULUCF										
CO <sub>2</sub> emissions with net CO <sub>2</sub> from LULUCF										
CH <sub>4</sub> emissions without CH <sub>4</sub> from LULUCF										
CH <sub>4</sub> emissions with CH <sub>4</sub> from LULUCF										
N <sub>2</sub> O emissions without N <sub>2</sub> O from LULUCF										
N <sub>2</sub> O emissions with N <sub>2</sub> O from LULUCF										
HFCs										
PFCs										
Unspecified mix of HFCs and PFCs										
SF <sub>6</sub>										
NF <sub>3</sub>										
Total (without LULUCF)										
Total (with LULUCF)										
Total (without LULUCF, with indirect)										
Total (with LULUCF, with indirect)										
GREENHOUSE GAS SOURCE AND SINK CATEGORIES										
	Reference year/period for NDC <sup>(1)</sup>	Base year <sup>(2)</sup>	1990	(Years 1991 to 2019)	(Years 1991 to 2019)	2020	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	(Years 2021 to latest reported year)	Change from 1990[base year][reference year][period] to latest reported year (%)
CO <sub>2</sub> equivalents (kt) <sup>(3)</sup>										
1. Energy										
2. Industrial processes and product use										
3. Agriculture										
4. Land use, land-use change and forestry <sup>(4)</sup>										
5. Waste										
6. Other										
Total (with LULUCF) <sup>(8)</sup>										



Only required if the Party submits a stand-alone national inventory report!



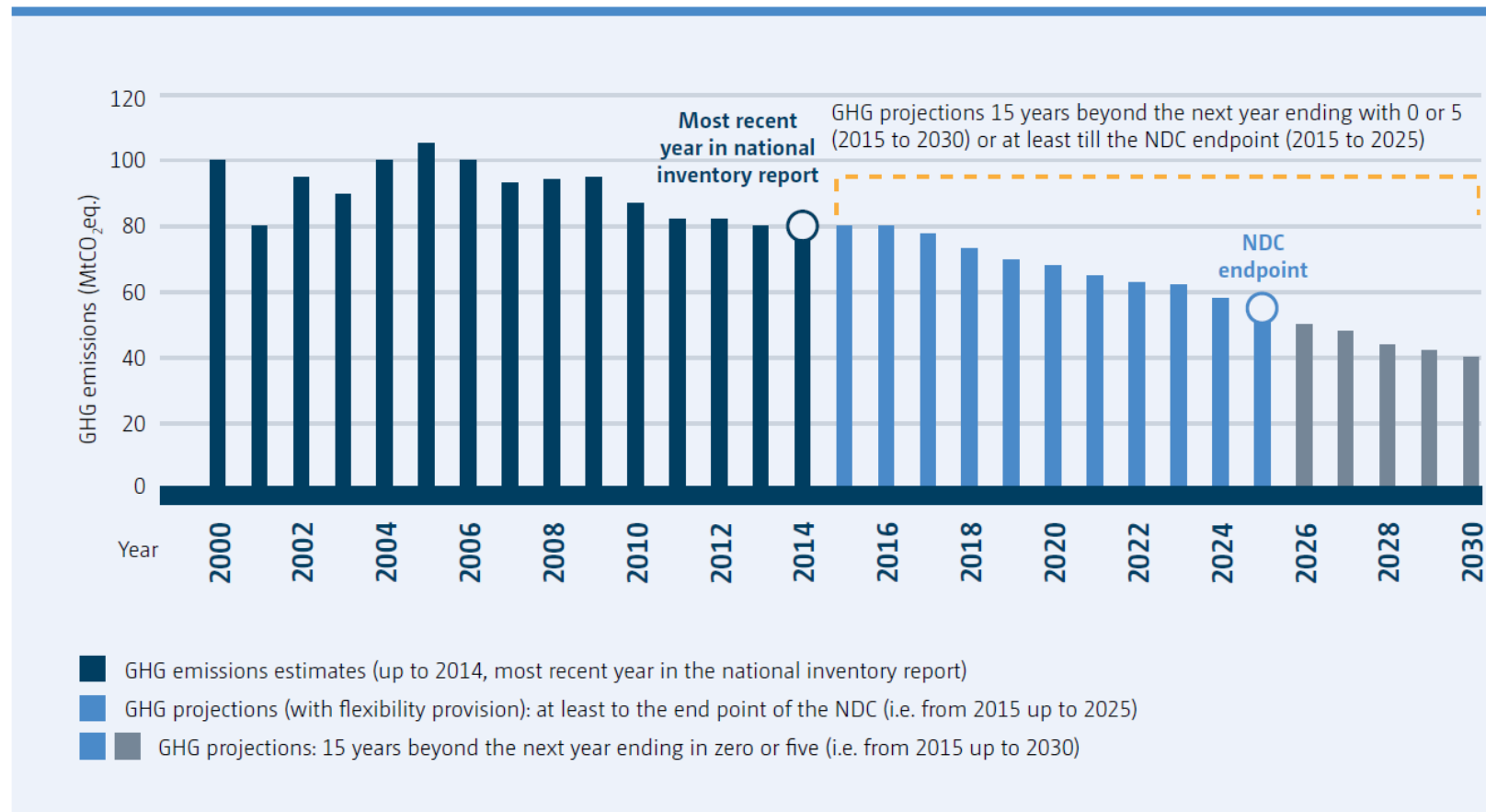
# Linking actual emissions and projections



15 years beyond the year ending with 0 or 5 after the most recent year in the inventory

With flexibility: at least up to the end point of the NDC

There is no specification for the timelines for estimates of expected impacts of individual mitigation measures



To enhance efficiency and consistency, it is useful to estimate expected impacts of individual measures using the same timeframe used for the projections

## Tables 7, 8, 9: Information on projections of GHG emissions and removals

	Most recent year in the NIR (kt CO <sub>2</sub> eq)	Projections of GHG emissions and removals (kt CO <sub>2</sub> eq)		
	20XX	20X(0)(5)	20X(0)(5)	20X(0)(5)
<b>Sector</b>				
Energy				
Transport				
IPPU				
Agriculture				
LULUCF				
Waste				
Other (specify)				
<b>Gas</b>				
CO <sub>2</sub> emissions including net CO <sub>2</sub> from LULUCF				
CO <sub>2</sub> emissions excluding net CO <sub>2</sub> from LULUCF				
CH <sub>4</sub> emissions including CH <sub>4</sub> from LULUCF				
CH <sub>4</sub> emissions excluding CH <sub>4</sub> from LULUCF				
N <sub>2</sub> O emissions including N <sub>2</sub> O from LULUCF				
N <sub>2</sub> O emissions excluding N <sub>2</sub> O from LULUCF				
HFCs				
PFCs				
SF <sub>6</sub>				
NF <sub>3</sub>				
Other (specify)				
Total with LULUCF				
Total without LULUCF				

Projections are reported in 5-year steps in the CTF table



Full time series data can be reported in the BTR in tabular or graphical format, if desired

Separate CTF tables for each scenario:

- Table 7: 'with measures' scenario [shall]
- Table 8: 'with additional measures' [may]
- Table 9: 'without measures' [may]

## 11. Key underlying assumptions and parameters used for projections

Key underlying assumptions and parameters	Unit, as applicable	Most recent year in the NIR, or the most recent year for which data is available 20XX	Projections of key underlying assumptions and parameters 20X(0)(5) 20X(0)(5) 20X(0)(5)		

**Timelines need to be the same as for the projections tables**

**Annex I CTF tables reported historic time series: For BTRs only the most recent year available needs to be reported**

The table refers to the key parameters used for the calculation of projections of the 'with measures' scenario. Examples include:

