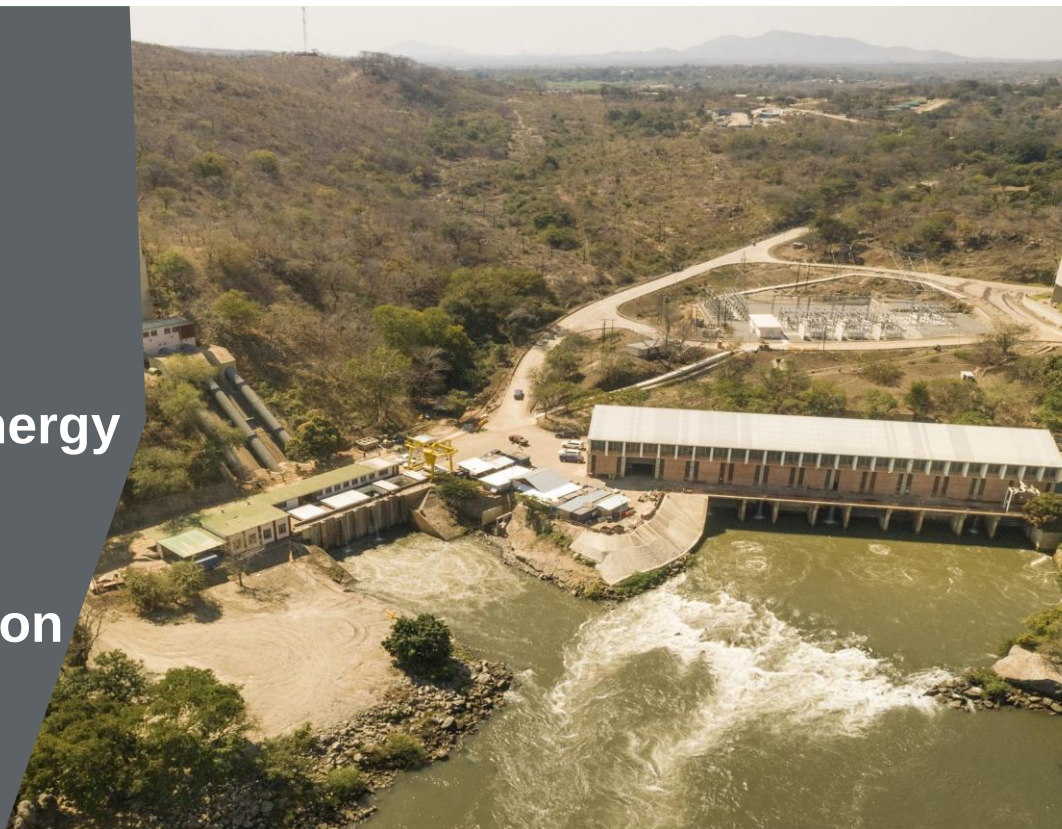


Malawi National Adaptation Plan

Infrastructure/Energy Sector M&R Framework and indicator Definition Sheets (IDS)



Ministry of Natural Resources

September, 2026

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STRATEGY 1: Climate-Resilient Infrastructure

Adaptation Action 1: Mandatory Climate Risk and Vulnerability Assessment for all NTMP projects and programmes

Objective: Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

Indicator Level	Indicator (SMART)	Baseline (2024)	Target (2030)	Metric	Means of Verification
Output	% of NTMP projects conducting CRVAs before approval	12%	100%	% of total NTMP projects	CRVA reports; Project Approval Files (Min. of Transport & Roads Authority)
Output	Updated Climate Adaptation for Roads (CAFRG, 2020) Guidelines integrating CRVA at the project planning and feasibility stage of the road design process.	No	Yes	Binary	CRVA reports; (Check for CRVA integrated at the project planning and feasibility stage of the road design process) Updated Climate Adaptation for Roads (CAFRG, 2020) Guidelines
Outcome	% of NTMP projects with designs revised based on CRVA findings	0%	≥70%	% of total NTMP projects	Design documentation; Engineering review reports
Impact	% reduction in climate-induced delays or cost overruns in NTMP infrastructure	Unknown	≥50%	% reduction compared to baseline period	Infrastructure Performance Reports; M&E Unit (MoTPW); Auditor General's office

Adaptation Action 2: Update transport design standards to withstand projected floods, heat stress and extreme rainfall.

Objective: Ensure climate considerations are integrated into infrastructure design standards to improve resilience.

Indicator Level	Indicator (SMART)	Baseline	Target	Metric	Means of Verification
Output	# of transport design standards updated to withstand projected floods, heat stress and extreme rainfall.	1	≥10 by 2026	Count	Approved Technical Guidelines; Malawi Bureau of Standards publications; COST Malawi
Outcome	% of public infrastructure projects using updated transport design standards	5%	≥80% by 2030	% adoption	Engineering certification; Procurement compliance reports
Impact	Increase in % of new infrastructure with resilience rating ≥ B (national standard)	TBD	≥90%	Rating index	Infrastructure audit reports; Resilience scorecard (DoPWD, DoDMA)

Adaptation Action 3: Integrate climate hazard scenarios into transport planning and investment decisions.

