Ministry of Environment
Greenhouse Gas Inventory and Research Center

Partnership on Transparency in the Paris Agreement

CBIT-GSP
CLIMATE TRANSPARENCY

Food and Agriculture Organization of the United Nations

Tracking Progress of the Mitigation Commitments of Nationally Determined Contributions (NDCs)

Introduction and explanation of tables and Exercise:
Filling CTF Table 5: Mitigation policies and measures, actions and plans

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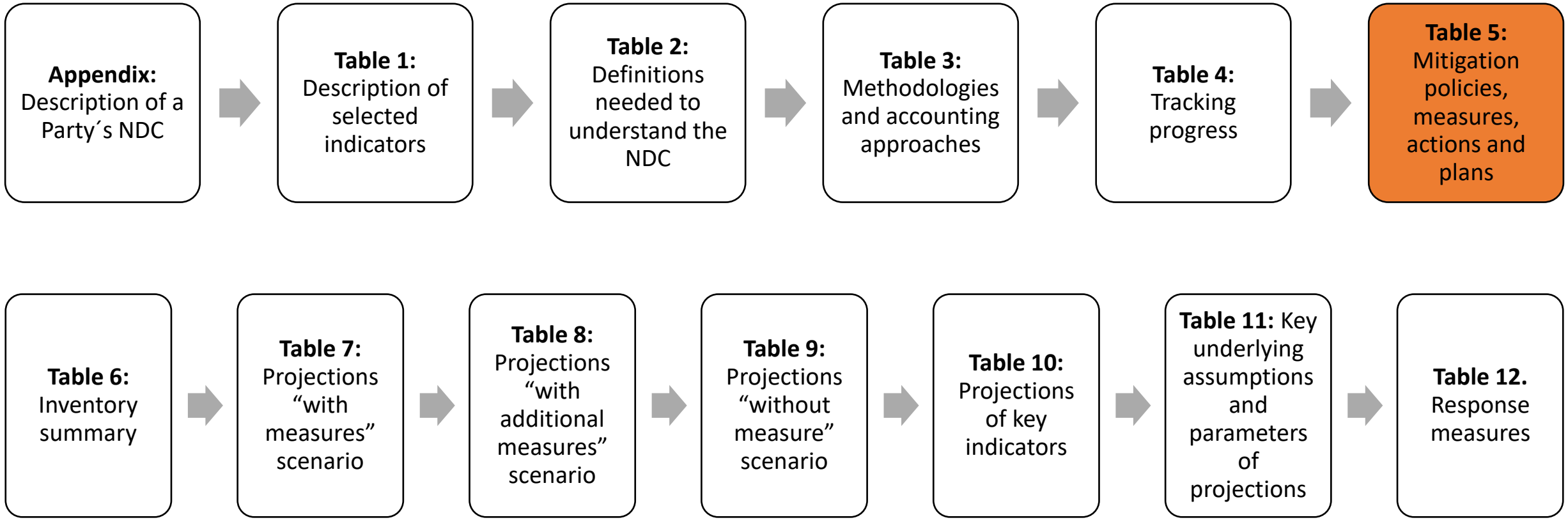
Content

Exercise 1 with filling in CTF Table 5: Mitigation policies and measures, actions and plans

Exercise 2 with estimating CO2 emissions reduction from mitigation measure

CTF Table 5: Mitigation policies and measures, actions and plans



CTF Table 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 a nationally determined contribution under Article 4 of the Paris Agreement

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions	
									Achieved	Expected

CTF Table 5

- Parties should focus on information that **has the most significant impact on GHG emissions** or removals and that affects key categories in the national GHG inventory.

Information that parties "shall" provide in a tabular format	Information that parties "may" provide
Name	Costs
Description	Non-GHG mitigation benefits
Objectives	How the mitigation actions interact with each other, as appropriate
Type of instrument (regulatory, economic or other)	
Status (planned, adopted or implemented)	
Sector(s) affected (energy, transport, industrial processes and product use, agriculture, LULUCF, waste management or other)	
Gases affected	
Start year of implementation	
Implementing entity or entities	

Estimates of expected and achieved GHG emission reductions as a result of its PAMs

- "Shall" requirement
- Those developing country Parties that need flexibility in the light of their capacities with respect to this provision are instead encouraged to report such information.
- Parties must describe the methodologies and assumptions used to estimate the GHG emission reductions or removals resulting from each PAM.