- GDP development
- Population development
- Energy demand (total and/or by fuel)
- Number of households
- Energy prices

Example: CTF table 5 from Estonia's BR3 submission

Key underlying assumptions		Historical <sup>b</sup>						Projected				
Assumption	Unit	1990	1995	2000	2005	2010	2011	2015	2020	2025	2030	2035
Population	thousands	1,570.60	1,448.08	1,401.25	1,358.85	1,333.29	1,329.66	1,313.27	1,297.40	1,276.00	1,250.73	1,222.95
GDP growth rate	%							3.30	3.00	2.50	2.50	2.10
GDP Constant prices	constant EUR million							17,472.00	20,373.07	23,275.90	26,334.55	29,458.80
EU ETS carbon price	EUR/EUA							7.50	15.00	20.00	26.50	36.50
International (wholesale) fuel import prices: Electricity Coal	EUR/GJ							NA	2.58	2.61	2.64	2.67
International (wholesale) fuel import prices: Natural gas	EUR/GJ							NA	6.69	8.01	9.36	9.83
Final energy consumption: Industry	TJ	88,828.00	31,415.00	22,470.03	27,446.82	22,082.97	23,693.83	22,964.72	28,213.57	29,491.38	30,769.18	31,294.07
Final energy consumption: Transport	TJ	36,585.47	22,953.98	23,153.93	29,736.30	31,148.20	31,164.85	31,821.47	35,483.00	37,790.50	40,098.00	38,658.50

# Summary of flexibility in individual reporting requirements for BTRs



REFERENCE IN THE MPGS (ANNEX TO DECISION 18/CMA.1)	PROVISION IN THE MPGS	FLEXIBILITY PROVISION FOR THOSE DEVELOPING COUNTRY PARTIES THAT NEED IT IN THE LIGHT OF THEIR CAPACITIES
<p><b>Paragraph 85</b> <i>Expected and achieved GHG emission reductions for PAMs</i></p>	<p>Each Party shall provide, to the extent possible, estimates of expected and achieved GHG emission reductions of its PAMs</p>	<p>Instead encouraged to report such information</p>
<p><b>Paragraph 92</b> <i>GHG emission and removals projections</i></p>	<p>Each Party shall report projections</p>	<p>Instead encouraged to report such projections</p>
<p><b>Paragraph 95</b> <i>Projections extension</i></p>	<p>Projections shall begin from the most recent year in the Party's national inventory report and extend at least 15 years beyond the next year ending in zero or five</p>	<p>May extend their projections at least to the end point of their NDC</p>
<p><b>Paragraph 102</b> <i>Projections methodology or coverage</i></p>	<p>See paragraphs 93 through 101 of the annex to decision 18/CMA.1</p>	<p>May report using a less detailed methodology or coverage</p>

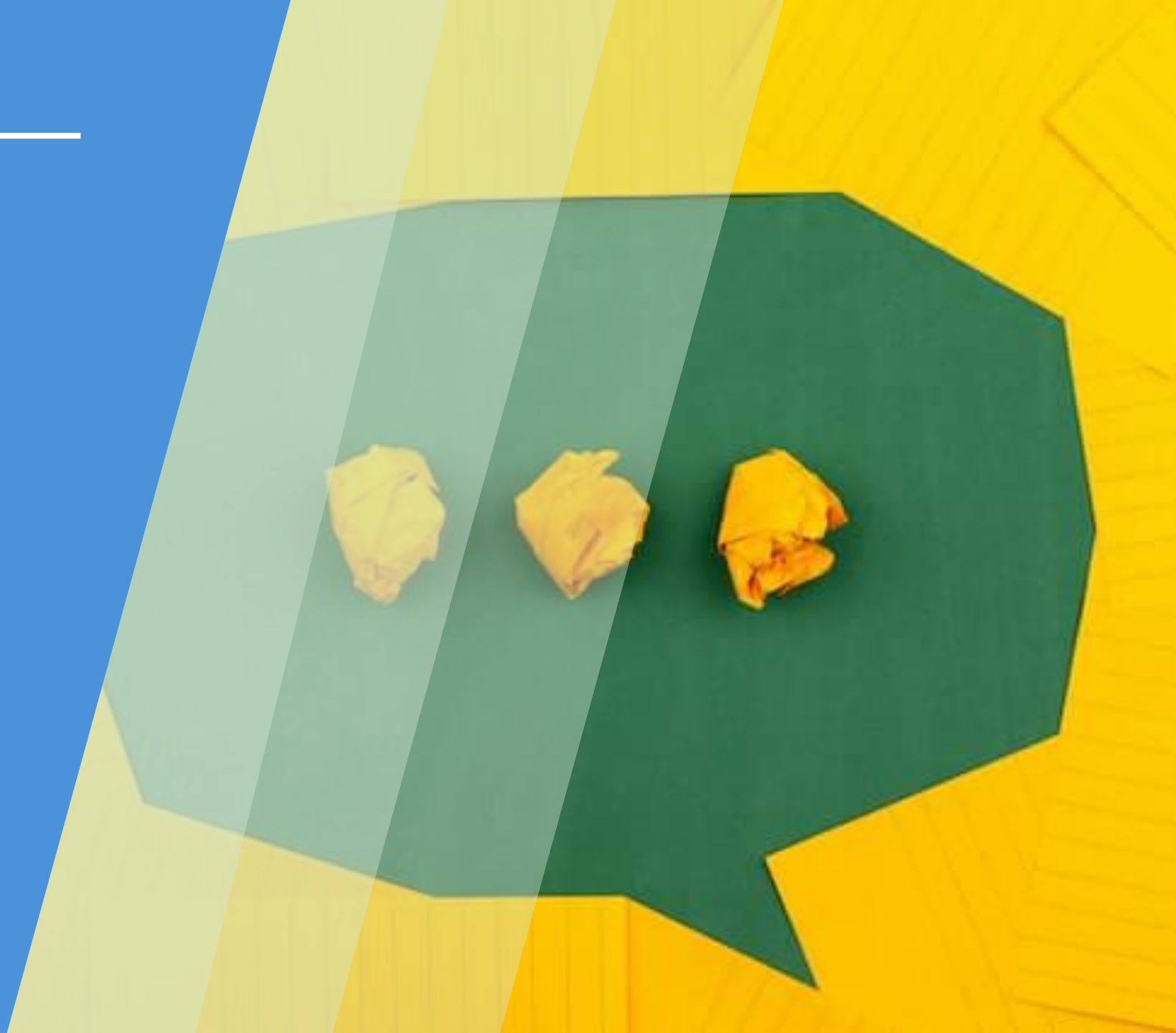
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## MODULE E2

# APPROACHES TO PRESENTING THE INFORMATION



**United Nations**  
Climate Change Secretariat







# Overview of options to present information

## Tabular

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### Narrative

- Suited to provide context
- Enables more detailed explanations
- Allows the description of connections and interactions

### Individual design

- Can provide a structured summary of information
- Allows to link different elements of information that are in different CTF tables
- Enables to add additional relevant information in a structured manner

### CTF tables

- Enables comparability across Parties
- Provides comprehensive information (with flexibility)

### Graphic

- Makes information and data easier to understand
- Enables direct visual understanding of trends or relationships