Objective: Integrate climate risk assessments and responses into sector-wide transport planning and implementation.

Indicator Level	Indicator (SMART)	Baseline	Target	Metric	Means of Verification
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Output	# of national and district transport plans integrating climate hazard scenarios	2	≥ 10	Count	Ministry of Transport Plans; District Infrastructure Profiles; Sector CRVA with a gender focus and a methodology of prioritizing adaptation investment in critical transport networks.
Outcome	% of new transport projects based on climate-informed plans	15%	$\geq 90\%$	% of total projects	Project design records; Funding proposals, Project documents
Impact	% increase in network reliability during climate shocks (floods, storms)	Low	$\geq 75\%$	% uptime	Transport service logs; Disaster impact reports

Adaptation Action 4: Construct climate-adaptive multipurpose dams to reduce flood risk and drought impacts on infrastructure.

Objective: Enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.

Indicator Level	SMART Indicator	Baseline (2024)	Target (2030)	Metric	Means of Verification
Output	# of climate-adaptive multipurpose dams constructed with climate resilience design	0	≥ 5	Count	Infrastructure project reports; DWR records

Outcome	% increase in water storage capacity in drought-prone districts	Low	≥40%	% volume	Hydrological assessments; DWR database
Impact	% reduction in water stress-related service disruptions	High	≥70%	% reduction	Water service delivery reports; DWR & district reports

STRATEGY 2: Flood and Storm Defenses

Adaptation Action 5: Construct flood protection infrastructure such as river embankments in high-risk river basins.

Objective: Reduce flood-related damage to infrastructure and nearby settlements.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Length (km) of embankments, basins and culverts constructed	TBD	≥150 km by 2029	Total km	Public Works and MoTPW project reports
Outcome	% reduction in annual floodwater intrusion into infrastructure	High	≥60%	% change	DoDMA flood impact reports
Impact	Estimated annual economic losses due to flood damage (USD)	US\$ 45M	≤US\$ 15M	USD	Post-disaster economic assessments

Adaptation Action 6: Rehabilitate urban drainage systems

Objective: Improve stormwater flow and flood prevention in rapidly urbanising areas.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	% of major urban drainage networks rehabilitated	10%	≥85%	% coverage	City Council progress reports; MoLGRD records
Outcome	% reduction in flood incidents in target urban areas	High	≥75%	# of cases	DoDMA incident logs; city disaster reports
Impact	% reduction in service interruption in urban public infrastructure	High	≥60%	% time restored	Urban infrastructure operation logs

STRATEGY 3: Upgrading and Maintenance

Adaptation Action 7: Adopt and implement demonstration projects using climate-resilient material standards, e.g prefab.

Objective: Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Climate-resilient material standards adopted and gazetted	No	Yes (by 2026)	Binary	Official Gazette; Malawi Bureau of Standards
Output	# of demonstration infrastructure projects using alternative materials	0	≥10 (by 2028)	Count	Project documentation; MoTPW reports

Outcome	% of new public infrastructure using approved resilient materials	15%	≥90%	% of certified projects	Construction permits; Procurement audits
Outcome	# of districts adopting alternative materials in public construction	0	≥15	Count	Procurement and design records
Impact	% decrease in infrastructure failure due to weather extremes	High	≥60%	% reduction	Infrastructure performance reviews; Asset condition surveys
Impact	Cost-effectiveness index of prefab vs traditional infrastructure	Baseline <1	>1.5 by 2030	Ratio	Independent engineering evaluations

Strategy 4: Assessing vulnerability and integrating the findings into the Integrated Resource Plan

Adaptation Action 8: Conduct energy-sector climate vulnerability assessment to inform IRP.

Objective: Assess and document climate risks across energy infrastructure assets.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	National energy-sector climate vulnerability assessment report completed	No	Yes (by 2025)	Binary	Ministry of Energy/ESCOM report archive; EGENCO
Outcome	# of energy sector strategies informed by the VA report	0	≥5	Count	Energy policy documents

Impact	% of energy infrastructure retrofitted following VA findings	0%	≥70%	%	Implementation tracking; Ministry of Energy, M&E reports
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Strategy 5: Develop standards for climate resilience of generation, transmission and distribution infrastructure, and off-grid systems including the integration of climate resilience into feasibility studies and grid codes.

