

**For Components 1 and 3 under the project
Nationally Appropriate Mitigation Actions
(NAMAs) for Low Carbon Island
Development Strategy for the Republic of
Mauritius
(NAMA Project)**

**CLIMATE CHANGE MITIGATION STRATEGY & ACTION
PLAN: 2021 - 2030**

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List of Acronyms

AFOLU	Agriculture, Forestry and Other Land Use
ATCS	Adaptive Traffic Control Systems
BTR	Biennial Transparency Report
CCA	Climate Change Act
CCC	Climate Change Committee
CCM	Climate Change Mitigation
CCMSAP	Climate Change Mitigation Strategy and Action Plan
CEB	Central Electricity Board
CO ₂ e	Carbon dioxide equivalent
EE	Energy Efficiency
EEMO	Energy Efficiency Management Office
ER	Emission Reduction
ETF	Enhanced Transparency Framework
FAREI	Food Agricultural Research and Extension Institute
FS	Forestry Services
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GWh	Gigawatt hour
ha	Hectare
HEC	Higher Education Commission
HEI	Higher Education Institutions
HFC	Hydrofluorocarbon
HOV	High Occupancy Vehicles
IPCC	Intergovernmental Panel on Climate Change
IPP	Independent Power Producer
IPPU	Industrial Processes and Product Use
ktCO ₂ e	Kilotonne of carbon dioxide equivalent
LRS	Light Rail System
MARENA	Mauritius Renewable Energy Agency
MEL	Metro Express Ltd
MEPU	Ministry of Energy and Public Utilities
MESWMCC	Ministry of Environment, Solid Waste Management and Climate Change
METEST	Ministry of Education, Tertiary Education, Sciences and Technology
MFARIIT	Ministry of Foreign Affairs, Regional Integration and International Trade
MFEPD	Ministry of Finance, Economic Planning and Development
MFSGG	Ministry of Financial Services and Good Governance
MGEFW	Ministry of Gender Equality and Family Welfare
MIE	Mauritius Institute of Education
MITD	Mauritius Institute of Training and Development
MLTLR	Ministry of Land Transport and Light Rail
MYESR	Ministry of Youth Empowerment, Sports and Recreation
MLTLR	Ministry of Land Transport and Light Rail
MRA	Mauritius Revenue Authority
MRIC	Mauritius Research and Innovation Council
MSB	Mauritius Standards Bureau
MSDG	Medium-Scale Distributed Generation
MSW	Municipal Solid Waste
MW	Megawatt
tCO ₂ e	Tonne of carbon dioxide equivalent
NAMA	Nationally Appropriate Mitigation Action

NIE	National Implementing Entity
NLTA	National Land Transport Authority
NDC	Nationally Determined Contribution
NIR	National Inventory Report
ODS	Ozone Depleting Substances
PA	Paris Agreement
PAX-km	Passenger kilometre
PS	Private Sector
PV	Photovoltaic
RAC	Refrigeration and Air Conditioning
RE	Renewable Energy
SEDEC	Service Diocésain de L'Éducation Catholique
SME	Small and Medium Enterprise
SWMD	Solid Waste Management Division
SSDG	Small-Scale Distributed Generation
TAP	Technology Action Plan
TNA	Technology Needs Assessment
TRMSU	Traffic Road Management and Safety Unit
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WMA	Wastewater Management Authority
WTE	Waste-to-Energy

EXECUTIVE SUMMARY

In 2021, the Climate Change Act (CCA) 2020 was proclaimed with the overarching objective to enhance the national climate governance ‘with a view to making Mauritius a climate change-resilient and low emission country’. The CCA 2020 will also support Mauritius to implement the provisions of the Paris Agreement (PA) up to 2030 and beyond. In 2021, Mauritius also submitted its updated Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC) according to the requirements of the PA. The updated NDC expresses an increase in the level of ambition to reduce atmospheric emissions of greenhouse gases (GHGs), while taking into account the country context and the common-but-differentiated responsibilities and respective capabilities to address climate change.

A Climate Change Mitigation Strategy and Action Plan (CCMSAP) has been developed for the period 2021-2030 to support implementation of the NDC. The CCMSAP supports the long-term objective ‘to contribute towards achieving a net-zero carbon society by 2070 while achieving the Sustainable Development Goals and securing a high quality of life for all’. The focus is on delivering sustainable development co-benefits while at the same time reducing GHG emissions across all sectors. The CCMSAP is also a contribution towards the formulation of long-term strategies as provisioned under the CCA 2020 (Section 14) and the PA (Article 4(19)). In addition to identifying the Strategies, Actions, Measures and Investments to support implementation of the NDC, a number of Enabling Factors (Legal & Institutional; Technology Transfer & Financing; Education and Research, Awareness Raising, and Role of Media; Gender and Children and Youth Mainstreaming) have been identified to support the formulation of a long-term National Climate Change Mitigation Strategy and Action Plan.

The CCMSAP is ordered using the sector classification used by the Intergovernmental Panel on Climate Change (IPCC). Some sectors are disaggregated for ease of readership. The total capital investment has been estimated to at least **USD 2.163 billion** for a total emission reduction of **2,205 ktCO_{2e}** by 2030, including the enhancement of sinks. The emission reductions are measured relative to the business as usual (BAU) scenario.

Energy Industries

OUTCOME: Decarbonisation of the electricity system using renewable energies and demand side energy efficiency TARGET: Reduce emissions relative to BAU by 1,870 ktCO_{2e} in 2030 INVESTMENT: USD 826.2 million		
E1	Promote end-use energy efficiency	E1.1. Increase economy-wide efficiency in electricity consumption by 10% in 2030
E2	Enhancing renewable energy sources in the electricity mix (without coal phase-out) at 40% by 2030	E2.1. Installation of additional 41 MW of onshore wind energy E2.2. Installation of additional 63.4 MW rooftop PV in residential segment E2.3. Installation of additional 62.5 MW solar PV in commercial segment E2.4. Installation of additional 71.5 MW utility scale PV E2.5. Increase biomass generation capacity by 32.7 MW E2.6. Waste-to-energy project for 20 MW E2.7. Installation of 22 MW off-shore wind energy E2.8. Installation of 20 MW wave energy power
E3	Enhancing renewable energy sources in the electricity mix with	E3.1. All mitigation actions defined under E2 E3.2. Substitution of thermal generation from coal with a

	complete phase-out of coal	combination of renewable biomass and/or variable technologies with energy storage technology
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Land Transport

OUTCOME: Towards a sustainable low-carbon land transport system in Mauritius TARGET: Reduce emissions relative to BAU by 74 ktCO₂e in 2030 INVESTMENT: USD 1,306.3 million		
LT1	Improved fuel economy of vehicles	LT1.1. Increased fuel economy at a rate of 0.5% per year
LT2	Decreasing peak time congestion to improve traffic fluidity	LT2.1. High Occupation Vehicles lane for uninterrupted flow along M2 LT2.2. Substituting ATCS for single timing traffic signaling to enhance real-time decision making LT2.3. Promoting active transportation LT2.4. Promoting car pooling
LT3	Reducing consumption of fossil fuels through increased adoption of lower-carbon vehicles	LT3.1. Increasing the share of hybrid cars to 8.31% of total passenger travel demand in 2030 LT3.2. Increasing the share of electric cars to 4.5% of total passenger travel demand in 2030
LT4	Electrification of mass transit mode of passenger transport	LT4.1. Operationalisation of the Light Rail System between Curepipe and Port Louis