# Illustrative example 1: Progress reporting for a baseline target using CTF tables



<b>NDC description</b>		<b>Table 1: Indicators</b>		<b>Table 2: Definitions</b>	
Annex II, appendix		Structured summary		Structured summary	
Target:	30% reduction below BAU	Indicator:	GHG emissions	Indicator:	GHG emissions using AR5 GWPs
Type:	Emission reduction below a projected baseline	Reference:	Starting point 2019: 169 Mt CO <sub>2</sub> e BAU 2030: 215 Mt CO <sub>2</sub> e	Differences to inventory:	Exclusion of emissions from HFCs
Year:	2030	Updates:	No recalculation conducted	Co-benefits:	N/A
Reference:	BAU emissions 2030: 215 Mt CO <sub>2</sub> e	Relation to NDC:	The indicator directly relates to the NDC target		
Time frame:	2020-2030				
Scope:	Economy-wide; all sectors; CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O				



### Table 3: Methodologies

#### Structured summary

Accounting approach:	See BTR section XYZ: inventory methodology
Consistency with Article 4:	Through use of IPCC 2006 GL
Para 74(b):	See BTR section XYZ: projections methodology
Others:	NA

### Table 4: Tracking progress

#### Structured summary

Indicator:	GHG emissions
Unit:	Mt CO <sub>2</sub> e
Reference:	Starting point 2019: 169,1 BAU 2020: 173,2, target: 167,3 BAU 2021: 177,4, target: 165,6 BAU 2030: 215, target: 150,5
Year 2020:	159,7
Year 2021:	174,5
Target level:	150,5
Target year:	2030
Progress 2021:	Reduction of 1.6% below BAU

### Table 10: Indicator projections

Key indicator:	GHG emissions using AR5 GWPs
Unit:	Mt CO <sub>2</sub> e
Value for most recent year from inventory:	169,1
Projections:	
2020:	159,7
2025:	172,3
2030:	159,6
2035:	148,0

# Illustrative example 2: Quantitative non-GHG transport target using CTF tables



## NDC description

Annex II, appendix

Target: 100% of new vehicle sales electric

Year: 2030

Reference: NA

Time frame: 2020-2030

Scope: Light-duty passenger vehicles, busses; BEVs and PHEVs only

## Table 1: Indicators

Structured summary

Indicator: Share of electric vehicles in annual vehicle sales

Reference: Starting point 2020: 0,6%

Updates: NA

Relation to NDC: The indicator directly relates to the NDC target

## Table 2: Definitions

Structured summary

Indicator: Share of electric vehicles in annual vehicle sales

Differences to inventory: NA

Co-benefits: NA



**Table 3: Methodologies**

Structured summary

Methodologies used:

Number of electric vehicles sold divided by total sales for each year

Inclusion of all categories:

The NDC covers multiple targets for different sectors, ...

**Table 4: Tracking progress**

Structured summary

Indicator: Share of electric vehicles in annual vehicle sales

Unit: Percent

Reference: Starting point 2020: 0,6%

Year 2021: 1,01%

Target level: 100%

Target year: 2030

Progress 2021: increased share by 0,41 percentage points

Achievement of the target needs to be reported once information on the achieved value in the target year is available

**Table 10: Indicator projections**

Key indicator:

Share of electric vehicles in annual vehicle sales

Unit: Percent

Value for most recent year:

0,6%

Projections:

2025: 34,7%

2030: 83,4%

2035: 97,2%

## Example: Belize's NC4 reporting in individual tabular format



Mitigation Action	Timeframe	Specific Objectives	Coverage							Emissions Reduction Potential	Co-Benefits
			Scope	Implementing Entity	Support Entity	Support Type	Gas	Funding Provided	Status		
1. emPOWER Rural Electrification Project - Caribbean Renewable Energy Fund	November 2018 - February 2020	Provide renewable energy solutions to assist Belize in achieving universal energy access.	Community Level (3)	Energy Unit, Ministry of Labour, Local Government, Rural Development, Public Service, Energy & Public Utilities	United Arab Emirates (UAE)	Financial	CO <sub>2</sub>	2.3M USD	Ongoing	319 tCO <sub>2</sub> eq/year	Access to clean energy to the population of rural villages that currently do not have access to the national grid. Improvement in community livelihood, economic development, increased employment, and quality of jobs.
Description	The emPower Rural Electrification Project plans to install 400kW of solar PV and battery storage in rural villages that currently do not have access to the national grid. These villages are Medina Bank, Golden State, and Indian Creek. This project is in alignment with Belize's Sustainable Energy Action Plan (SEAP), which sets a goal of universal access to energy services by 2030.										
Assumptions	The estimated grid emission factor is 0.218 tCO <sub>2</sub> /MWh, calculated by splitting the GHG emissions of electricity production (GHG inventory category 1A1) for year 2017 by the MWh produced (data obtained from BEL). The estimation of impact of this policy is made by applying the grid emission factor to the 400kW installed. The value of capacity factor is obtained by multiplying daily isolation hours by 365 days.										



The format and details of the information provided easily lends itself to use in BTR and CTF tables.

# Example: Individual tables in Zimbabwe's NC4



To summarise  
sectoral  
targets

For the comparison  
of methodologies  
across reports

Sector	2030 GHG Emissions (million tonnes CO <sub>2</sub> -eq)	baseline Emissions (million tonnes CO <sub>2</sub> -eq)	2030 GHG emissions (million tonnes CO <sub>2</sub> -eq)- with mitigation actions	Absolute Reduction (million tonnes CO <sub>2</sub> -eq)	Percentage (%)
Energy	26.62	22.42	22.42	4.2	14
IPPU	4.20	3.75	3.75	0.45	2
Agriculture, Forestry and Other Land Use	41.57	16.22	16.22	24.35	82
Waste	3.00	2.35	2.35	0.65	2
<b>Overall</b>	<b>75.39</b>	<b>44.74</b>	<b>44.74</b>	<b>29.65</b>	<b>100</b>

	Sectoral Coverage	Reference year of target, Base year and historical data	BAU (Baseline) Scenario - Variables used for baseline projections	Mitigation Scenario (Number of Mitigation Actions Selected for Assessment)	Remarks
INC and SNC	Energy, Industrial Processes, Agriculture, LULUCF, Waste	-	-	-	Mitigation assessment not conducted due to lack of complete historical and BAU emission projections. Proposed sectoral mitigation measures mentioned
TNC	Energy, IPPU, Agriculture, LULUCF, Waste	2030 2000-2013	GDP, GDP growth rate, Population, population growth rate, industrial growth rate, average deforestation rate,	Assessment done just for individual measures in each sector	Sectoral mitigation assessment done.



## Example: Narrative descriptions

### The narrative description provides context and provide additional detail

**Baseline scenario:** The impacts of electricity generation on the environment is due to one or several factors including particulate emissions; gaseous emissions (CO<sub>2</sub>, SO<sub>x</sub>, NO<sub>x</sub> etc.); warm water discharges into streams, rivers or sea; liquid and solid waste (sludge, ash); inundation (in the case of large reservoirs) and changes of land use. Particulate and gaseous emissions are of primary importance in the case of electricity generation using fossil fuels. During the preparation of this report, the real-time data related to GHG emissions in electricity generation up to 2015 was collected. The GHG emission trends from 2015 to 2030 was taken from the Long Term Generation Expansion Plan (LTGEP) of 2015-2034 as it had projected same using several parameters including population and GDP growth. According to the LTGEP, demand for electricity will increase from 11,516 GWh in 2015 to 25,598 GWh in 2030. The annual growth will increase from 4.1% in 2015 to 4.9% in 2030. Accordingly, electricity generation will increase from GWh 12,901 in 2015 to GWh 28,410 in 2030. In the LTGEP base case scenario, coal will be the major source of power having its share reaching 40% by 2020 and 60% by 2034. The contribution of renewable energy sourced power will increase to 40% by 2025 and then decline to 35% by 2034 (LTGEP, 2015-2034). Figure 4.7 shows the GHG emissions in the baseline scenario for electricity generation.

