

# Training Workshop for Eswatini: In country Training on NDC tracking improving indicators, filling CTF tables, and introducing the BTR road map tool

Exercise:

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

Khetsiwe Khumalo

Transparency Officer

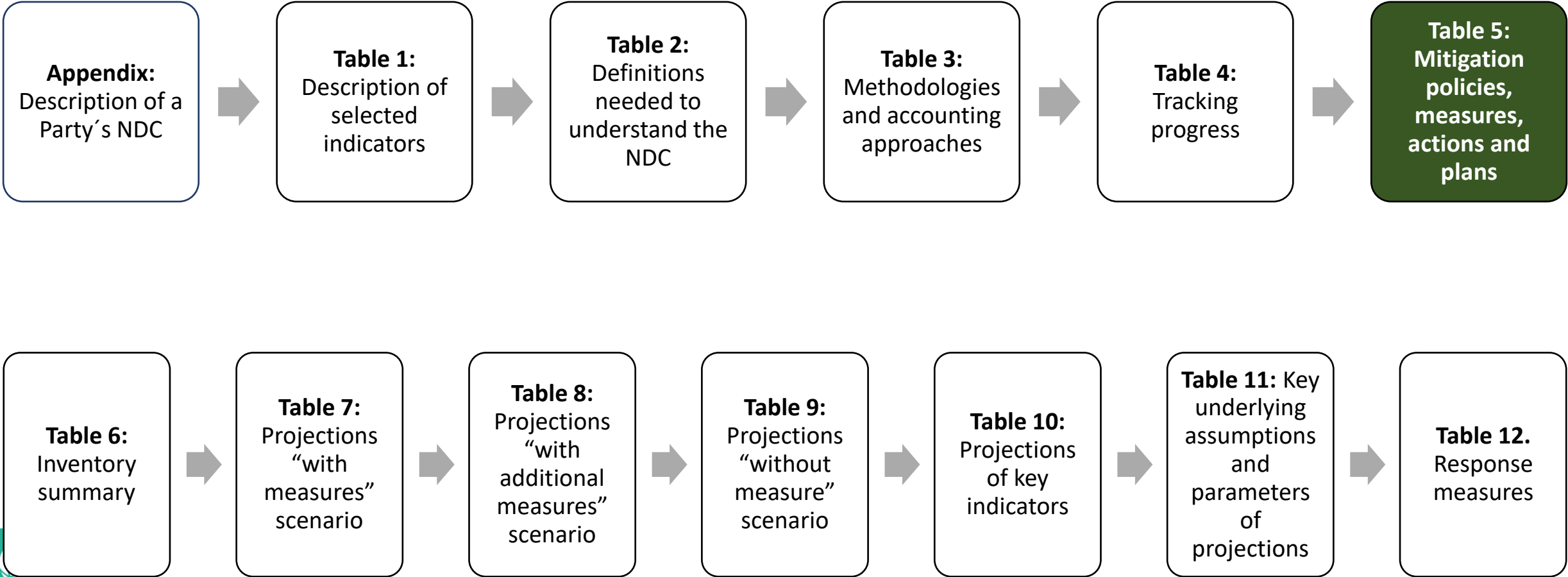
UNEP Copenhagen Climate Centre

## What are we going to do?

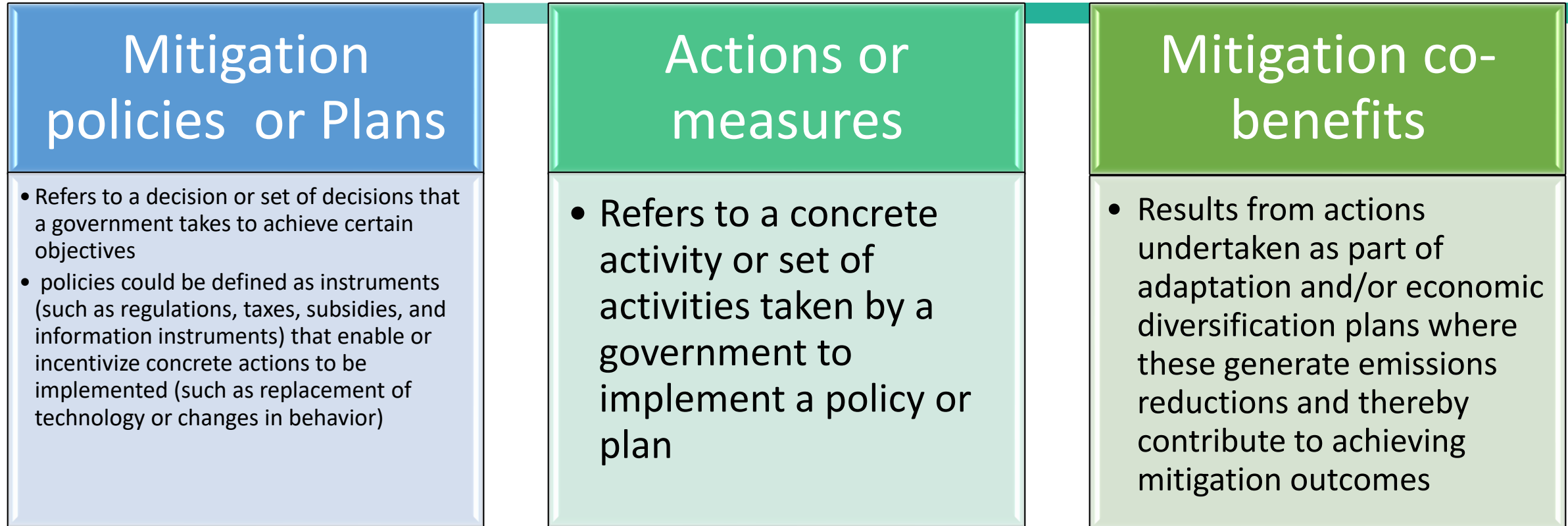
Exercise 1. Filling in  
CTF Table 5: Mitigation  
policies and measures,  
actions and plans

Exercise 2. Estimating  
CO2 emissions  
reduction from  
mitigation measure

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



# Key terms to understand



Parties to the Paris Agreement may implement mitigation policies and measures, actions and plans in any sector of their economy and must report information on those actions, policies and measures that have the most significant impact on GHG emissions or removals and those impacting key categories in the national GHG inventory

## 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	

## D. 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

- Each Party **shall** provide information on **policies, actions and measures that support implementation of its NDC**, focusing on those that have the most significant impact on GHG emissions or removals and those impacting key categories in the national GHG inventory
- To the extent possible, Parties **shall** organize reporting of actions **by sector** (energy, transport, IPPU, agriculture, LULUCF, waste, other), in a tabular format, including relevant information on mitigation co-benefits, as applicable:

Name	Description	Objectives	Type of instrument (regulatory, economic, other)	Status (planned, adopted, implemented)	Sectors affected	Gasses affected	Start year of implementation	Implementing entity
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- Each Party may also provide information on related costs, non-GHG mitigation benefits and how these actions interact with each other, as appropriate
- Each Party **shall** provide information on **estimates of expected and achieved GHG emission reductions [FX: encouraged];** and **methodologies and assumptions used**, to the extent possible
- Each Party should: identify PAMs no longer in-place and explain why; provide information on how its PAMs are modifying longer-terms trends in GHG emissions and removals

# CTF - Table 5:

## 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<sup>a, b</sup>

Name <sup>c</sup>	Description <sup>d, e, f</sup>	Objectives	Type of instrument <sup>g</sup>	Status <sup>h</sup>	Sector(s) affected <sup>i</sup>	Gases affected	Start year of implementation	Implementing entity or entities	Estimates of GHG emission reductions (kt CO <sub>2</sub> eq) <sup>j, k</sup>	
									Achieved	Expected

<sup>a</sup> Each Party shall provide information on actions, policies and measures that support the implementation and achievement of its NDC under Article 4 of the Paris Agreement, focusing on those that have the most significant impact on GHG emissions or removals and those impacting key categories in the national GHG inventory. This information shall be presented in narrative and tabular format (para. 80 of the MPGs).