Solid Waste Management

OUTCOME: Avoided emissions at landfill from a circular waste economy TARGET: Reduce emissions relative to BAU by 42.3 ktCO₂e in 2030 INVESTMENT: USD 16.3 million		
SWM1	Composting of the putrescible fraction of solid waste	SWM1.1. Composting of 31% of municipal solid waste in 2030
SWM2	Recycling of municipal solid waste	SWM2.1. Recycling of 22% of municipal solid waste by 2030
SWM3	Energy recovery from municipal solid waste	SWM3.1. Twenty percent (20%) of municipal solid waste recovered for waste-to-energy

Waste Water Management

OUTCOME: Avoided emissions in wastewater management from adoption of low-carbon technologies TARGET: Reduce emissions relative to BAU by 6 ktCO₂e in 2030 INVESTMENT: To be determined following feasibility study		
WWM1	Reduced methane emissions from adoption of low-carbon water treatment technologies	WWM1.1. Increasing utilisation level of aerobic treatment from 0.01 (BAU) to 0.03 in 2030 WWM1.2. Increasing utilisation level of anaerobic treatment from 0.01 (BAU) to 0.035 in 2030

Industrial Processes and Product Use

OUTCOME: Reducing the use HFCs according to Kigali Amendment to the Montreal Protocol TARGET: Reduce emissions relative to BAU by 43.5 ktCO₂e in 2030 INVESTMENT: USD 0.17 million		
IP1	Phase Down of hydrofluorocarbons (HFCs) in Mauritius	IP1.1. Reducing HFCs by 10% of the baseline value (2024) by 2029
IP2	Phase out of equipment using	IP2.1. Import ban on refrigerators using HFCs in 2024, and all

	HFCs	Refrigeration and Air Conditioning (RAC) equipment running on HFCs by 2029
IP3	Environmentally-sound disposal of HFC refrigerants	IP3.1. Recovery and safe disposal of HFCs in retired stock of RAC equipment

Agriculture (crops and livestock)

AGRICULTURE (crops) OUTCOME: Reducing emissions from good agricultural practices TARGET: Reduce emissions relative to BAU by 2.7 ktCO₂e in 2030 INVESTMENT: USD 5.66 million		
A1	Reducing chemical inputs in crop production	A1.1. Reducing chemical inputs by 1% absolute per year until 2030 (bio-farming practices)
A2	Implementation of bio-farming scheme	A1.2. Application of compost produced from MSW in crop cultivation
LIVESTOCK (L) OUTCOME: Improved food security with application of mitigation technologies for livestock waste management TARGET: Limiting increased emissions relative to BAU to 4.4 ktCO₂e in 2030 INVESTMENT: USD 1.4 million		
L1	Improved food security with adoption of environmentally-sound animal excrement management technologies	L1.1. Increase in livestock heads for increased food security with low-carbon excrement management technologies

Forestry

OUTCOME: Increasing the sink capacity of Mauritius TARGET: Enhancing sink capacity relative to BAU by 9.5 ktCO₂e in 2030 INVESTMENT: USD 7.3 million		
F1	Planting trees in urban areas	F1.1. Planting of 600,000 trees over a period of 7 years along the M1/M2 motorways
F2	Afforestation of abandoned agricultural land	F2.1. Afforesting 1,750 ha of abandoned sugar cane land with a combination of endemic by 2030

M&E Framework

The CCMSAP is accompanied by a Monitoring & Evaluation Framework that seeks to address the transparency requirements of the PA and to measure the sustainable development benefits of the mitigation actions of the NDC. For the transparency requirements, an online NDC Registry is planned to be operationalised. To measure the sustainable development benefits of mitigation, three types of indicators (agenda setting indicators; policy/strategy formulation indicators; policy/strategy evaluation indicators) underpinning an integrated policy cycle have been proposed for all emission sectors. A selected set of indicators for the Energy Industries is illustrated below as example.

Issue	Agenda setting	Formulation	Evaluation
Rising energy costs due to heavy reliance on imported fossil fuels (supply side)	1. Per capita energy bill (US\$/person/year) 2. Fossil fuel use (% of total final energy and electricity consumption) 3. Fossil fuel subsidies (US\$/year) 4. Share of floor area of	1. Share of renewables in electricity production (%) 2. Economic and financial incentives (US\$/year) to invest in renewable energy sources and energy storage technologies 3. Investments in grid	1. Reduced costs of energy imports (US\$/year) 2. National and household energy savings (US\$/year) 3. Emissions from electricity generation and consumption (tCO ₂ /year) 4. Grid emission factor

	green buildings in total park of buildings (%)	strengthening (US\$/year) 4. Installed capacity of different types of renewables (MW) 5. Number of persons trained in renewables value chains (sex disaggregated)	(tCO ₂ /MWh) 5. Number of green jobs created in the electricity supply and demand value chains
Low adoption of end-use energy efficiency (demand side management)		1. Amount of incentives to energy efficient appliances (US\$/year) 2. Number of energy performance standards and labels, including building energy codes, that are enforced 3. Number of persons trained in demand side management value chains (sex disaggregated) 4. Number of annual energy audits and energy value (GJ / GWh) carried out in manufacturing, and commercial and distributive trades 5. Number of accredited energy auditors 6. Investments in urban green infrastructure (US\$/year)	

1.0 Introduction

This report relates to Activity 1.2.4 by providing a Climate Change Mitigation Strategy and Action Plan (CCMSAP) that also responds to the requirements of Section 14 of the Climate Change Act 2020.¹ It also serves to strengthen national capacity to identify mitigation actions to meet the mitigation targets proposed in the updated Nationally Determined Contribution.² The CCMSAP is also a contribution of Mauritius towards fulfilling the requirements of Article 4 (19) of the Paris Agreement,³ which states that “(a)ll Parties should strive to formulate and communicate long-term low greenhouse gas emission development strategies, mindful of Article 2 taking into account their common but differentiated responsibilities and respective capabilities, in the light of different national circumstances”.

The CCMSAP is the result of the baseline analysis of mitigation actions,⁴ and the modeling of mitigation scenarios to 2030.⁵ It is, therefore, advised that the CCMSAP is used in conjunction with those two documents.

For ease of use, all strategic orientations are given in tabular form for each emission sector.

Structure of the Strategy and Action Plan

The CCMSAP covers all the emissions sectors using the nomenclature of the Intergovernmental Panel on Climate Change (IPCC), namely: the energy sector (energy industries and transport); non-energy sector (waste; agriculture; IPPU and FOLU). This is in keeping with the approach that has been adopted throughout the implementation of the Nationally Appropriate Mitigation Action (NAMA) project financed by the Global Environment Facility (GEF) and executed by United Nations Environment (UNE). The CCMSAP covers only mitigation actions for which the reductions of greenhouse gases have been quantified.⁶ The mitigation actions are drawn from the analysis of baseline mitigation actions,⁷ as well as those identified institutional stakeholders.

Section 2 gives the Climate Change Mitigation Strategy and Action Plan for the IPCC sectors while noting that the energy sector being the largest emissions sector has been separated into energy industries and transport. The CCMSAP also gives the measures that accompany the mitigation actions, as well as the costs of each action, while noting that some actions could not be budgeted pending completion of feasibility studies. Section 3 elaborates the Enabling Factors that will be needed to support implementation of the CCMSAP, while Section 4 provides the Monitoring and Evaluation Framework.

¹ Republic of Mauritius (2020) The Climate Change Act 2020, Government Gazette of Mauritius No. 145 of 28 November 2020.

² Republic of Mauritius (2021) *Update of the Nationally Determined Contribution of the Republic of Mauritius*. Republic of Mauritius: Port Louis.

³ UNFCCC (2015) *Decision 1/CP.21: Adoption of the Paris Agreement*. Paris Climate Change Conference, Paris: France.

⁴ P Deenapanray (2021) *Baseline Analysis of Mitigation Actions – A sectoral perspective*. Ministry of Environment, Solid Waste Management and Climate Change, Port Louis; P Deenapanray (2021) *MRV Baseline Analysis*. Ministry of Environment, Solid Waste Management and Climate Change, Port Louis.