*Sri Lanka NC3*

*US NC7/BR4*

#### KEY POLICIES AND MEASURES

The United States continues to advance many effective and complementary policies and measures across sectors to meet its targets. Discussed here are a subset of policies and measures that provide a significant contribution to greenhouse gas mitigation—or have the potential to over time. While this section mentions policies and measure that have continued since the last National Communication, the goal is to emphasize new or expanded policies and measures—and progress—since then.

#### **Energy: Supply**

##### **Federally-Led Investment in Clean and Renewable Energy**

The federal government deploys a number of policies to accelerate clean and renewable sources of energy, including supporting research, development, and deployment. One of the most effective policies over the past decade has been the Energy Investment Tax Credit and the Energy Production Tax Credit for renewable forms of energy. First established in 1978 and 1992, respectively, and extended multiple times, they are currently set to expire in 2023 and 2021, respectively. The tax incentives remain one of the biggest investments in renewable energy in U.S. history and help provide long-term certainty for investment in wind turbine, solar, and other renewable generation. Between 2010 and 2020, renewable electricity grew from 10 percent of generation, or 425 billion kWh, to 21 percent, or 834 billion kWh. Renewables also surpassed coal generation for the first time in 2020, and are anticipated to account for 84 percent of capacity additions in 2021—when including storage.<sup>133</sup>

Multiple agencies advance a whole-of-government approach to accelerate clean energy deployment through the following subset of key programs:

- **Financing Clean Energy:** DOE's Loan Program Office (LPO) plays a large role in advancing renewable energy through loan guarantees in new renewable generation projects, energy efficiency, nuclear energy, transmission infrastructure, and critical materials. At the end of 2020, LPO managed a portfolio of over \$30 billion in loans, loan guarantees, and conditional commitments—17 percent in support of solar. LPO has over \$40 billion in available authority, more than half of which is available for advanced nuclear, advanced fossil, and renewable and efficient energy. Included in that available authority is \$2 billion for the Tribal Energy Loan Guarantee Program, first launched in 2018, that helps grow economic opportunities on Tribal lands through energy development.<sup>134</sup>



# Example: UK's reporting on mitigation actions in CTF table 3 of its fourth Biennial Report



Table 3  
Progress in achievement of the quantified economy-wide emission reduction target: information on mitigation actions and their effects

Name of mitigation action	Included in with measures GHG projection scenario	Sector(s) affected	GHG(s) affected	Objective and/or activity affected	Type of instrument	Status of implementation	Brief description	Start year of implementation	Implementing entity or entities	Estimate of mitigation impact (not cumulative, in kt CO <sub>2</sub> e) 2020	Estimate of mitigation impact (not cumulative, in kt CO <sub>2</sub> e) 2025	Estimate of mitigation impact (not cumulative, in kt CO <sub>2</sub> e) 2030	Estimate of mitigation impact (not cumulative, in kt CO <sub>2</sub> e) 2035
Building Regulations Part L (2002+2005/6)*	Yes	Energy	CO <sub>2</sub>	Efficiency improvements of buildings (Energy consumption), Efficiency improvement of appliances (Energy consumption)	Regulatory	Implemented	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	2002	Ministry of Housing, Communities & Local Government (MHCLG)	10053	7710	5119	2736
Building Regulations 2010 Part L*	Yes	Energy	CO <sub>2</sub>	Efficiency improvements of buildings (Energy consumption)	Regulatory	Implemented	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	2010	Ministry of Housing, Communities & Local Government (MHCLG)	5088	6374	4885	3794
Building Regulations 2013 Part L*	Yes	Energy	CO <sub>2</sub>	Efficiency improvements of buildings (Energy consumption), Efficiency improvement of appliances (Energy consumption)	Regulatory	Implemented	Building Regulations set minimum energy performance standards for new buildings and when people carry out controlled 'building work' to existing properties including extensions, conversions and certain categories of renovation and replacement windows and boilers.	2013	Ministry of Housing, Communities & Local Government (MHCLG)	76	100	98	85
Sustainable Energy-Using Products – Post-Low Carbon Transition Plan*	Yes	Energy	CO <sub>2</sub>	Efficiency improvement of appliances (Energy consumption)	Regulatory	Implemented	The EU Ecodesign Directive and the Energy Labelling Framework Regulation operate by setting minimum performance and information requirements (respectively) for energy-using products. They aim to take the least efficient products off the market and to give consumers clear energy use-related information to guide their purchasing decisions. This is implemented through product-specific EU regulations.	2010	Department for Business, Energy and Industrial Strategy (BEIS)	2033	1999	1473	921

Reporting on mitigation actions in BR CTF table 3 is very similar to the new BTR CTF table 5

## Example: Reporting on underlying assumptions for projections in the UK's CTF table to its fifth BR



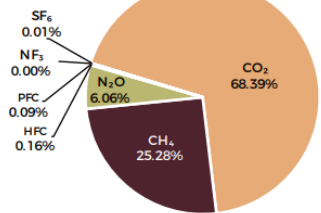
<i>Key underlying assumptions</i>		<i>Historical<sup>b</sup></i>		<i>Projected</i>					
<i>Assumption</i>	<i>Unit</i>	<i>1990</i>	<i>2018</i>	<i>2019</i>	<i>2020</i>	<i>2025</i>	<i>2030</i>	<i>2035</i>	<i>2040</i>
<b>EU ETS carbon price</b>	EUR/EUA, 2019 prices	NO	16.22	25.53	26.50	31.81	50.12	52.19	52.19
<b>Electricity generation carbon price - includes Carbon Price Support Levy</b>	EUR/EUA, 2019 prices	NO	36.96	45.95	46.34	49.21	54.40	60.00	63.36
<b>Pound Sterling to Euro exchange rate</b>	EUR per GBP	1.52	1.13	1.13	1.12	1.10	1.15	1.20	1.20
<b>Pound Sterling to US Dollars exchange rate</b>	USD per GBP	1.79	1.34	1.30	1.32	1.39	1.45	1.50	1.50
<b>UK GDP growth rate</b>	per cent/per annum	NO	1.39	1.23	1.45	1.85	2.27	2.23	2.26
<b>Crude oil - Brent 1 month</b>	GBP/bbl, 2019 prices	23.44	54.58	48.38	43.04	48.85	54.63	60.00	60.00
<b>Coal - CIF ARA</b>	GBP/tonne, 2019 prices	43.25	70.41	45.99	48.36	49.13	50.29	51.37	51.37
<b>Gas - NBP</b>	GBP/MWh, 2019 prices	NE	20.99	12.97	16.04	18.08	20.13	21.84	21.84
<b>No. of households</b>	millions	22.64	27.79	27.99	28.17	29.13	30.06	30.94	31.77
<b>Population</b>	thousands	57,237.50	66,435.60	66,867.42	67,254.54	68,927.52	70,369.95	71,588.73	72,688.25