<sup>b</sup> For each Party with an NDC under Article 4 of the Paris Agreement that consists of mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans consistent with Article 4, para. 7, information to be reported under paras. 80, 82 and 83 of the MPGs includes relevant information on policies and measures contributing to mitigation co-benefits resulting from adaptation actions or economic diversification plans (para. 84 of the MPGs).

<sup>c</sup> Parties may indicate whether a measure is included in the 'with measures' projections.

<sup>d</sup> Additional information may also be provided on the cost of the mitigation actions, non-GHG mitigation benefits, and how the mitigation action interacts with other mitigation actions, as appropriate (para. 83(a-c) of the MPGs).

<sup>e</sup> Parties should identify actions, policies and measures that influence GHG emissions from international transport (para. 88 of the MPGs).

<sup>f</sup> Parties should, to the extent possible, provide information about how actions, policies and measures are modifying longer-term trends in GHG emissions and removals (para. 89 of the MPGs).

<sup>g</sup> Parties shall, to the extent possible, provide information on the types of instrument: regulatory, economic instrument or other (para. 82(d) of the MPGs).

<sup>h</sup> Parties shall, to the extent possible, use the following descriptive terms to report on status of implementation: planned, adopted or implemented (para. 82(e) of the MPGs).

<sup>i</sup> Parties shall, to the extent possible, provide information on sector(s) affected: energy, transport, industrial processes and product use, agriculture, LULUCF, waste management or other (paras. 81 and 82(f) of the MPGs).

<sup>j</sup> Each Party shall provide, to the extent possible, estimates of expected and achieved GHG emission reductions for its actions, policies and measures in the tabular format; those developing country Parties that need flexibility in the light of their capacities with respect to this provision are instead encouraged to report this information (para. 85 of the MPGs).

<sup>k</sup> To the extent available, each Party shall describe the methodologies and assumptions used to estimate the GHG emission reductions or removals due to each action, policy and measure. This information may be presented in an annex to the biennial transparency report (para. 86 of the MPGs).

### Custom footnotes:

Documentation box:



# CTF Table 5: Mitigation policies and measures, actions and plans – Example

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 CO <sub>2</sub> 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	CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O	2021	MLTLR; TMRSU; Mauritius Standards Bureau (MSB); National Land Transport Authority (NLTA).		6.7



# CTF Table 5: Mitigation policies and measures, actions and plans – Example

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
Phasing out of HFC in Eswatini	Substitution of HFC consumption (substitution of HFC-134A with isobutane (HC-600A) in domestic and commercial refrigeration)	To reduce GHG emissions	Regulatory	Under implementation	IPPU	HFC	2022	Eswatini Environment Authority/ refrigeration company		?

# Estimating 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.

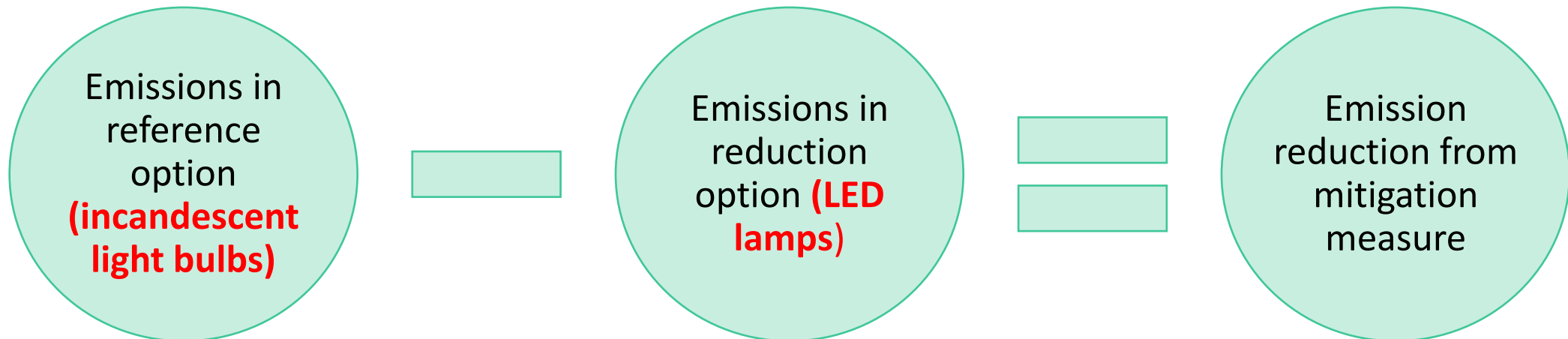
# Estimating the GHG effect of a policy or action