⁵ P Deenapanray and AM Bassi (2022) *Mitigation Scenarios Modeling*. Ministry of Environment, Solid Waste Management and Climate Change, Port Louis.

⁶ Ibid.

⁷ P Deenapanray (2021) *Baseline Analysis of Mitigation Actions – A sectoral perspective*. Ministry of Environment, Solid Waste Management and Climate Change, Port Louis.

2.0 Climate Change Mitigation Strategy and Action Plan (CCMSAP)

The CCMSAP gives the roadmap for mitigation strategies and actions unto to 2030 in alignment with the timeline of the Paris Agreement. The long-term objective and the Rio principles underlying the CCMSAP are:

Long-term Objective: “To contribute towards achieving a net-zero carbon society by 2070 while achieving the Sustainable Development Goals and securing a high quality of life for all”.

Rio Principles of sustainable development. The most notable Principles that underpin the CCMSAP are: sovereignty (Principle 2), common-but-differentiated responsibilities and respective capabilities (Principle 7), inclusiveness and subsidiarity (Principle 10), women and youth participation (Principle 20 and Principle 21), intergenerational equity (Principle 3), poverty elimination (Principle 5), precautionary approach (Principle 15), and partnerships (Principle 27).

The Mitigation Strategies and Actions are given in Table 1, while Table 2 lists the investments and measures that would be required to implement the mitigation actions. Together, they serve the purpose of supporting implementation of the updated NDC, while at the same time providing the foundation for the subsequent formulation of long-term strategies to 2070. The Enabling Factors (section 3) provide the forward looking conditions for achieving net-zero carbon emissions post-2030.

The sector-level outcome and target in terms of greenhouse gas emissions reductions (ER) is given, as well as strategy-level disaggregation of emissions reduction.

Table 1. Climate Change Mitigation Strategy and Action Plan: 2021-2030.

ENERGY (Energy Industries, E) OUTCOME: Decarbonisation of the electricity system using renewable energies and demand side energy efficiency TARGET: Reduce emissions relative to BAU by 1,870 ktCO₂e in 2030				
	Strategy	Action	Time Frame	Main stakeholders
E1	Promote end-use energy efficiency [77 ktCO ₂ e ER]	E1.1. Increase economy-wide efficiency in electricity consumption by 10% in 2030 (baseline 2019)	2022 - 2030	EEMO
E2	Enhancing renewable energy sources in the electricity mix (without coal phase-out) at 40% by 2030 [1,112 ktCO ₂ e ER]	E2.1. Installation of additional 41 MW of onshore wind energy	2022 - 2026	MEPU; CEB; MARENA; PS
		E2.2. Installation of additional 63.4 MW rooftop PV in residential segment	2022 - 2026	MEPU; CEB; MARENA; PS
		E2.3. Installation of additional 62.5 ME solar PV in commercial segment	2022 - 2026	MEPU; CEB; MARENA; PS
		E2.4. Installation of additional 71.5 MW utility scale PV	2022 - 2026	MEPU; CEB; MARENA; PS
		E2.5. Increase biomass generation capacity by 32.7 MW (134 GWh bagasse; 48 GWh cane trash)	2021 - 2025	MEPU; CEB; IPPs
		E2.6. Waste-to-energy project for 20 MW	2030	MEPU; CEB; SWMD; PS
		E2.7. Installation of 22 MW off-shore wind energy	2026 - 2030	MEPU; CEB; MARENA; PS
		E2.8. Installation of 20 MW wave energy power	2026 - 2030	MEPU; CEB; MARENA; PS
E3	Enhancing renewable energy sources in the electricity mix with complete phase-out of coal	E3.1. All mitigation actions defined under E2	2021 - 2030	As for E2
		E3.2. Substitution of thermal generation from coal with a combination of renewable biomass and/or variable technologies with energy storage technology	2026 - 2030	MEPU; MFEPD; CEB; MARENA; IPPs; PS

	(60% RE in 2030) [1,780 ktCO ₂ e ER]			
ENERGY (Land Transport, LT)				
OUTCOME: Towards a sustainable low-carbon land transport system in Mauritius				
TARGET: Reduce emissions relative to BAU by 74 ktCO₂e in 2030				
LT1	Improved fuel economy of vehicles [6.7 ktCO ₂ e ER]	LT1.1. Increased fuel economy at a rate of 0.5% per year	2021 - 2030	MLTLR; TRMSU; MSB
LT2	Decreasing peak time congestion to improve traffic fluidity [5.3 ktCO ₂ e ER]	LT2.1. High Occupation Vehicles (HOV) lane for uninterrupted flow along M2	2025 - 2027	MLTLR; TRMSU
		LT2.2. Substituting ATCS for single timing traffic signaling to enhance real-time decision making	2022 - 2027	MLTLR; TRMSU
		LT2.3. Promoting active transportation	2021 - 2025	MLTLR; TRMSU
		LT2.4. Promoting car pooling	2022 - 2030	MLTLR; TRMSU
LT3	Reducing consumption of fossil fuels through increased adoption of lower-carbon vehicles [34.5 ktCO ₂ e ER]	LT3.1. Increasing the share of hybrid cars to 8.31% of total passenger travel demand in 2030	2021 - 2030	MLTLR; MFEPD; NLTA
		LT3.2. Increasing the share of electric cars to 4.5% of total passenger travel demand in 2030	2021 - 2030	MLTLR; MFEPD; NLTA
LT4	Electrification of mass transit mode of passenger transport [27.5 ktCO ₂ e ER]	LT4.1. Operationalisation of the Light Rail System between Curepipe and Port Louis	2022	MLTLR; MEL
SOLID WASTE MANAGEMENT (SWM)				
OUTCOME: Avoided emissions at landfill from a circular waste economy				
TARGET: Reduce emissions relative to BAU by 42.3 ktCO₂e in 2030				
SW M1	Composting of the putrescible fraction of solid	SWM1.1. Composting of 31% of municipal solid waste in 2030	2024 - 2030	SWMD; PS

	waste [36.3 ktCO ₂ e ER]			
SW M2	Recycling of municipal solid waste [5.8 ktCO ₂ e ER]	SWM2.1. Recycling of 22% of municipal solid waste by 2030	2022 - 2030	SWMD; PS
SW M3	Energy recovery from municipal solid waste [0.2 ktCO ₂ e ER]	SWM3.1. Twenty percent (20%) of municipal solid waste recovered for waste-to-energy	2030	SWMD; CEB; MEPU; PS
WASTE WATER MANAGEMENT (WWM)				
OUTCOME: Avoided emissions in wastewater management from adoption of low-carbon technologies				
TARGET: Reduce emissions relative to BAU by 6 ktCO₂e in 2030				
WW M1	Reduced methane emissions from adoption of low-carbon water treatment technologies [6 ktCO ₂ e ER]	WWM1.1. Increasing utilisation level of aerobic treatment from 0.01 (BAU) to 0.03 in 2030	2021 - 2030	WMA; MEPU; PS
		WWM1.2. Increasing utilisation level of anaerobic treatment from 0.01 (BAU) to 0.035 in 2030	2021 - 2030	WMA; MEPU; PS
IPPU (IP)				
OUTCOME: Reducing the use HFCs according to Kigali Amendment to the Montreal Protocol				
TARGET: Reduce emissions relative to BAU by 43.5 ktCO₂e in 2030				
IP1	Phase Down of HFCs in Mauritius	IP1.1. Reducing HFCs by 10% of the baseline value (2024) by 2029	2025 - 2030	National Ozone Unit; MRA (Customs); PS
IP2	Phase out of equipment using HFCs (in support of IP1)	IP2.1. Import ban on refrigerators using HFCs in 2024, and all RAC equipment running on HFCs by 2029	2025 - 2030	National Ozone Unit; MRA (Customs); PS
IP3	Environmentally-sound disposal of HFC refrigerants (in support of IP1)	IP3.1. Recovery and safe disposal of HFCs in retired stock of RAC equipment	2025 - 2030	National Ozone Unit; PS
AFOLU				
AGRICULTURE (A)				