Adaptation Action 9: Update the grid code to incorporate climate change considerations

Objective: Ensure power system operations, planning, and protection align with future climate conditions.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	National grid code revised and gazetted with climate provisions	No	Yes (by 2026)	Binary	Government Gazette; Energy Regulatory Authority records
Outcome	% of grid operations adhering to new climate provisions	0%	≥85%	%	Grid operator compliance reports
Impact	% reduction in weather-induced power outages	High	≥60%	% reduction	ESCOM fault data; Outage response logs

Adaptation Action 10: Update the Mini-grid regulatory framework to include climate resilience measures

Objective: Ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Mini-grid regulatory framework revised and climate resilience integrated	No	Yes (by 2026)	Binary	Gazette notice; Energy Regulatory Authority publications
Outcome	% of new mini-grids compliant with updated climate-resilient standards	0%	≥90%	% of installations	Licensing records; Site audit reports
Impact	% of mini-grid systems sustaining operation during climate shocks	Low	≥80%	% uptime	ESCOM off-grid monitoring reports

Adaptation Action 11: Develop climate resilient standards for the generation, transmission and distribution infrastructure and off grid system

Objective: Institutionalize engineering and operational standards for a resilient power system.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	National standards for climate-resilient energy infrastructure published	No	Yes (by 2025)	Binary	Malawi Bureau of Standards; DoE publications
Outcome	% of public-funded energy infrastructure built to new standards	0%	≥95%	% of total	Project inspection reports; Procurement evaluations
Impact	% reduction in damages to energy systems from extreme weather	High	≥70%	% reduction	Post-disaster energy assessments

Strategy 6: Develop standard procedures to coordinate responses to disasters affecting the energy sector, including a clear communication strategy between energy agencies and Department of Disaster Management Affairs (DoDMA), load shedding procedures, emergency repairs, and coordination with actions under the responsibility of DoDMA, including early warning systems

Adaptation Action 12: Develop disaster response procedures (with clear governance institutional structure with top management representation)

Objective: Strengthen preparedness and response mechanisms for energy sector disasters.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	National disaster response protocol for energy sector finalized and endorsed and	No	Yes (by 2026)	Binary	DoE/DoDMA joint protocol

	aligned to National DRM framework				
Outcome	% of energy utilities trained on new response protocol	0%	≥100% by 2027	%	Training logs; Capacity building reports
Impact	Average recovery time of energy systems post-disaster	>72 hrs	<24 hrs by 2028	Avg. hours	Incident and recovery logs (DoE, ESCOM)

Adaptation Action 13: Map energy infrastructure exposed to floods, storms and heat.

Objective: Improve energy sector risk planning by identifying and mapping vulnerable zones.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Disaster-prone areas (exposed to floods, storms and heat) mapped and integrated into energy planning	Partial	100% (by 2027)	% mapped	GIS database; DoE and DoDMA maps
Outcome	% of new energy projects located outside high-risk zones	Unknown	≥90% by 2027	%	EIA reports; Project site assessments
Impact	% reduction in energy asset damage in previously high-risk zones	High	≥60% by 2030	%	Post-disaster infrastructure assessments

Strategy 11: Strengthen technical capacity to integrate climate resilience at all stages of the infrastructure life cycle

Adaptation Action 14: Prepare communication system/strategy on disaster warnings and ensure that all energy entities are working within the structure of the National DRM framework

Objective: Integrate energy sector early warning communications within the national DRM system.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	National communication protocol for energy disaster warnings adopted	No	Yes (by 2025)	Binary	DoE/DoDMA protocol publication
Outcome	% of energy agencies linked to DRM alert system (e.g. DoDMA, DCCMS)	10%	100% by 2026	%	Communication logs; Alert delivery records
Impact	% improvement in coordinated response time across agencies	Low	≥70% faster coordination by 2026	% time improvement	Response time audits; DRM coordination logs

STRATEGY 7: Integrating energy storage into power generation and transmission

Adaptation Action 15: Prepare mechanisms on preparedness and response in line with ODSS Early Warning framework

Objective: Ensure energy infrastructure response is aligned with national early warning protocols.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Sector-specific response mechanisms aligned with ODSS framework	No	Yes (by 2025)	Binary	Preparedness and Response Guidelines; MoE documents
Outcome	% of early warning triggers followed by energy sector action within 12 hrs	<20%	≥90%	%	DoE response logs; ODSS reports
Impact	% reduction in asset loss/downtime from unanticipated shocks	High	≥60%	%	Infrastructure continuity reports; Emergency repair logs

Adaptation Action 16: Integrating energy storage into power generation and transmission

Objective: Promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of BESS installations integrated into power infrastructure	0	≥15 by 2030	Count	ESCOM/DoE project reports
Outcome	% of renewable energy projects with storage-enabled balancing	0%	≥60% by 2030	%	System integration records; Grid performance reports
Impact	% improvement in grid stability index during VRE fluctuations	Low	≥50% by 2030	% improvement	National Grid Stability Reports