# Example: Using graphs for illustration in Mexico's BUR3

To illustrate data

Emisiones por gas en 1990



Emisiones por gas en 2019

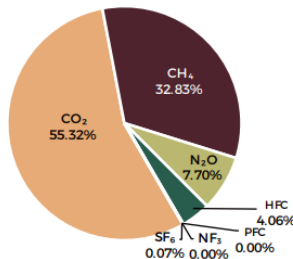
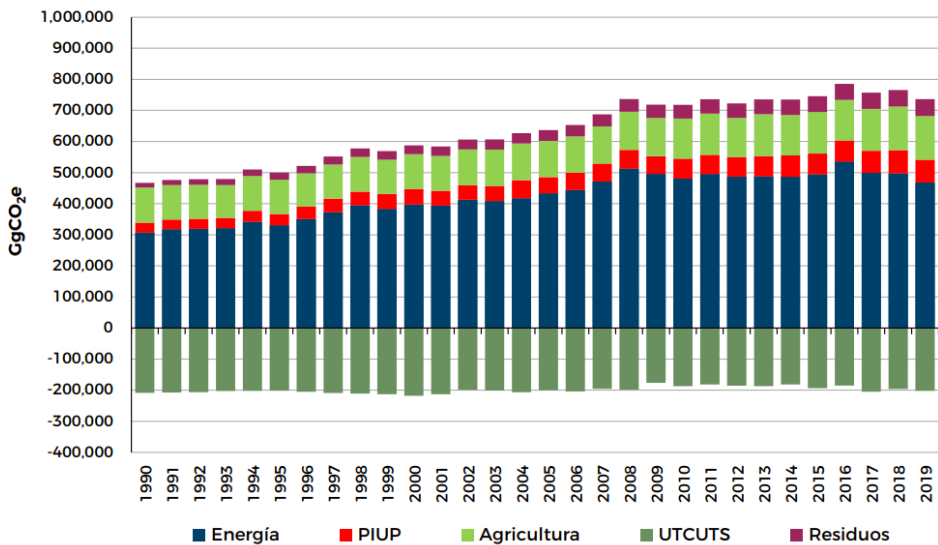
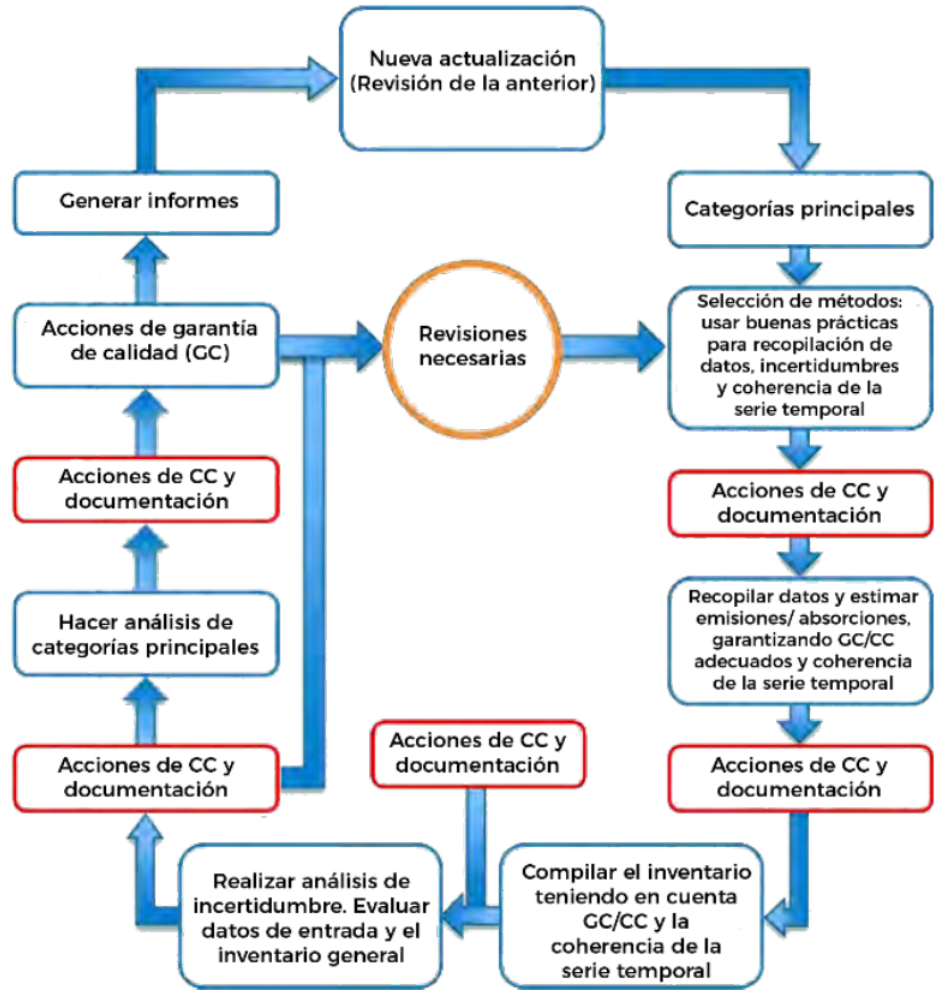


Figura 2.3 Emisiones de GEI por sector, 1990-2019  
GgCO<sub>2</sub>e



To illustrate processes





# Examples of cross-referencing for joint submissions

## MITIGATION ACTIONS AND THEIR EFFECTS

The United States has made continual progress toward its greenhouse gas emissions reduction goals. The success of these emission reductions can be attributed to, in part, by market-based measures and energy use changes driven by both federal and nonfederal policy and measures across the electricity and transportation sectors. Since that 2020 goal was set, the United States has increased its ambition and put into place new policies and measures to drive down emissions from the country on a path to achieve these goals. The policies and measures help modify energy demand by locking in clean infrastructure, avoiding the lock-in of fossil fuel infrastructure, accelerating the turnover of fossil fuel vehicle and appliance stock, influencing land use decisions and agricultural production practices, and shifting behaviors and culture in support of a clean energy future.

Chapter 4 of the National Communication describes the federal and nonfederal policies through 2020 that contribute to the United States' progress its commitments to reduce emissions. Annex 2 includes a detailed list of relevant policy and measures. The United States has also developed a National Climate Strategy that lays out priority policies and measures to take this decade to put the country on a path toward net-zero emissions no later than 2050. The United States is committed under the Paris Agreement to pursue efforts to limit warming to 1.5°C above pre-industrial levels.

## Singapore's GHG Emissions in 2018

Singapore's GHG emissions for 2018 totalled 53,312.68 GgCO<sub>2</sub> eq. This excludes the interim Tier 1b estimate of HFCs emissions from the RAC sector of 6,398.15 GgCO<sub>2</sub> eq in 2018. A breakdown of the total GHG emissions by sources in GgCO<sub>2</sub> eq is shown in the tables on pg 74–75.<sup>5,6</sup> The estimated CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub> and NF<sub>3</sub> emissions were converted to CO<sub>2</sub>-equivalent using the 100-year time-

based on the IPCC Good Practice Guidance and Uncertainty Management in National GHG Inventories to improve the transparency, consistency, comparability, completeness and confidence in the national GHG inventory of emissions estimates. The multi-agency GHG inventory team uses a four-stage inventory preparation process to facilitate continuous improvement to the national GHG inventory for subsequent inventory compilation cycles.

More information on the National GHG Inventory is presented in Chapter 3 of the BUR.

## A.I.4.2 Mitigation actions and their effects

Information about the mitigation actions and their effects is provided in Chapter 4.3, and CTF Table 3. Information about the Greek institutional arrangements, including institutional, legal, administrative and procedural arrangements used for compliance, monitoring, reporting, archiving of information and evaluation of the progress towards the economy-wide emission reduction target is provided in Chapter 4.1, 4.2 and 5.1.

There were no changes in domestic institutional arrangements, including institutional, legal, administrative and procedural arrangements used for domestic compliance, monitoring, reporting, archiving of information and evaluation of the progress towards its economy-wide emission reduction target since the BR4.

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## MODULE E3

# REPORTING ON INSTITUTIONAL ARRANGEMENTS



**United Nations**  
Climate Change Secretariat



- Transparency of climate action and support, through the ETF, is a key mechanism for:
  - Building mutual trust and confidence;
  - Facilitating implementation and raising ambition of climate action.
- It requires a continuous process of improvement, collection, processing, analysis, compilation and reporting and review of data.