OUTCOME: Reducing emissions from good agricultural practices				
TARGET: Reduce emissions relative to BAU by 2.7 ktCO₂e in 2030				
A1	Reducing chemical inputs in crop production [3.42 ktCO ₂ e ER]	A1.1. Reducing chemical inputs by 1% absolute per year until 2030 (bio-farming practices)	2021 - 2030	FAREI; PS (planters and importers of chemical fertilisers)
A2	Implementation of bio-farming scheme [-0.8 ktCO ₂ e ER]	A1.2. Application of compost produced from MSW in crop cultivation	2022 - 2030	FAREI; PS (farmers & producer of compost)
LIVESTOCK (L)				
OUTCOME: Improved food security with application of mitigation technologies for livestock waste management				
TARGET: Limiting increased emissions relative to BAU to 4.4 ktCO₂e in 2030				
L1	Improved food security with adoption of environmentally-sound animal excrement management technologies	L1.1. Increase in livestock heads for increased food security with low-carbon excrement management technologies	2022 - 2030	FAREI; farmers
FORESTRY (F)				
OUTCOME: Increasing the sink capacity of Mauritius				
TARGET: Enhancing sink capacity relative to BAU by 9.5 ktCO₂e in 2030				
F1	Planting trees in urban areas [4.3 ktCO ₂ e ER]	F1.1. Planting of 600,000 trees over a period of 7 years along the M1/M2 motorways	2022 - 2028	FS; MESWMCC
F2	Afforestation of abandoned agricultural land [5.2 ktCO ₂ e ER]	F2.1. Afforesting 1,750 ha of abandoned sugar cane land with a combination of endemic by 2030	2022 - 2030	FS; PS

The capital investments and measures that are needed to implement the mitigation actions are given in Table 2.

Table 2. Capital investments and measures required for implementing mitigation actions.

ENERGY (Energy Industries, E)	
E1.1. Increase economy-wide efficiency in electricity consumption by 10% in 2030	USD 3.61 million
<ul style="list-style-type: none"> • Measure 1.1.1. Establish energy efficiency (EE) Financing Scheme to promote commercial financing for EE projects in Small and Medium Enterprises (SMEs) and other companies • Measure 1.1.2. Establish EE Information Centre for awareness raising and provision of tailored technical information on EE technologies, opportunities, costs, suppliers and energy audits by an EE Information Centre • Measure 1.1.3. Development of an Energy Information System • Measure 1.1.4. Implementation of energy efficiency measures in building envelope • Measure 1.1.5. Financial incentives for retrofits (appliance and building envelope) for targeted groups • Measure 1.1.6. Building capacity of local installers (building envelope and systems) in the use of appropriate technologies for efficient use of energy in buildings • Measure 1.1.7. Implementation of Minimum Energy Performance Standards • Measure 1.1.8. The use of Building Energy Management Systems in hotels and service sector buildings • Measure 1.1.9. Introduce energy managers in all public buildings (with appropriate training) • Measure 1.1.10. Implementation of a programme to eliminate energy-inefficient lamps in outdoor lighting • Measure 1.1.11. Efficient energy use for water pumping at the Central Water Authority, Wastewater Management Authority and Irrigation Authority • Measure 1.1.12. Improving the Energy Use Intensity of primary, secondary and tertiary educational institutions • Measure 1.1.13. Use of mobile applications and artificial intelligence to promote EE 	
E2.1. Installation of additional 41 MW of onshore wind energy	USD 101.98 million
<ul style="list-style-type: none"> • Measure 2.1.1. Implement transparent bidding process for selection of most cost-effective private bidder 	
E2.2. Installation of additional 63.4 MW rooftop PV in residential segment	USD 141.25 million
<ul style="list-style-type: none"> • Measure 2.2.1. Implementation of the Solar Home Project • Measure 2.2.2. Implementation of Small-Scale Distributed Generation (SSDG) Net-billing Scheme 	
E2.3. Installation of additional 62.5 MEW solar PV in commercial segment	USD 139.25 million
<ul style="list-style-type: none"> • Measure 2.3.1. Introduce second phase of Medium-Scale Distributed Generation (MSDG) Scheme • Measure 2.3.2. Implementation of SSDG Schemes for Cooperatives and SMEs 	
E2.4. Installation of additional 71.5 MW utility scale PV	USD 103.82 million
<ul style="list-style-type: none"> • Measure 2.4.1. Implement transparent bidding process for selection of most cost-effective private bidder 	
E2.5. Increase biomass generation capacity by 32.7 MW	USD 26.16 million
<ul style="list-style-type: none"> • Measure 2.5.1. Implementation of Biomass Framework 	
E2.6. Waste-to-energy project for 20 MW	USD 103.72 million
<ul style="list-style-type: none"> • Measure 2.6.1. Implement transparent bidding process for selection of most cost-effective private bidder 	
E2.7. Installation of 22 MW off-shore wind energy	USD 102.68 million
<ul style="list-style-type: none"> • Measure 2.7.1. Implement transparent bidding process for selection of most cost-effective private bidder 	
E2.8. Installation of 20 MW wave energy power	USD 103.72 million
<ul style="list-style-type: none"> • Measure 2.8.1. Implement transparent bidding process for selection of most cost-effective private bidder 	
E3.2. Substitution of thermal generation from coal with a combination of renewable biomass and/or variable technologies with energy storage	To be determined

technology <ul style="list-style-type: none"> Measure 3.2.1. Carry out feasibility study of substituting coal with locally-grown renewable woody biomass Measure 3.2.2. Cost benefit analysis of increased penetration of variable REs with alternative storage technologies Measure 3.2.3. Implementation of the Biomass Framework 	following feasibility studies
Cross-cutting measures supporting E2 and E3 (CcME) <ul style="list-style-type: none"> CcME 1: Grid reinforcement using Battery Energy Storage System, Automatic Generation Control, Advanced Distribution Management System and Advanced Metering Infrastructure CcME 2: Full operationalisation of the Utility Regulatory Authority CcME 3: Continued application of existing fiscal incentives to promote renewables CcME 4: Operationalisation of new Renewable Energy Generation Schemes to promote solar PV (e.g. smart cities) 	
ENERGY (Land Transport, LT)	
LT1.1. Increased fuel economy at a rate of 0.5% per year	USD 0.10 million
<ul style="list-style-type: none"> Measure 1.1.1. Natural decrease in engine fuel intensity due to technology evolution Measure 1.1.2. Implement Energy Efficiency Labelling of vehicles Measure 1.1.3. Implement Energy Efficiency Labelling of tyres 	
LT2.1. High Occupation Vehicles (HOV) lane for uninterrupted flow along M2	USD 20 million
<ul style="list-style-type: none"> Measure 2.1.1. VISSIM traffic micro-simulation to build a micro-simulation network model Measure 2.1.2. Provision of overpass, grade-separated junctions, adaptive traffic control systems (ATCS) and coordinated ATCS in identified congested areas 	
LT2.2. Substituting ATCS for single timing traffic signaling to enhance real-time decision making	>USD 0.23 million
<ul style="list-style-type: none"> Measure 2.2.1. Use high speed broadband technology to support the implementation of an island-wide Intelligent Transport System 	
LT2.3. Promoting active transportation	>USD 4.56 million
<ul style="list-style-type: none"> Measure 2.3.1. Developing cycle circuits in four towns (Rose Hill, Vacoas, Grand Baie, Flacq) 	
LT2.4. Promoting car pooling	No cost
<ul style="list-style-type: none"> Measure 2.4.1. Adoption of carpooling from Plaine Magnien to Port Louis on Motorway M1 	
LT3.1. Increasing the share of hybrid cars to 8.31% of total passenger travel demand in 2030	USD (497.68) million
<ul style="list-style-type: none"> Measure 3.1.1. Promote the socio-economic and financial benefits of hybrid cars 	
LT3.2. Increasing the share of electric cars to 4.5% of total passenger travel demand in 2030	USD 1,281.38 million
<ul style="list-style-type: none"> Measure 3.2.1. Promote the socio-economic and financial benefits of electric cars Measure 3.2.2. Investments in battery charging infrastructure Measure 3.2.3. Adopt financial and economic incentives to promote low-carbon vehicles 	
LT4.1. Operationalisation of the Light Rail System (Metro Express) between Curepipe and Port Louis	USD 405 million (sunk cost)
<ul style="list-style-type: none"> Measure 4.1.1. Promote modal shift from private car usership to light rail system 	
SOLID WASTE MANAGEMENT (SWM)	