**Total net in GHG emissions resulting from the policy or action (t CO<sub>2</sub>e) = Total net policy scenario emissions (tCO<sub>2</sub>e) – Total net baselines scenario emissions (tCO<sub>2</sub>e)**

**Note:** “Net” refers to the aggregation of emissions and removals. “Total” refers to the aggregation of emissions and removals across all sources and sinks included in the GHG assessment boundary

# Estimating the GHG effect of Measures

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



# Estimating the GHG reduction of efficient lighting

1. Estimate CO<sub>2</sub> emissions in the reference option (incandescent light bulbs)

$$\begin{aligned} & \text{Emissions}_{reference\ option} (tCO_2) \\ &= \frac{\text{Electricity}_{incandescent\ lighting} (MWh) \times \text{Grid emission factor} \left( \frac{tCO_2}{MWh} \right)}{(1 - \text{Grid losses } \%)} \end{aligned}$$

2. Estimate CO<sub>2</sub> emissions in the reduction option (LED lamps)

$$\text{Emissions}_{reduction\ option} (tCO_2) = \frac{\text{Electricity}_{LED\ lamps} (MWh) \times \text{Grid emission factor} \left( \frac{tCO_2}{MWh} \right)}{(1 - \text{Grid losses } \%)}$$

# Estimating the GHG reduction of efficient lighting

$$\text{Electricity}_{\text{incandescent lighting}} = \text{Capacity}_{\text{incandescent bulb}} \times \text{Daily usage (hours)}$$

$$\text{Electricity}_{\text{LED lighting}} = \text{Capacity}_{\text{LED bulb}} \times \text{Daily usage (hours)}$$

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

# Estimating the GHG reduction of efficient lighting

## Efficient domestic lighting with LEDs (1000 bulbs)

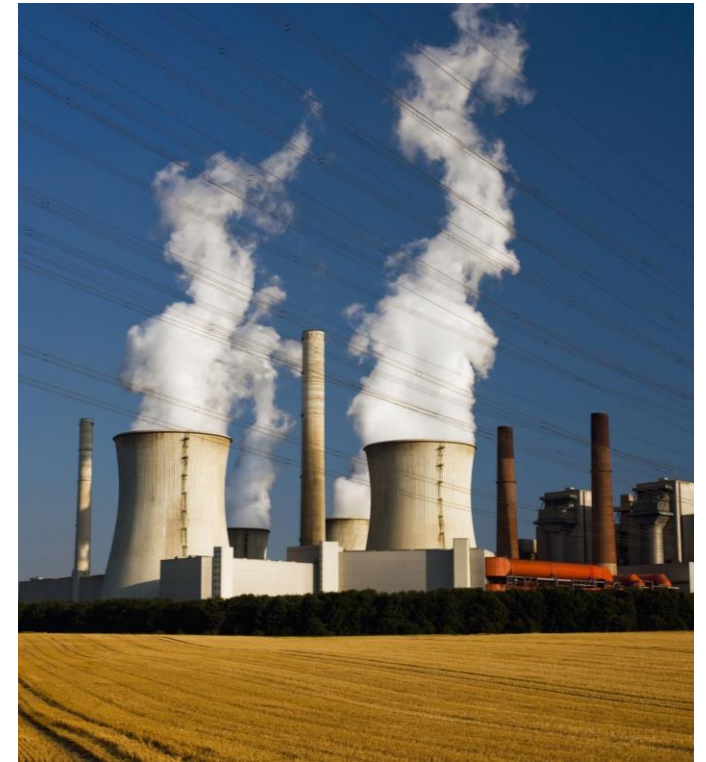
General inputs:		
CO2-eq. emission coefficient	0.49	ton CO2-eq./MWh
Grid loss	18.6%	
Reduction option: LEDs		
Average W of LED lamps	9.0	W
Daily usage	7.00	hrs
Annual import of bulbs	1000	Bulbs
Electricity for LED lighting	23	MWh/year
Reference option: Incandescent bulbs		
Average W of replaced lamps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