*Continuous process for national climate reporting*

# Why reporting on institutional arrangements is important



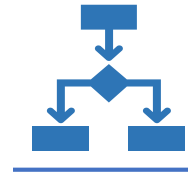
Strong institutional arrangements are vital to enabling countries to provide a reliable, consistent and continuous flow of data and information.



Transparency

- Enhanced reporting requirements are met
- Quality of reports is continuously improved

National decision makers are informed on the progress on climate action and level of climate ambition



Decision-making and implementation

Decision makers are equipped with the evidence they need to choose the right course of action and secure investments



Strong institutional arrangements



# Benefits of strong institutional arrangements



United Nations  
Climate Change Secretariat



Timely and sustainable international reporting



Informing policies, plans, strategies and programs



Political buy-in



Improved access to support



Increased awareness



Capacity-building

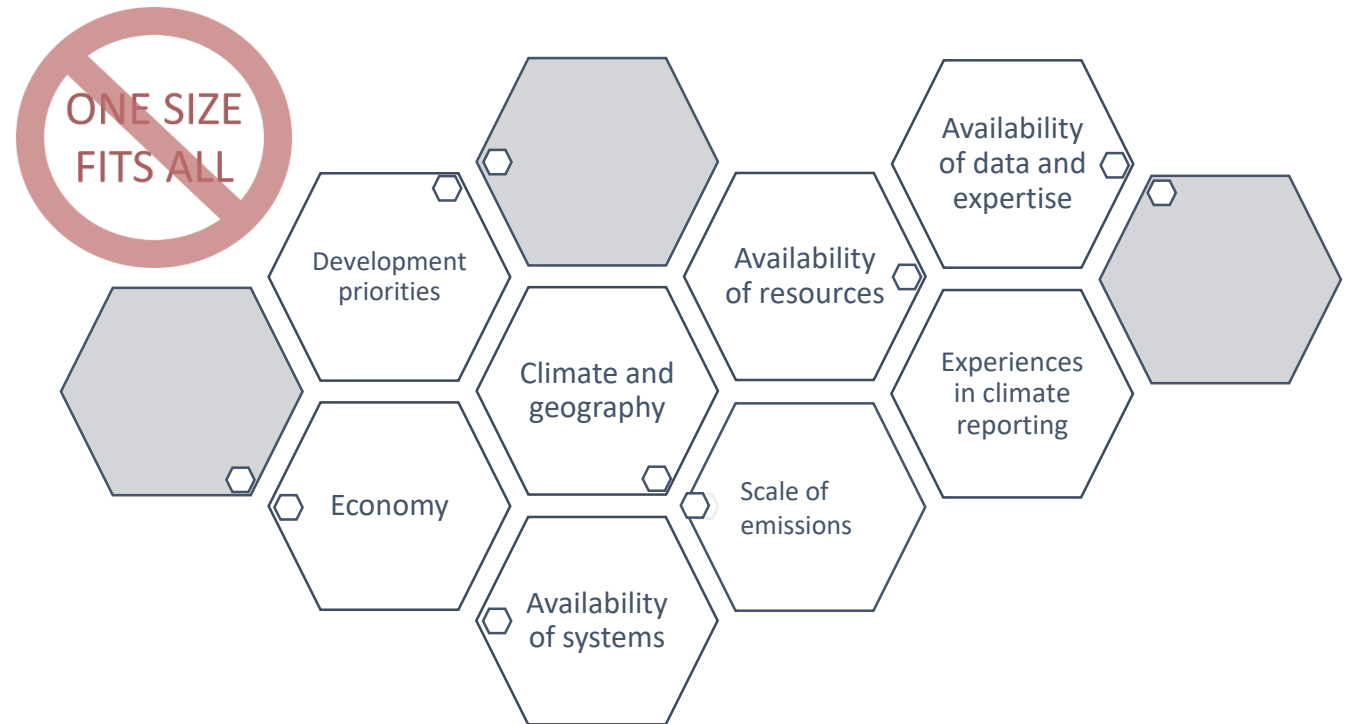


# Arrangements are always individual

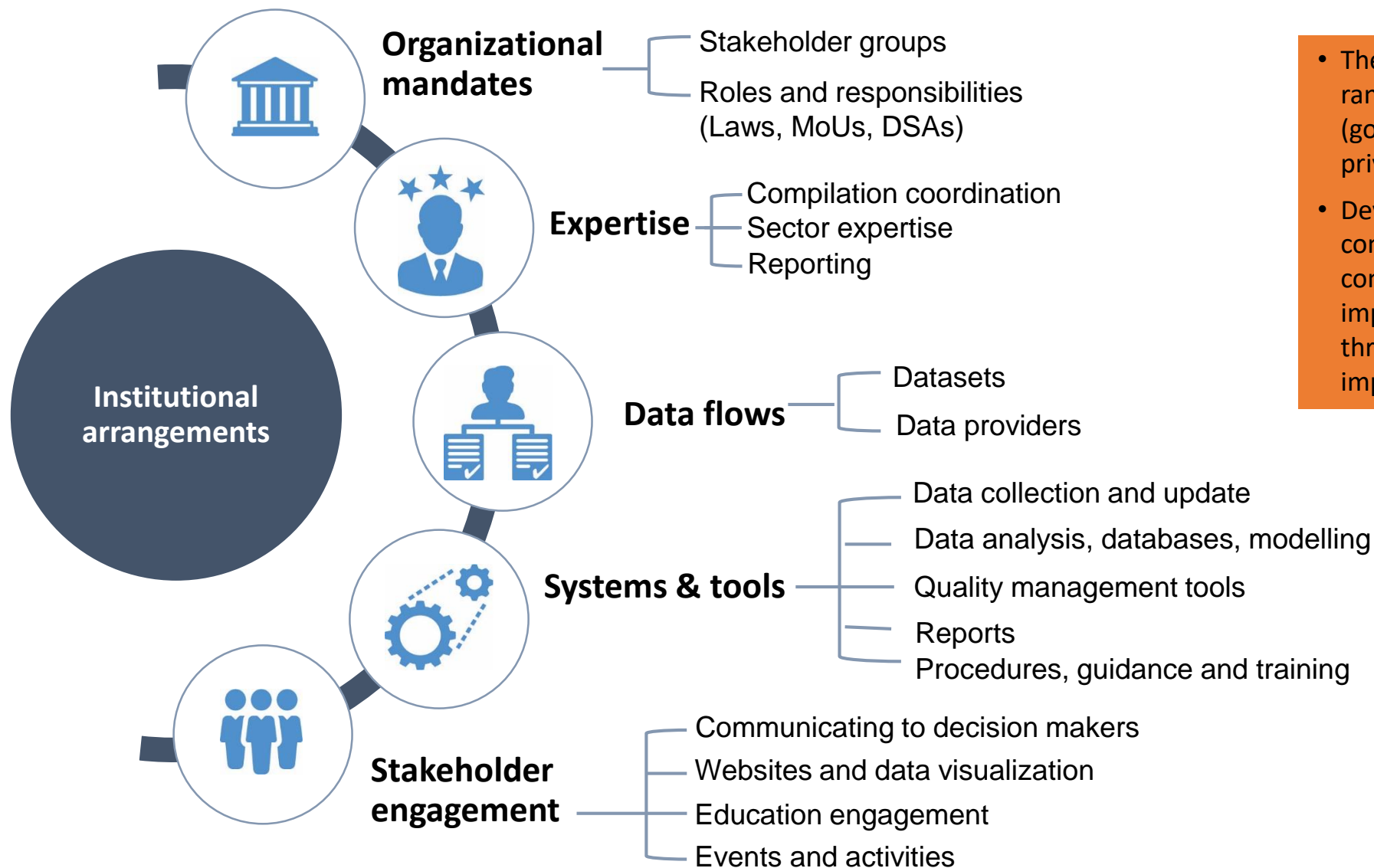


There is no one-size-fits-all model for institutional arrangements.