SWM1.1. Composting of 31% of municipal solid waste in 2030	USD 16.28 million
<ul style="list-style-type: none"> Measure 1.1.1. Recovery of 50% food waste (17.28 Gg) and 50% garden waste (34.13 Gg) in 2030 	
SWM2.1. Recycling of 22% of municipal solid waste by 2030	No cost
<ul style="list-style-type: none"> Measure 2.1.1. Recovery of 8.36 % paper (9.72 Gg) and 3.52% textiles waste (1.44 Gg) in 2030 	
SWM3.1. Twenty percent (20%) of municipal solid waste recovered for waste-to-energy	No cost (capital cost covered under Energy Industries)
<ul style="list-style-type: none"> Recovery of 2.88 % paper (3.35 Gg) and 5.48% wood waste (2.14 Gg) in 2030 	
WASTE WATER MANAGEMENT (WWM)	
WWM1.1. Increasing utilisation level of aerobic treatment from 0.01 (BAU) to 0.03 in 2030	To be confirmed following feasibility study
WWM1.2. Increasing utilisation level of anaerobic treatment from 0.01 (BAU) to 0.035 in 2030	To be confirmed following feasibility study
<u>Cross-cutting measures (CcMWWM)</u>	
<ul style="list-style-type: none"> CcMWWM 1. Feasibility study, including cost-benefit analysis of adoption of aerobic and anaerobic treatment technologies CcMWWM 2. Identification and mobilisation of resources for capital and operational expenditures 	
IPPU	
IP1.1. Reducing HFCs by 10% of the baseline value (2024) by 2029	USD 170,000
<ul style="list-style-type: none"> Measure 1.1.1. Formulate the HFC phase-down plan Measure 1.1.2. Freeze imports of HFCs in 2024 through regulatory mandate Measure 1.1.3. Start Phase Down by substituting most potent HFCs (e.g. R404A, R134a) with ammonia and hydrocarbon-based refrigerants 	
IP2.1. Import ban on refrigerators using HFCs in 2024, and all Refrigeration and Air Conditioning (RAC) equipment running on HFCs by 2029	Covered under IP1.1
<ul style="list-style-type: none"> Measure 2.1.1. Introducing necessary regulation and legal provision for ban (following Measure 1.1.1) 	
IP3.1. Recovery and safe disposal of HFCs in retired stock of RAC equipment	Investments to be confirmed following completion of HFC phase-down plan
<ul style="list-style-type: none"> Measure 3.1.1. Feasibility study on the most appropriate system of recovery and disposal (completed under Measure 1.1.1) 	
AFOLU	
AGRICULTURE (A)	
A1.1. Reducing chemical inputs by 1% absolute per year until 2030 (bio-farming)	USD 1.01 million
A1.2. Application of compost produced from MSW in crop cultivation	USD 4.65 million
<u>Cross-cutting Measures Agriculture (CmMA)</u>	
<ul style="list-style-type: none"> Capacity building to entice farmers to adopt MauriGAP (Mauritius Good Agricultural Practices) Economic and financial incentives for farmers to adopt good agricultural practices, including adoption of low-carbon techniques 	

LIVESTOCK (L)	
L1.1. Increase in livestock heads for increased food security with low-carbon excrement management technologies	USD 1.40 million
<ul style="list-style-type: none"> • Measure 1.1.1. Technology transfer of aerobic and anaerobic treatment of waste at the expense of solid storage • Measure 1.1.2. Capacity building of farmers on the use of aerobic and anaerobic animal waste technologies • Measure 1.1.3. Economic and financial incentives provided to farmers for the adoption of low-carbon technologies 	
FORESTRY (F)	
F1.1. Planting of 600,000 trees over a period of 7 years along the M1/M2 motorways	USD 5.33 million
F2.1. Afforesting 1,750 ha of abandoned sugar cane land with a combination of endemic by 2030	USD 1.97 million
<u>Cross-cutting Measures Forestry (CcMF)</u>	
<ul style="list-style-type: none"> • CcMF1. Improved coordination between stakeholders involved in tree planting activities • CcMF2. Develop integrated land use plan for zoning afforestation projects 	

3.0 Enabling Factors

Several enabling factors or drivers of change will be required to implement the Mitigation Strategies and Actions. The mitigation landscape is dynamic and actions to 2030 must be extended to reach the long-term objective of net-zero carbon society. Hence, the enabling factors underpin a forward looking approach to decarbonisation in Mauritius, as well as supporting the country to address the requirements of the PA.

3.1. Legal and Institutional Arrangements

The Climate Change Act 2020 makes provisions for institutional arrangements, mainly at the national level, for carrying out stakeholder coordination related to climate change. It also lists the roles and responsibilities of stakeholders. In order to foster the Principles of subsidiarity and inclusiveness (Principle 10) and partnerships (Principle 27), and to operationalise the roles and responsibilities of stakeholders as per the requirements of the PA, Table 3 proposes Strategies and Actions to improve climate governance in Mauritius. Institutional arrangements should allow for stakeholders to be coordinated in two distinct processes, namely: (i) processes related to UNFCCC initiatives (e.g. national communication, biennial update reports and nationally determined contributions) that are under the oversight of the Climate Change Committee; and (ii) processes related to the formulation of sectoral mitigation strategies and action plans. Plans to engage stakeholders in the two processes are likely to be distinct as well.

Table 3. Strategies and Actions for improved climate governance.

LEGAL AND INSTITUTIONAL (LI) ARRANGEMENTS				
	Strategy	Action	Time Frame	Owner
LI1	Improved legal framework for enhanced climate governance	LI1.1. Update the Climate Change Act 2020 and associated legislations using an adaptive management approach based on lessons learned on its application	Ongoing	MESWMCC, DCC
		LI1.2. Strengthen laws & regulations such as creating legal code for defining the responsibilities of main emitters, introduction of extended producer responsibility, and adoption of novel market-based tools to support mitigation actions	Ongoing	MESWMCC, DCC
		LI1.3. Update the National Code of Corporate Governance 2016 for public interest entities to explicitly integrate climate risks analysis	2023-2024	MFSGG
LI2	Constitutional change to enshrine climate change	LI2.1. Initiate national dialogue for amending the Constitution to enshrine the government duty to address issues related to climate change to enhance the wellbeing of all	2024-2025	MESWMCC ; DCC ; Attorney General's Office; Legislators
		LI2.2. Capacity building of legislators and the judiciary on the implications of enshrining the government duty to address issues related to climate change to enhance the wellbeing of all	2024-2025	MESWMCC ; DCC ; Attorney