Example of the table for efficient domestic lighting with LEDs

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

# Grid emission factor

- Emission factor describes the average CO<sub>2</sub> emitted per unit of electricity generated in the grid.
- It is calculated by **dividing the absolute CO<sub>2</sub> emissions of all power stations by the total net generation.**
- You can estimate Grid emission factor for your country (tCO<sub>2</sub>/MWh) based on the data on:
  - CO<sub>2</sub> emissions from electricity generation (t CO<sub>2</sub>)
  - Electricity generation (MWh)



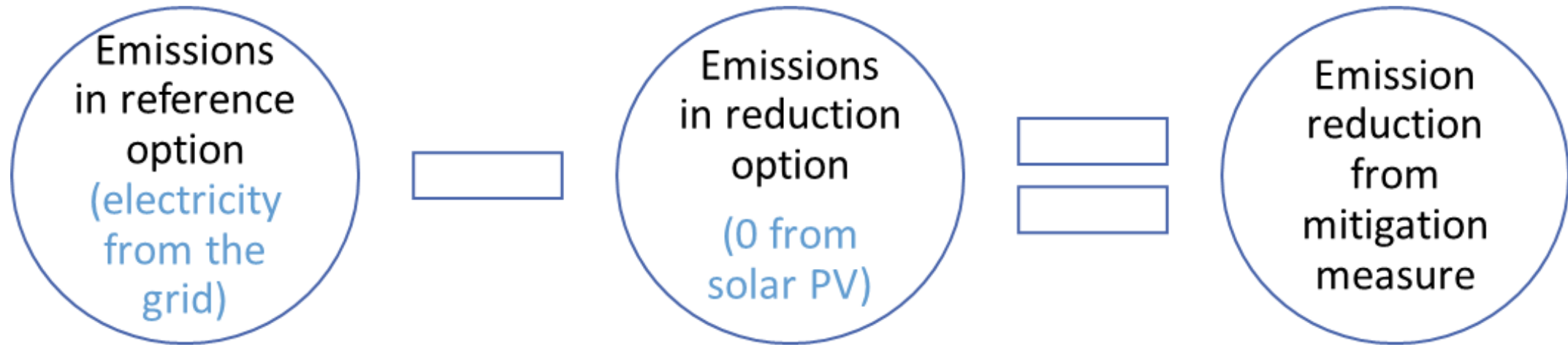


# Grid emission factor

## Grid emission factor

- If data for your country is not available, use the data from this database  
[Harmonized Grid Emission factor data set.xlsx \(live.com\)](#)

## Estimating the GHG reduction from solar PV



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

# Estimating the GHG emission reduction from solar PV

- *Electricity production<sub>Solar PV</sub> (MWh) = Size of solar PV (MW) × Annual capacity factor (h)*
- *Annual capacity factor (h) = Daily insolation (h/day) × 365 (day)*

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

# Estimating the GHG effect for Solar PV

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

Example of the table for the Solar PV

# CTF Table 5: Mitigation policies and measures, actions and plans – Example

- Estimate CO<sub>2</sub> emissions reduction for 4 mitigation measures using template provided

- Open excel file (*Day 2 Exercise Table 5 Technologies.xlsx*) for estimating emissions reduction

- Review the data in yellow cells and update it with country-specific data

- Template contains examples of two mitigation measures:

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





**CBIT-GSP**  
CLIMATE TRANSPARENCY



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# Thank you for your attention!

KHETSIWE KHUMALO | [khetsiwe.khumalo@un.org](mailto:khetsiwe.khumalo@un.org)  
UNEP-CCC