Arrangements need to be designed and tailored to national circumstances.



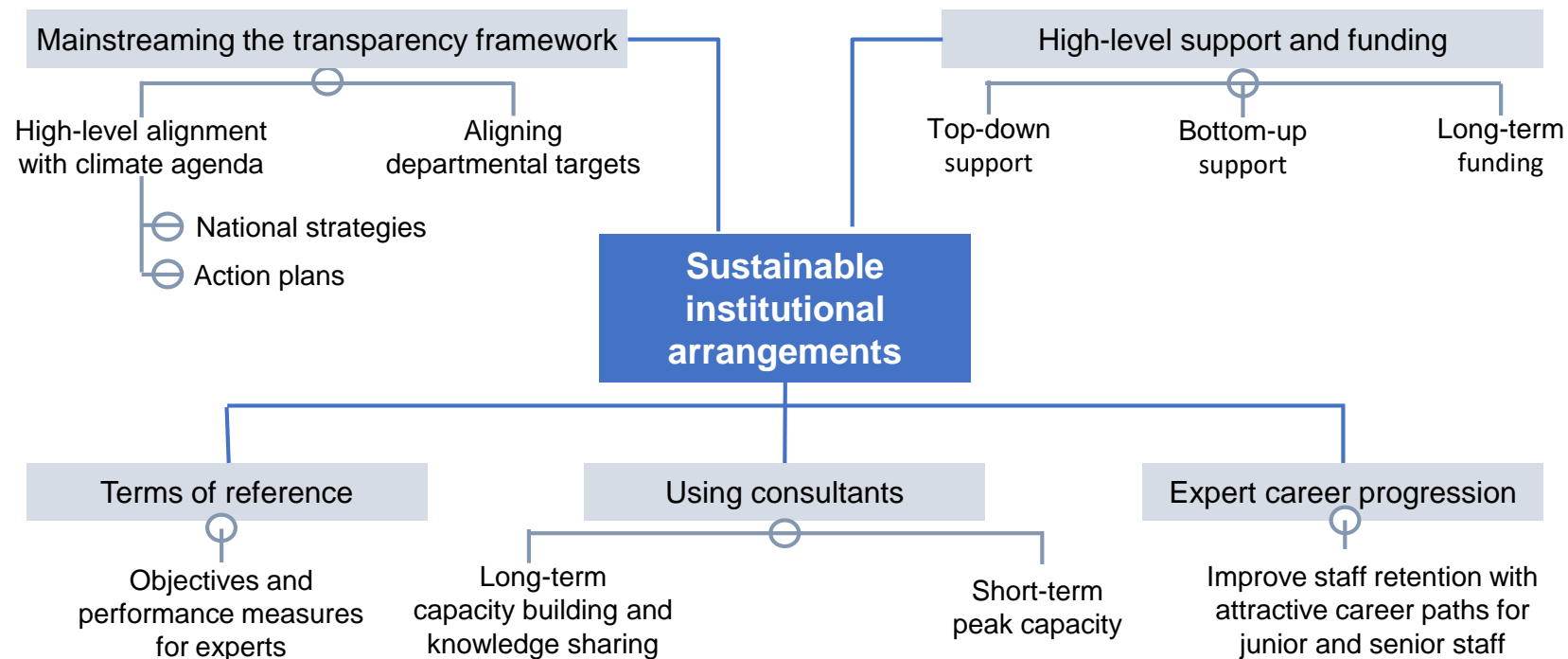
# Key components of institutional arrangements



- These components span a range of organizations (government, academia, private sector, etc.)
- Developing these components is a process of continual, gradual improvement tracked through a well-developed improvement plan.



# Key elements to sustaining institutional arrangements



- Continuity of service of, and continuous improvement
- Retainment of the knowledge and expertise gained from previous reporting cycles
- Availability of sufficient dedicated human and financial resources
- Relevant stakeholders are integrated in the transparency system



## Tracking progress

Institutional arrangements in place to track progress of NDCs

## Tracking ITMOs

Institutional arrangements in place for tracking ITMOs\*, if applicable

## Implementation & MRV

Legal, institutional, administrative and procedural arrangements for domestic implementation, monitoring, reporting, archiving of information and stakeholder engagement related to the implementation and achievement of its NDC