				General's Office
LI3	Improving stakeholder coordination for climate inclusiveness	LI3.1. Operationalise Sectoral Guidelines for supporting institutions to carry out their obligations, and roles and responsibilities	2022 - 2025	DCC & institutional stakeholders
		LI3.2. Establish a work programme under the aegis of the CCC that will culminate in the setting up of a formal institutional mechanism for taking the views of children and youth in public decision-making related to climate change	2022 - 2023	CCC
		LI3.3. Provide technical support to stakeholders to fulfill their respective roles and responsibilities in relation to Operational Guidelines (LI3.1)	2022 - 2024	DCC & institutional stakeholders
		LI3.4. Support provided to institutional stakeholders to implement the Stakeholder Engagement Plan (SEP) for engaging all key stakeholders for the formulation of sectoral mitigation strategies, action plans and projects/programmes	2022 - 2024	DCC & institutional stakeholders
LI4	Institutional strengthening of public institutions to integrate the function of climate change	LI4.1. Identify human resources needs and technical capacity needs of institutional stakeholders to implement provisions of the CCA 2020	2022	DCC & institutional stakeholders
		LI4.2. Scale up efforts to establish and operationalise Climate Change Units / Focal Points in public and private institutions	2022 - 2024	MFEDP & institutional stakeholders
		LI4.3. Human capacity building of Climate Change Units following needs gaps analyses (should also cover process for Integrated Policy Planning)	2022 - 2024	DCC & institutional stakeholders
		LI4.4. Establish a formal Scientific Advisory Body to the Inter-Ministerial Council to enhance the science-policy interface	2022	MESWMCC; DCC
LI5	Institutional strengthening for enhanced regional and international climate dialogues	LI5.1. Establish a work programme under the aegis of the CCC that will enhance the capacity of Mauritius to contribute to regional and international climate dialogues for enhanced climate governance	2025	CCC

3.2. Technology Transfer and Financing

The process to achieving the long-term objective is dynamic, implying that there will be a constant need to review, revise and update the CCMSAP. Two important aspects of this process are: (i) to scan for technological change; and (ii) to mobilise sufficient financial resources to implement Mitigation Strategies and Actions.

Table 4 and Table 5 show the Strategies and Actions address the provisions made under Article 10 (technology development and transfer) and Article 9 (financing) of the PA.

Table 4. Strategies and Actions for Technology Transfer.

TECHNOLOGY DEVELOPMENT AND TRANSFER (TT)				
	Strategy	Action	Time Frame	Owner
TT1	Developing and updating Technology Action Plans (TAPs)	TT1.1. Apply the Guidelines for identifying and prioritising mitigation technologies in all emitting sectors using a participatory, inclusive multi-stakeholder process	ongoing	DCC; institutional stakeholders
		TT1.2. Carry out barriers analysis and detail the enabling environment for prioritized technologies	ongoing	DCC; institutional stakeholders
		TT1.3. Develop Technology Action Plans (TAPs) and use to formulate bankable proposals to attract international climate finance and financing from development partner and to update sectoral strategies and action plans	ongoing	DCC; institutional stakeholders
		TT1.4. Update TAPs on a regular basis to inform the formulation of higher level ambition NDCs and the continuing effort to attract climate finance	ongoing	DCC; institutional stakeholders
TT2	Institutional and human capacity strengthening for TT action planning	TT2.1. Capacity building on the Technology Needs Assessment (TNA) methodology and tools	2022 - 2024	DCC
		TT2.2. Institutionalisation of TNA methodology and tools to develop TAPs through application of the Sector Guidelines (LI3.1)	2022 - 2024	DCC; institutional stakeholders

Table 5. Strategies and Actions for Climate Financing.

FINANCING (F)				
	Strategy	Action	Time Frame	Owner
F1	Institutionalising direct access and tracking flows of climate finance	F1.1. Develop budget tags and codes for tracking the allocation of climate finance in national budgetary process (including Funds related to CC such as the National Environment and Climate Change Fund, disaster funds)	2022-2024	MFEPD
		F1.2. Establish and operationalise National Implementing Entity (NIE) for direct access to multilateral climate funds as per Section 24 of CCA	2022 - 2024	MFEPD ; MESW MCC
F2	Institutional and human capacity strengthening for accessing international climate finance	F2.1. Develop a Climate Finance Policy and Strategy Framework (including a national Work Programme that identifies and prioritises projects/programmes for financial resources mobilisation)	2022 - 2023	MFEPD ; DCC
		F2.2. Enhance human capacity (public, private, civil society and not-for profit organisations, academia) to develop bankable proposals to attract international climate finance from multilateral (e.g. Green Climate Fund) and bilateral sources (a learning-by-doing approach is preferred)	ongoing	MFEPD ; DCC; institutional stakeholders
		F2.3. Develop a pipeline of concept notes and proposals to increase preparedness to attract climate finance based on country priorities (based on Table 1 and TT1.3)	ongoing	MFEPD ; DCC; institutional

				stakeholders
		F2.4. Strengthen donor / development partner coordination to match concept notes and proposals with potential sources of climate finance	ongoing	MFEPD ; MFARIT
		F2.5. Leverage private sector participation and investments through public-private engagements	ongoing	MFEPD ; DCC; BM

3.3. Education and Research, Awareness Raising, and Role of Media

Climate change is a fast evolving area that requires adaptive education at all levels. Research on all aspects of climate change can provide a scientific basis for informed decision-making. Also, all stakeholders in the country have an influence on emissions of greenhouse gases, and they are, in turn, impacted by decisions that are taken to reduce emissions. Consequently, outreach activities on climate mitigation are necessary and reflective of an inclusive approach to achieving the long-term objective of net-zero carbon society. In this process, media outlets constitute a key group of stakeholders. Table 6 gives the Strategies and Actions related to these elements of climate change mitigation.

Table 6. Strategies and Actions for Education and Research, Awareness Raising, and Role of Media.

EDUCATION AND RESEARCH (ER)				
	Strategy	Action	Time Frame	Owner
ER1	Integrating climate change in educational curricula at all levels	ER1.1. Strengthen the integration of the science of climate change, climate change mitigation in primary and secondary school curricula, including adequate pedagogical tools for learning-by-doing and interactive approaches	Ongoing	METEST; MIE; DCC
		ER1.2. Support the development of undergraduate and postgraduate courses in areas of climate change mitigation where gaps exist	Ongoing	METEST; HEC; HEI; DCC
		ER1.3. Review and update / develop vocational training courses for supporting climate change mitigation based on needs gaps analyses, in conjunction with the private sector	Ongoing	METEST; MITD; DCC
		ER1.4. Support the establishment of environmental clubs within schools at all levels to incentivise students to participate in climate mitigation actions	Ongoing	METEST; SEDEC
ER2	Enhance the science-policy interface for evidence-based public policy decision-making	ER2.1. Support provided to tertiary institutions for the development of transdisciplinary approaches to climate science, mitigation scenarios analyses and technology development and transfer to support the science-policy interface through the Scientific Advisory Body (see LI4.4).	Ongoing	DCC; HEI; METEST
		ER2.2. Support to establish collaborations between local research institutions and regional and international counterparts to strengthen local institutional capabilities in all aspects of climate research, including mobilisation of regional and international research funding	Ongoing	DCC; HEI; METEST

