

The background features a person in a grey suit jacket and white shirt, holding a brown leather bag and a book. The scene is overlaid with a green-tinted background containing various mathematical symbols and diagrams, such as vectors, angles, and equations like $P=2l+z$ and $a \times b$.

Belize MRV Manual Tool

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Purpose- The purpose of the manual is to provide users an overall view of how to input and monitor data for the national MRV system in reducing climate change impacts and enhancing sustainable development

- ▶ The manual is intended to inform policy makers and implementers at the national and international level.
- ▶ It is also intended for managers and technicians.
- ▶ The manual begins with the different components of the MRV, and it then goes into the instructions on how to use each section.
- ▶ It is important for the users to understand each component of the MRV, its terminologies and concept to better and effectively use the MRV tool properly.

Main MRV Components



- 1 Selection of Indicators
- 2 MRV System covering all sectors
- 3 The “Intervention” that basically looks at how indicators will be verified.
- 4 Monitoring sheet

Selection of Indicators

- ▶ Example of SDG to be collected by the Transport Department
- ▶ It is recommended SDGs and indicators presented should be monitored by the user, respective to sectors
- ▶ This section on SDGs will be filled out in the MRV component under the domain section

Transport		Sustainable development						
Domain	Parameters	Action	Relevance to SDG and	Indicators	Selected (Yes/No)	Explanation of chosen indicator	Effect on Indicator	Monitoring done
Growth and Development	Access to sustainable technology	Improve efficiency in the public transit system through the deployment of 77 hybrid and electric buses by 2030 (17 by 2025)	Goal 11, Target 11.2	Number of hybrid buses deployed by 2025	Yes	All indicators were sourced from the NDC implementation plan and ICAT consultation on SDGs.	Positive	No
				Number of electric buses deployed by 2025	Yes		Positive	No
		Facilitate adoption of electric vehicles in the passenger fleet by conducting a feasibility study for EV penetration, including assessment of potential incentives, and investing in EV charging infrastructure	Goal 7, Target 7a	Feasibility study of EV penetration complete by 2022	Yes		Positive	Yes
				Assessment of potential incentives for uptake of EVs complete by 2022	Yes		Positive	Yes
				Development of regulations and incentives scheme for EV uptake by 2024	Yes		Positive	No
		City and community resilience	Goal 9, Target 9.1	Number of EV charging stations deployed by 2025	Yes		Positive	Yes
Number of new projects to support climate-resilient transport infrastructure	Yes			Positive	No			

Section on MRV

- ▶ When choosing a specific action to fill out. The second column will indicate the number of indicator you want to choose.

- ▶ Each actions has drop down boxes with indicators to chose from.
- ▶ The “effect” column indicate whether the impact of the indicator has a (+,-) outcome on the action

- ▶ The domain section shows where the user will input information on non-GHG.
- ▶ The previous slide on the “selection of indicators for non-GHG” should be inputted in this section # 3.

Sector	Actions	Indicator Selection			Domain				
		Number of indicators selected per action	Indicator name	Effect	Environment	Social	Growth & Development	Economic	Institut
Energy	Reduction in transmission and distribution losses from 12% to 10% by 2030 resulting in reduced electricity demand and better quality of supply								
	Improve energy efficiency and conservation by at least 10% by 2030 compared to a BAU baseline projection								
	Achieve 75% gross generation of electricity from renewable energy sources by 2030 through the implementation of hydropower, solar, wind and								
	Reduce emissions from high carbon electricity sources including through taking 2MW diesel generation offline by 2021 and converting new LPG generation to CNG by 2026								
	Install 40 MW utility-scale solar power and 19 MW additional hydropower capacity by 2025								
	Implement feed in tariff policy and regulatory framework to facilitate distributed renewable								

Example of the tool in use with a quantitative perspective

- ▶ First action has two indicators. The effect shows a positive outcome. Seeing that no SDGs are being monitored for this action, it does not need to be filled out.

- ▶ Seeing the target value is a 2% difference for 2030. A 0.25 intervention value is given as an example. Based on that value, the NAIs estimate shows a value of 1. It estimates what improvement has been made before the monitoring has started. The NAIs monitored shows a zero improvement value, these are calculated for each indicator in order to evaluate the sustainable development benefits. Note: these are more relevant for non-GHG impacts. With all the values inputted, a project success value would be determined. The present value shows a 13% project success.

Sector	Actions	Indicator Selection		
		Number of indicators selected per action	Indicator name	Effect
Energy	Reduction in transmission and distribution losses from 1 reduced electricity of supply 3 Improve efficiency at least 10% baseline projection	2	Transmission losses (%)	+
		2	Distribution losses (%)	+
	Achieve 75% gross generation of electricity from renewable energy sources by 2030 through the implementation of hydropower, solar, wind and Reduce emissions from high carbon electricity sources including through taking 2MW diesel generation offline by 2021 and converting new LPG generation to CNG by 2026 Install 40 MW utility-scale solar power and 19 MW additional hydropower capacity by 2025 Implement feed in tariff policy and regulatory framework to facilitate distributed renewable			

Domain				Measurement type	Baseline Value	Target value estimated (ex-ante)	Intervention Value monitored (ex-post)	Unit	NAIs estimated (ex-ante)	NAIs monitored (ex-post)	Evaluation of Project Success
Social	Growth & Development	Economic	Institutional								
				Direct	-	2	0.25	%	1	0	13%
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Example of the tool in use with a qualitative perspective

- ▶ Second action presented is policy base. It has no numeric value to be used to determine monitoring success.
- ▶ For qualitative scenarios, assessing monitoring success can be done once a target value is established, the user will be able to fill out the relevant columns.