\* ITMOs: Internationally transferred mitigation outcomes

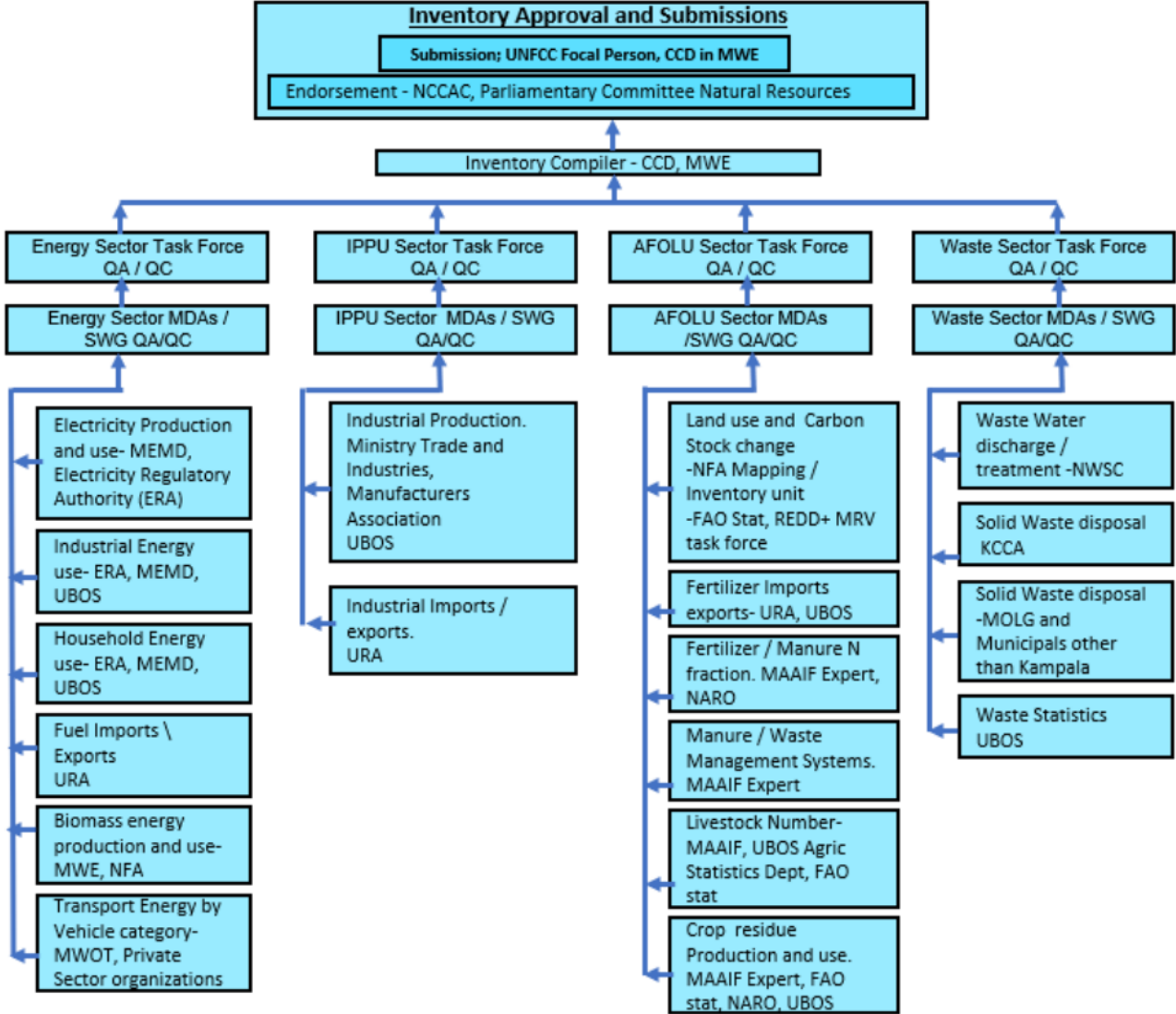


# Example: Uganda's GHG inventory system reported in its third National Communication

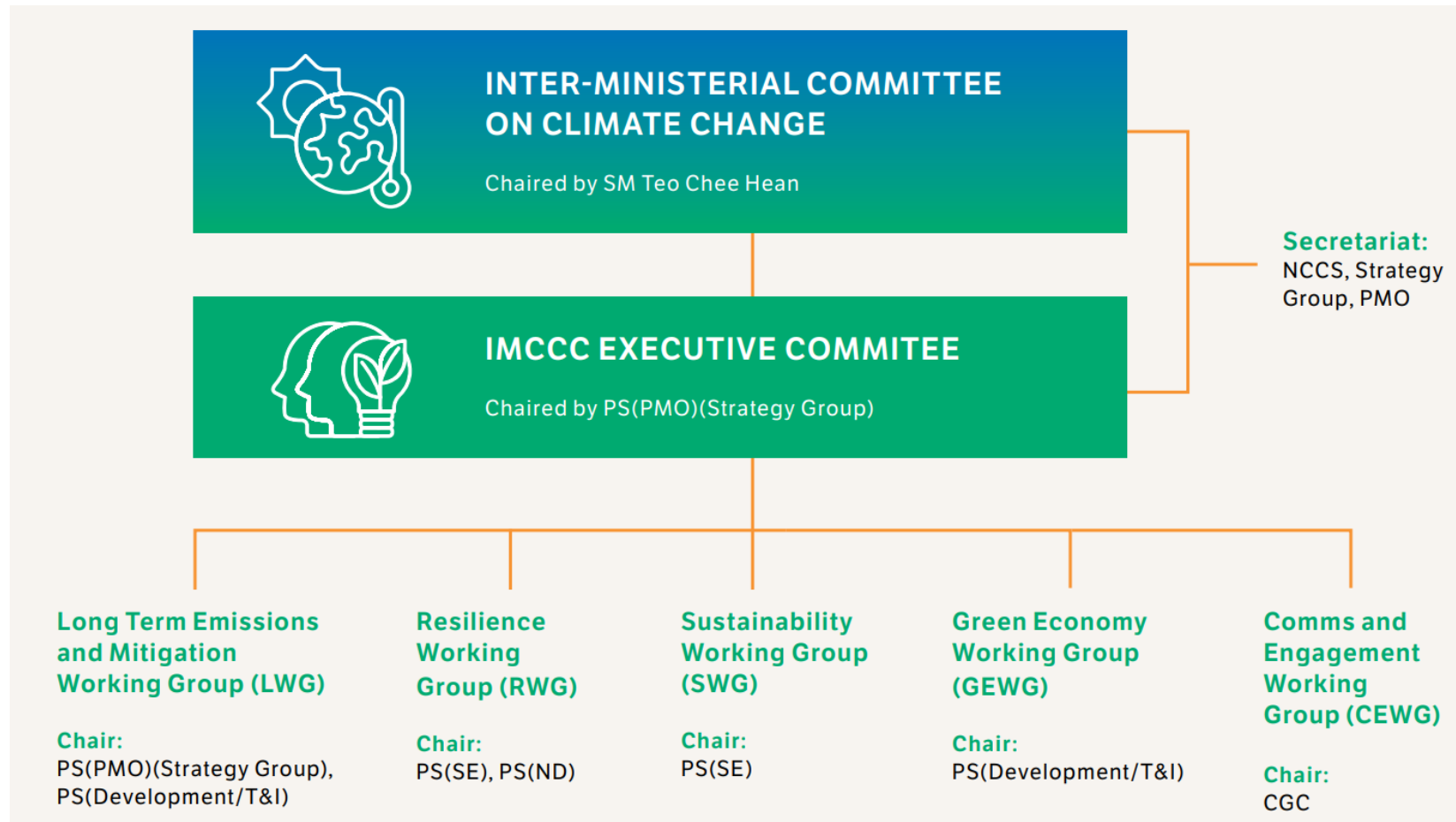
For many countries, the GHG inventory will be an essential element to tracking progress towards their NDC.

### Key features

- Clear responsibilities for data collection and quality control
- Involvement of academic institutions and civil society
- Central compilation and overall responsibility



# Example: Singapore's implementation arrangements reported in its fifth BUR/NC



## Key features

- High-level positioning
- 'Whole-of-government' approach
- Coordination between and within relevant line ministries
- Clear responsibility and accountability from ministerial to working group level
- Top-down and bottom-up consultation processes

## Example: Norway's arrangements for Kyoto mechanisms reported in its NC7/BR3



The reporting of institutional arrangements put in place by countries to track units from the Kyoto mechanisms can be used as guidance for the future reporting on institutional arrangements for ITMOs.

### Key features

- Clear responsibilities
- Robust QA/QC processes

### ■ 5.4 Accounting for the Kyoto mechanisms

This chapter provides an overview, while the Biennial Report in the Annex will give some more detail.

#### 5.4.1 First commitment period (2008-2012)

Norway was found eligible to participate in the three Kyoto mechanisms on 22 April 2008. The Norwegian Environment Agency has been assigned the tasks as Designated National Authority for the Clean Development mechanism (CDM), as well as Designated Focal Point for Joint Implementation (JI). However, Norway has not allowed JI projects on its territory. The Norwegian Environment Agency also operates the Norwegian national registry.





## CBIT - Capacity-building Initiative for Transparency

- **Strengthen national institutions** for transparency-related activities in line with national priorities
- Provide relevant tools, training and assistance for meeting the provisions stipulated in Article 13 of the Paris Agreement
- Assist in the **improvement of transparency over time**

## ICAT - Initiative for Climate Action Transparency

- Enhance climate action transparency, **enabling transformative policies** and better responding to the UNFCCC
- Increase **awareness of the benefits of enhanced transparency** to encourage countries to invest in **data systems**
- Develop a set of tools and methodologies and supporting networks for transparency efforts

## CGE Toolbox on institutional arrangements

- **Handbook** in English, Spanish, French, Arabic, Chinese and Russian
- Compilation of country **experiences** and lessons learned
- Compilation of **references** to other relevant technical resources
- **Animations** on institutional arrangements

## Others

- The **NDC Partnership**
- **Partnership on Transparency in the Paris Agreement**
- Donors / international organizations

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# Topics for discussion



**United Nations**  
Climate Change Secretariat





- ➔ Which of the reporting requirements are the most challenging?
- ➔ How will your experiences with NC and BUR reporting enable you to report under the ETF?
- ➔ What challenges do you foresee in reporting progress of your country's NDC?

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THANK YOU FOR YOUR ATTENTION.

<https://unfccc.int/CGE>



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