		ER2.3. Establish dedicated priority funding for research on climate change in support of the science-policy interface	2023 onwards	HEC; MRIC; DCC
AWARENESS RAISING (AR)				
AR1	Communication strategy on stakeholder outreach	AR1.1. Develop a communication strategy based on the Stakeholder Engagement Plan (SEP) and Gender and Youth Action Plan developed at LI3.2 and GY1.2, respectively.	2023-2024	DCC; MGEFW; MYESR
		AR1.2. Carry out outreach activities to cover communication and awareness raising on all climate-related issues with stakeholders at all levels	Ongoing	DCC
AR2	Building partnerships for enhancing awareness on climate issues	AR2.1. Build partnerships between public, private, NGOs and CSOs to deliver the most effective and efficiency sensitisation campaigns at all levels	Ongoing	DCC
		AR2.2. Awareness raising among parliamentarians and legislators to enhance cross-sectoral integration of climate mitigation in public policies.	Ongoing	DCC
CONTRIBUTION OF MEDIA (ME)				
ME1	Enhancing the role of the media as a conduit between decision makers and all stakeholders	ME1.1. Capacity building of journalists and influencers on the science of climate change, mitigation scenarios, and the sustainable development benefits of mitigation	Ongoing	DCC
		ME1.2. Establish focal points in traditional media outlets and engage them on a regular basis to communicate on all climate-related initiatives	2022	DCC
		ME1.3. Enhance the capacity of government to utilise emerging digital media platforms to carry out large-scale outreach activities related to climate change to reach all stakeholders	2022 - 2023	DCC
		ME1.4. Government to ensure that appropriate media and outreach approaches are used to target children, young people and other vulnerable groups that do not have access to traditional media or digital media	Ongoing	DCC

3.4. Gender and Children and Youth Mainstreaming

Women, children and youth form a significant segment of the population. A gendered approach to climate change is envisaged from a Human Rights approach. Also, children and youth are key stakeholders that are often neglected in climate change policy making. By virtue that long-term mitigation strategies are forward looking and spanning at least one generation, children and youth will be called upon to implement those strategies. Hence, it is equally important to include their interests and concerns in the strategic decision-making process. Table 7 lists the Strategies and Actions for mainstreaming gender and youth in climate governance, which are additional to the strengthening of stakeholder inclusiveness (Table 3).

Table 7. Strategies and Actions for Gender, Children and Youth Mainstreaming.

GENDER, CHILDREN AND YOUTH (GY)				
	Policy	Action	Time Frame	Owner

GY1	Gender and youth mainstreaming in climate change	GY1.1. Carry out Gender, Children and Youth Analysis as part of baseline assessments when formulating sectoral climate mitigation strategies and projects/programmes in collaboration with relevant organisations	2023	MGEFW; MYESR; DCC
		GY1.2. Formulate Gender, Children and Youth Action Plan for all sectoral climate strategies and projects/programmes in collaboration with relevant organisations	2024	MGEFW; MYESR; DCC
GY2	Institutional and human capacity strengthening for gender and youth mainstreaming in climate change	GY2.1. Enhance the human capacity of with specialised focal person(s) dealing with gender, children and youth. Also, to propose best practices for institutional coordination in other institutions such as academia and private sector.	2022 onwards	MGEFW; MYESR; DCC; institutional stakeholders
		GY2.2. Capacity building of public and private institutions to carry out Gender and Youth Analysis, and to develop Gender, Children and Youth Action Plan for climate-related initiatives.	2023 onwards	MGEFW; MYESR; DCC; institutional stakeholders

4.0 Monitoring and Evaluation Framework

Monitoring and evaluation (M&E) is proposed from two perspectives, namely: (i) actions to achieve the reporting requirements under PA (Article 13), and (ii) tracking progress in implementing the CCMSAP.

4.1. Reporting Requirements under the UNFCCC

With the Paris Agreement (PA) and its Article 13, the Enhanced Transparency Framework (ETF) for action and support was established. The modalities, procedures and guidelines for Article 13 provide operational details on how to report on the information on national GHG inventories, tracking of progress of implementation and achievement of NDCs, climate change impacts and adaptation efforts, support provided and received for implementing the PA, and general functioning of the ETF. The Strategies and Actions to achieve these reporting requirements are shown in Table 8, and will take place in conjunction with the relevant Legal and Institutional interventions (e.g. LI3.1). While the focus of the Strategy is on the requirements under the UNFCCC, the Actions are supportive of cooperation and data sharing as provisioned under Section 17 of the CCA 2020.

Table 8. Strategies and Actions to meet the reporting requirements under the Paris Agreement.

REPORTING REQUIREMENTS (RR) UNDER THE UNFCCC				
	Strategy	Action List	Time Frame	Owner
RR1	Enhanced Transparency Framework established and operational	RR1.1. Online registry for reporting on the implementation of mitigation contributions in NDC, and support received is established and operationalised	2022	DCC
		RR1.2. Capacity building of institutional stakeholders to use the online portal	2021 - 2022	DCC
		RR1.3. Human and institutional strengthening to produce Biennial Transparency Reports (BTRs)	2023 - 2024	DCC

4.2. Indicators for M&E of the CCMSAP

The monitoring and evaluation of the CCMSAP 2021-2030 take into account the economic, social and environmental – i.e. sustainable development - objectives of interventions. The process for the monitoring of progress is contained in an integrated policymaking approach. Typically, climate change mitigation should be framed following a policy cycle including (1) the definition of issues (or agenda setting), (2) policy formulation, (3) decision-making, (4) implementation, and (5) evaluation.⁸ A description of the three types of indicators that inform the integrated policy cycle is given in Table 9. Table 10 gives the M&E Framework for the CCMSAP that can be used to track the adaptive management of sectoral mitigation strategies and actions.

Table 9. Three types of indicators in M&E Framework.

Agenda setting indicators	Formulation indicators	Evaluation indicators
<p><u>State of the environment and impacts of economic activity.</u></p> <p>→ Indicators to identify issues related to the environment – e.g. GHG emission levels - resulting from economic activities, as well as from climate change feedbacks.</p> <p>→ Indicators selected to best identify the baseline problem and its causes (e.g. socioeconomic reasons underlying mitigation)</p>	<p><u>Policy cost and reach.</u></p> <p>→ Indicators to assess the potential cost and performance of various interventions actions</p> <p>→ For CC mitigation, it could be the abate cost of CO₂, and net savings from avoided energy use</p>	<p><u>Policy impacts on economic, social and environmental progress and overall human well-being.</u></p> <p>→ Indicators to assess the success of interventions</p> <p>→ Indicators may include the overall progress of human well-being; adaptation co-benefits; and social advancements (i.e. jobs creation, poverty alleviation, social inclusiveness, gender and youth mainstreaming)</p>

⁸ UNEP (2009) Integrated Policymaking for Sustainable Development – A reference manual. UNEP, Geneva.

Table 10. M&E Framework for CCMSAP.