- ▶ Example: The “interconnection policy developed and implemented” A target value use can be 50%, so base on the status of the policy being developed and implemented a 10%(10, 20,30, 40, 50) can be allotted to each component of the policy that is completed.
- ▶ Note that user will need to determine what completion ranking system they want to use as it relates to qualitative actions. Or users can use the 50% valuation. Once the target value is identified it will be easy to complete the table.

Energy			
Energy	Install 40 MW utility-scale solar power and 19 MW additional hydropower capacity by 2025		
	Implement feed in tariff policy and regulatory framework to facilitate distributed renewable power generation by 2022		+
	2	Regulations to facilitate the interconnection of renewable energy to the grid developed and implemented by 2022	+
Expand the use of biomass, including bagasse, for electricity generation			
Explore the feasibility of onshore wind power generation and flexible storage technologies to complement high levels of variable renewable			

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	Policy and planning	Indirect	-	50	50		1	1	100%
	Laws and regulation	Indirect	-	50	30		1	1	60%
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Intervention

- ▶ The intervention shows the indicators that will be used for monitoring a specific action, it also shows the entity involved in monitoring and frequency of reporting
- ▶ Note: that sector leads will be the ones filling out QC & QA procedures for each perspective indicator for their sector.

- ▶ Note: The intervention is linked to the monitoring sheet. Each serial number is linked to each indicator in the sheet. In order to include new indicators, changes would be needed to be made within the monitoring sheet by including a new row and adjusting the numbering by placing a cursor over the cell of the unchanged numbering and dragging down.

Serial number	1	
Serial number	2	
Indicator Name	Energy efficiency labelling scheme piloted by 2022	
Indicator Name	Implementation of energy conservation measures (ECMs) in public buildings	
Domain		
Action Name	Improve energy efficiency and conservation by at least 10% by 2030 compared to a BAU baseline projection	
Baseline Value		
Way of monitoring	How	
	Frequency	Annually
	By whom	Energy Unit
Project Value	0	
QA/QC procedures		
	QC check done	

	A	B
130		
131		
132		
133		
134		Parameter
135		
136	1	Energy efficiency labelling scheme piloted by 2022
137	2	Implementation of energy conservation measures (ECMs) in public buildings
138		Emissions (tCO2e) avoided with new renewable energy

Monitoring sheet

- ▶ The monitoring sheet will be inputted manually by the user
- ▶ After the baseline value, the value applied will be the target value information to be included.
- ▶ Year one- will include information/value after the monitoring is done for that year etc.

	Parameter	Unit	Baseline		Project				
			Value applied	Baseline value	Value applied	Year1	Value applied	Year4	Value applied
134									
136	1	Energy efficiency labelling scheme piloted by 2022		0 Started					
137	2	Implementation of energy conservation measures (ECMs) in public buildings		0 not implemented					
138	3	Emissions (tCO2e) avoided with new renewable energy projects by 2025		0 680ktco2e					
139	4	Assessment of generation potential from biomass including bagasse	# of assessment	0	0				
140	5	Volume of biomass product used for electricity		0	0				
141	6	Assessment of flexible energy storage feasibility	# of assessment	0	0				
142	7	Investments in upgrading long-distance transmission network by 2025	USD	0 USD 18 million					
143	8	Transmission losses (%)	%	0	850.00%				
144	9	Investments in upgrading distribution networks by 2025	USD	0 USD 15 million					
145	10	Distribution losses (%)	%	0	6.1				
146	11	Tons of emission reduced from high carbon electricity sources	ktCO2e	0	0				
147	12	% of gross generation of electricity from renewable energy sources by 2025	%	0	59				
148	13	MW of fossil fuel generation capacity retired or converted to less emissive technologies	MW	0	2MW				
149	14	MW of renewable energy in operation by 2025	# of MW operational	0	75MW installed				

List of Indicators

- ▶ How to include new indicators in the MRV component for sectors under “indicator selection” ?
 ▶ Go to indicator section, include a new row and input a new indicator. Highlight the entirety of the indicators, go over go to data, click on data validation.

Indicator Selection
Indicator name

The screenshot shows the Microsoft Excel interface with the 'Data' tab selected. The 'Data Validation' dropdown menu is open, showing options like 'Data Validation...', 'Circle Invalid Data', and 'Clear Validation Circles'. Below the menu, a spreadsheet is visible with a list of indicators in column A, rows 89 to 106. The indicators include 'Energy', 'Investments in upgrading long-distance transmission network by 2025', 'Transmission losses (%)', 'Investments in upgrading distribution networks by 2025', 'Distribution losses (%)', 'Tons of emission reduced from high carbon electricity sources', 'National Housing Policy developed by 2022', 'National Urban Development Policy developed by 2023', 'Energy efficiency labelling scheme piloted by 2022', 'Development of National Standard Building Code by 2022', 'Building codes formally adopted in national legislation by 2023', 'Implementation of energy conservation measures (ECMs) in public buildings', 'Finance mobilized for energy efficient investments by MSMEs by 2025', '% of gross generation of electricity from renewable energy sources by 2025', 'Number of renewable energy bankable projects prepared by the Ministry by 2025', 'Emissions (tCO2e) avoided with new renewable energy projects by 2025', 'MW of fossil fuel generation capacity retired or converted to less emissive technologies', and 'MW of renewable energy in operation by 2025'.

- ▶ Choose list in the drop-down box, under “Allow”
- ▶ Identify the source location you want to place this information.

The screenshot shows the 'Data Validation' dialog box in Excel. The 'Settings' tab is selected. Under 'Validation criteria', the 'Allow:' dropdown is set to 'List'. The 'Data:' dropdown is set to 'between'. The 'Source:' field is empty. There are checkboxes for 'Ignore blank' and 'In-cell dropdown', both of which are checked. At the bottom, there are 'Clear All', 'OK', and 'Cancel' buttons.

Thanks