Fill in the CTF Tables 5

Data for your country Table C "Tables to be filled by participants“, Table C

Example of Table 5 for Mauritius

Example for Belize

Fill in CTF Table 5
CTF_Tracking_Progress_NDC_Template_Clean

Example of the CTF Table 5 for Mauritius

Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO2 eq)	
									Achieved	Expected in 2030
Improved fuel economy of vehicles	Improvements in the fuel intensity of vehicles at the rate of 0.5% per year between 2022 and 2030, decreasing to 0.25% per year after 2030.	Technological improvements, better fuel economies.	Regulatory, economic	Planned	Transport	CO2, CH4, N2O	2021	MLTLR; TMRSU; Mauritius Standards Bureau (MSB); National Land Transport Authority (NLTA).		6.7

Example of Belize

- Source: NC4

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_2	2.3M USD	Ongoing	319 tCO2 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 tCO2/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.										

Exercise 2. Estimating CO_2 emissions reduction from the three mitigation measures

Estimate CO_2 emissions reduction for 3 mitigation measures using template provided

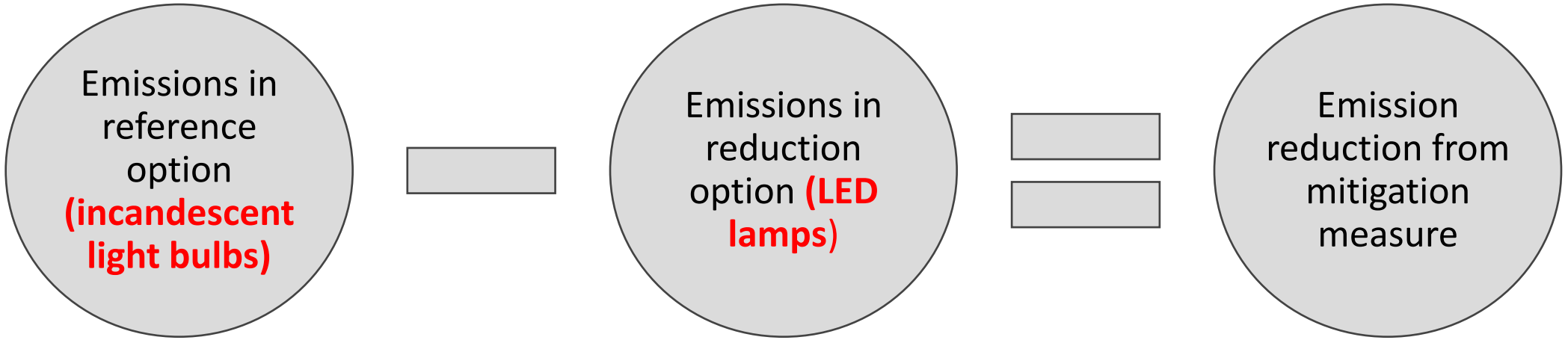
- Open excel temple for estimating emissions reduction
- Review the data in yellow cells and update it with your own country-specific data (Table C in Data Collection Table)

Template contains examples of three mitigation measures:

- 1000 LED lamps replacing 1000 incandescent bulbs
- 1MW Solar PV (on-grid)

Approach for the calculation of emission reduction for a mitigation option

- Example of efficient lighting
- LED lamps replacing incandescent light bulbs



Approach for the calculation of emission reduction for a mitigation option

1. Estimate CO_2 emissions in the reference option (incandescent light bulbs)

$$Emissions_{reference\ option}\ (tCO_2) = \frac{Electricity_{\ incandescent\ lighting}(MWh) \times Grid\ emission\ factor(\frac{tCO_2}{MWh})}{(1 - Grid\ losses\ \%)}$$

2. Estimate CO_2 emissions in the reduction option (LED lamps)

$$Emissions_{reduction\ option}(tCO_2) = \frac{Electricity_{\ LED\ lamps}(MWh) \times Grid\ emission\ factor(\frac{tCO_2}{MWh})}{(1 - Grid\ losses\ \%)}$$

Estimation of the electricity consumption in the reference option and reduction option

$$Electricity_{incandescent\ lighting} = Capacity_{incandescent\ bulb} \times Daily\ usage\ (hours)$$

$$Electricity_{\ LED\ lighting} = Capacity_{LED\ bulb} \times Daily\ usage\ (hours)$$

Reduction option: LEDs		
Average W of LED lamps	9.0	W
Daily usage	7.00	hrs
Electricity for LED lighting	23	MWh/year
Reference option: Incandescent bulbs		
Average W of replaced lamps	60.0	W
Electricity for incandescent lighting	153	MWh/year