Sector	Problem	Indicator of issue identification	Indicator of policy/strategy formulation	Indicator of policy/strategy evaluation
Cross-sectoral indicators	1. Socioeconomic impacts of climate change mitigation and policy-induced interventions	1. Number of persons impacted by and influencing climate change mitigation (through winners and losers) disaggregated by gender, children and youth in all emission sectors	1. Number and share of children receiving formal education on climate change mitigation and interventions 2. Number of persons (disaggregated by sex, youth and children) participating in design, planning and monitoring of climate mitigation actions 3. Number of young women and men supported in studies/training on disciplines related to climate mitigation 4. Number of young women and men supported in climate mitigation plans along with national poverty reduction policies and action plans	1. Share of renewable energies in the total primary energy consumption 2. Share of energy bill in total importation bill of the country 3. Gender-differentiated green jobs created 4. Carbon intensity of the economy (1000 units of GDP/ tCO _{2e})
	1. Poor application of good agricultural practices in crop production	1. Amount of fertilizer/pesticides used (tonne/year) 2. Agricultural soil loss or deterioration (tonne/ha/yr) 3. Average nitrate and pesticide concentration in surface and groundwater (mg/l)	1. Number of capacity building activities on good agricultural practices, including low-carbon methods of agriculture 2. Investments in low-carbon climate technologies for agriculture (US\$/year) 3. Number of soil management plans implemented 4. 3. Amount of tax exemptions on organic fertilizers, soil conditioners, and bio-pesticides (US\$/year)	1. Decrease in C content of agricultural production (tCO _{2e} /t(produce)) 2. Reduction in yield variability (%) 3. Number of farmers adopting MauriGAP, and agriculture land area under sustainable farming (ha) 4. Carbon stock in soil (tonne/ha)
Agriculture	2. Use of traditional and inefficient technologies for managing animal waste	1. Livestock production (number of heads and tonnes of different animals per year) 2. Methods of excrement management (% utilization for waste management)	1. Number of farmers adopting low-carbon technologies for managing animal excrements 2. Investment in training and dissemination of new technology for waste management (US\$/year) 3. Number of capacity building programmes implemented on sustainable livestock production	1. Reduction of GHG emissions per unit of product (tCO _{2e} /kg of meat) 2. Increases in livestock production for enhanced food security (kg of meat/year) 3. Amount of treated sludge and animal manure composting (tonne/year)
	1. Rising energy costs due to heavy reliance on imported fossil fuels (supply side)	1. Per capita energy bill (US\$/person/year) 2. Fossil fuel use (% of total final energy and electricity consumption) 3. Fossil fuel subsidies (US\$/year) 4. Share of floor area of green buildings in total park of buildings (%)	1. Share of renewables in electricity production (%) 2. Economic and financial incentives (US\$/year) to invest in renewable energy sources and energy storage technologies 3. Investments in grid strengthening (US\$/year) 4. Installed capacity of different types of renewables (MW) 5. Number of persons trained in renewables value chains (sex disaggregated)	1. Reduced costs of energy imports (US\$/year) 2. National and household energy savings (US\$/year) 3. Emissions from electricity generation and consumption (tCO ₂ /year) 4. Grid emission factor (tCO ₂ /MWh) 5. Number of green jobs created in the electricity supply and demand
Energy (energy industries)	2. Low adoption of end-use energy		1. Amount of incentives to energy efficient	

Sector	Problem	Indicator of issue identification	Indicator of policy/strategy formulation	Indicator of policy/strategy evaluation
	efficiency (demand side management)		<p>appliances (US\$/year)</p> <p>2. Number of energy performance standards and labels, including building energy codes, that are enforced</p> <p>3. Number of persons trained in demand side management value chains (sex disaggregated)</p> <p>4. Number of annual energy audits and energy value (GJ / GWh) carried out in manufacturing, and commercial and distributive trades</p> <p>5. Number of accredited energy auditors</p> <p>6. Investments in urban green infrastructure (US\$/year)</p>	value chains
Energy (Transport)	1. Unsustainable access and mobility in land transport	1. Number of commuters using public transport	1. Investment in transport infrastructure (e.g. light rail system/Metro Express, carpooling, park-and-ride etc.) to enhance accessibility and mobility	<p>1. Number of commuters using public transport</p> <p>2. GHG emissions from transport sector (tCO₂e/yr)</p> <p>3. Percentage of fuel consumption (in tons per year)</p> <p>4. 1000v-km per day per type of vehicle</p> <p>5. Emission factor per type of vehicle</p>
	2. Aggravated transport of goods within the country	1. The volume of freight transport per unit of Gross Domestic Product (GDP)	1. Investment in improving and developing the national road network to curb congestion	1. GHG emissions from transport of goods (tCO ₂ e/yr)
	3. Unaffordability of low-carbon modes of passenger transport	<p>1. Number of hybrid and electric vehicles in both public and private transport</p> <p>2. Fuel consumption per type at the maritime transport and aviation</p>	<p>1. Economic and financial incentives (US\$/year) to invest in low-carbon vehicles</p> <p>2. Existence of regulatory framework for taxing private vehicles based on carbon emissions and labelling</p> <p>3. Investments to promote the use of alternative low-carbon fuels (US\$/year)</p>	<p>1. Number of hybrid and electric (and other low-carbon) vehicles in both public and private transport</p> <p>2. GHG emissions from passenger transport and maritime transport and aviation (tCO₂e/yr)</p>
	4. Low transport efficiency	<p>1. Number of commuters using private transport</p> <p>2. Volume of air travel routes</p>	<p>1. Number and types of incentives for the reduction use of private passenger travel</p> <p>2. Investments in low-carbon carriers at domestic air travel routes (US\$/year)</p>	1. GHG emissions from domestic and air travel routes (tCO ₂ e/yr)
Forestry (and natural capital)	1. Weak institutional capacity for sustainable forest management	<p>1. Percentage of forest areas and degraded ecosystems</p> <p>2. Area of forest and conservation land affected by invasive species</p> <p>3. Rate of deforestation (ha/yr)</p> <p>4. Number of protected and</p>	<p>1. Investments on forestation projects (US\$/year)</p> <p>2. Development of forest protection policy framework, strategy and action plan</p> <p>3. Enforcement of forest protection laws</p> <p>4. Capacity building of forest and parks conservators on climate change mitigation (e.g.</p>	<p>1. GHG sinks in inventories (tCO₂/yr)</p> <p>2. Percentage of forest area</p> <p>3. Number of rehabilitated forests/abandoned land (ha)</p> <p>4. Rate of deforestation (ha/yr)</p>

Sector	Problem	Indicator of issue identification	Indicator of policy/strategy formulation	Indicator of policy/strategy evaluation
		conservation areas 5. Coastal erosion and flooding	GIS-based inventory, scenarios modeling, vulnerability assessments and climate impact studies on stock of forests) 5. Incentives/investments on afforestation of abandoned / marginal land 6. Investments on conservation measures for climate threatened species and habitats (US\$/year) 7. Investments in restoration and new mangrove plantation (US\$/year and ha restored/planted)	5. Percentage of forest area impacted by pest and diseases 6. Count and distribution of fauna and flora species 7. Number of implemented Ecosystem Based Adaptation (EbA) tools and measures 8. Area of mangrove plantations (ha)
Solid Waste	1. Embryonic circular waste economy	1. Amount of produced/treated/cycled/reused solid waste (tonne/year) per source and type	1. Investments on enhancing the national circular waste economy taking into account all waste management operations (US\$/year) 2. Investments on energy production/recovery from solid waste (US\$/year)	1. Energy produced from solid waste management (MWh/year) 2. GHG emissions from solid waste sector (tCO _{2e} /year) 3. Quantity and types of wastes recycled and/or treated for environmentally-sound disposal 4. Jobs created in the circular waste economy
Waste Water	1. Waste water treatment with low focus on GHG emissions	1. Amount of produced/treated/ waste water (tonne(BOD)/year) by source and by type of treatment	1. Investments on low-carbon treatment facilities, including capacity building (US\$/year) 2. Investments on energy production/recovery from solid waste (US\$/year)	1. GHG emissions from waste water management (tCO _{2e} /year) 2. Amount of treated sludge (tonne/year) and methane recovered (tCH ₄ /year) 3. Energy produced from waste water management (MWh/year)
IPPU	1. Shifting focus from minimising ozone depletion to be inclusive of climate change	1. Amount of refrigerants, including HFCs imported (tonne/year) and identification of end uses 2. Number and type of equipment imported that use HFCs as refrigerants	1. Phase-down plan for HFCs, including regulations/legal mandate for implementing the Kigali Amendment to the Montreal Protocol 2. Investments in new equipment that use GWP-free refrigerants (US\$/year). 3. Number of stakeholders capacitated in the use of GWP-free refrigerants and method of HFC recovery and disposal	1. GHG emissions from refrigerants (tCO _{2e} /year) 2. Number and type of equipment using HFCs retired from the market 3. Amount of HFCs recovered for safe disposal (tonne/year)