Efficient domestic lighting with LEDs (1000 bulps)

General inputs:		
CO2-eq. emission coefficient	0.49	ton CO2-eq./MWh
Grid loss	18.6%	
Reduction option: LEDs		
Average W of LED lamps	9.0	W
Daily usage	7.00	hrs
Annual import of bulbs	1000	Bulbs
Electricity for LED lighting	23	MWh/year
Reference option: Incandescent bulbs		
Average W of replaced lamps	60.0	W
Electricity for incandescent lighting	153	MWh/year

Annual emissions (tons)	Emissions in reduction option	Emissions in reference option	**Estimated emissions reduction from the mitigation option**
CO2-eq. emission	14	91	**78**

Example of the table for efficient domestic lighting with LEDs

Grid emission factor

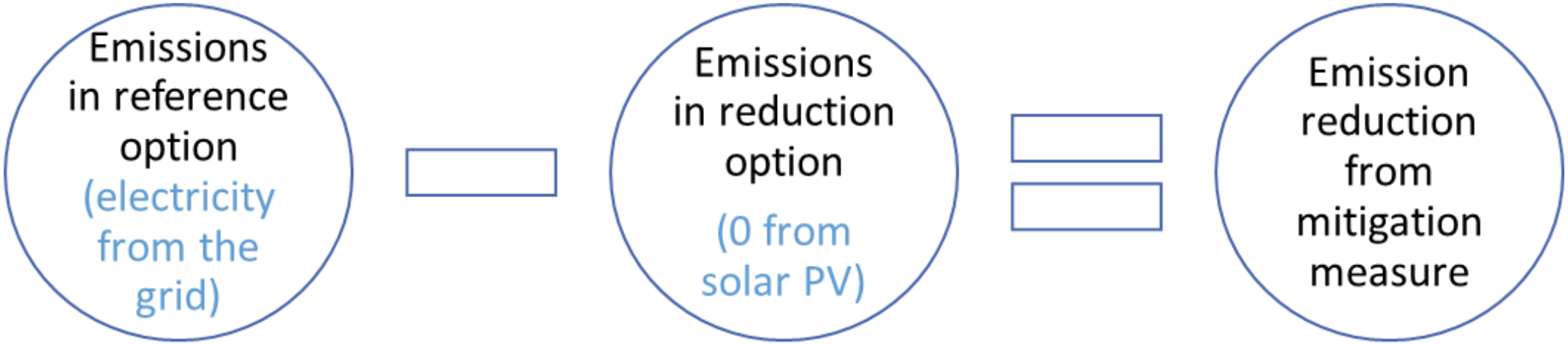
- Emission factor describes the average CO_2 emitted per unit of electricity generated in the grid.
- It is calculated by **dividing the absolute CO_2 emissions of all power stations by the total net generation**.

- You can estimate Grid emission factor for your country (tCO_2/MWh) based on the data on:
    - CO2 emissions from electricity generation (t CO_2)
    - Electricity generation (MWh)

Grid emission factor

- If data for your country is not available, use the data from this database Harmonized_Grid_Emission_factor_data_set.xlsx (live.com)

Mitigation measure – Solar PV (on grid)



$$Emissions_{reference\ option}(t\ CO_2) = Electricity_{solar\ PV}(MWh) \times Grid\ Emission\ Factor\left(\frac{tCO_2}{MWh}\right)$$

Electricity production from solar PV

- $Electricity\ production_{Solar\ PV}(MWh) = Size\ of\ solar\ PV(MW) \times Annual\ capacity\ factor(h)$
- $Annual\ capacity\ factor(h) = Daily\ insolation(h/day) \times 365\ (day)$

Size of solar PV	1.0	MW
Daily insolation	5	hours
Annual capacity factor	1825	Full time hours
Efficiency factor	1	
Electricity production	**1825**	**MWh**

Solar PVs, large grid, 1 MW		
General inputs:		
CO2-eq. emission coefficient	0.49	tCO2/MWh
Activity: Solar PV		
Size of solar PV	1.0	MW
Daily insolation	5	hours
Annual capacity factor	1825	Full time hours
Efficiency factor	1	
Electricity production	1825	MWh
Reference option: No solar PVs		
Electricity production	1825	MWh

Annual emissions (tons)	Emissions in reduction option	Emissions in reference option	**Estimated emissions reduction from the mitigation option**
CO2-eq. emission	0	886	886

Example of the table for the Solar PV