Adaptation Action 17: To conduct grid studies for all prospective VRE projects

Objective: Ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of grid impact studies completed for VRE projects	0	≥30 by 2028	Count	DoE project approval files
Outcome	% of VRE investments supported by grid readiness plans	0%	≥80%	%	Planning approvals; ESCOM capacity study reports
Impact	% reduction in project delays or system instability from VRE	High	≥60%	%	System operation logs; Energy project M&E data

Adaptation Action 18: Develop Ancillary services market framework

Objective: Enable market-based provision of grid balancing, frequency, and voltage control.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Ancillary services market framework developed and adopted	No	Yes (by 2026)	Binary	
Outcome	% of power producers participating in ancillary market	0%	≥10%	%	Licensing and participation logs Regulatory Authority records; DoE documentation

Impact	% improvement in reliability of electricity supply (SAIDI/SAIFI)	Low	≥40%	% improvement	ESCOM service quality reports
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STRATEGY 8: Diversification of energy source from hydro source to other renewables

Adaptation Action 19: Reduce climate vulnerability of power supply through renewable energy diversification

Indicator Level	Indicator	Baseline	Target	Metric	Means of Verification
Output	Installed non-hydro renewable generation capacity	120 MW	600 MW	Megawatts (MW)	MERA generation licensing database; ESCOM and IPP commissioning reports
Outcome	Share of national electricity generation capacity coming from non-hydro sources	18%	45%	Percentage (%)	MERA energy statistics; Malawi Energy Balance reports
Impact	Reduction in electricity supply disruption during drought and low-flow years	Baseline load shedding hours in 2025	40% reduction	% reduction in annual unserved energy / load shedding hours	ESCOM system operation reports; System Average Interruption Duration Index (SAIDI)

Adaptation Action 20: Expand decentralized and off-grid renewable energy systems for climate resilience

Indicator Level	Indicator	Baseline	Target	Metric	Means of Verification
Output	Functional decentralized renewable energy systems installed (mini-grids and solar home systems)	320 systems	2,000 systems	Number of systems	REA project completion reports; installer certification records
Outcome	Households, health centres and schools with reliable off-grid electricity access in climate-vulnerable areas	65,000 connections	350,000 connections	Number of connections	REA and ESCOM connection databases; M&E surveys
Impact	Reduced service disruption to basic services (health, water, education) during climate shocks	40%	≥85%	% of facilities maintaining power during flood/drought events	Facility operational reports; post-disaster assessments

Adaptation Action 21: Climate-proof energy infrastructure planning

Indicator Level	Indicator	Baseline (2025)	Target (2030)	Metric	Means of Verification
Output	New and rehabilitated energy infrastructure designed using climate-resilient standards	3 projects	30 projects	Number of projects	Engineering design approvals; procurement documents
Outcome	Energy infrastructure projects incorporating climate risk screening in investment decisions	15%	≥90%	% of new projects	Public Investment Management system; project appraisal records
Impact	Reduced climate-related damage to energy infrastructure assets	Baseline damage costs in 2025	50% reduction	% reduction in climate-related asset losses	ESCOM asset management reports; disaster damage and loss assessments

Adaptation Action 22: Enable climate-responsive energy policy and financing

Indicator Level	Indicator	Baseline	Target	Metric	Means of Verification
Output	Public and private climate-responsive energy investment facilities operational	1 facility	4 facilities	Number of facilities / windows	Treasury and development partner financing agreements
Outcome	Volume of climate-aligned energy finance mobilised annually	MWK 60 billion	MWK 300 billion per year	MWK per year	Climate finance tracking system; budget statements; development partner reports
Impact	Increased resilience and sustainability of the national power system to climate variability	Baseline index developed in 2025	50% improvement over baseline	Composite resilience index (diversification, redundancy, climate screening)	National power system resilience assessments; Ministry of Energy performance reviews

STRATEGY 9: Strengthen grid infrastructure to withstand impact of climate change hazards

Adaptation Action 23: Migrate from wooden poles to steel/concrete powerline poles

Objective: Improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	% of power lines converted to steel/concrete poles	5%	≥75% by 2030	%	Infrastructure inventory (ESCOM)
Outcome	% reduction in distribution system damage from climate events	High	≥60%	%	ESCOM fault reports; post-storm audits
Impact	% decrease in repair costs and outage time due to pole failure	High	≥50%	%	Maintenance budgets; Energy regulator reports

Adaptation Action 24: Strengthen Climate and Weather Services for a Resilient Energy Sector in Malawi

Objective: Strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.

Indicator Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Evidence-based operational decisions in energy generation and water management	0	1	Number of tools	ESCOM/DCCMS-An early warning system for energy sector in place
Outcome	Rapid alerts and response coordination	0	1	Coordination strategy	Reports – ESCOM/DCCMS
Impact	Improved response to power cuts emanated from climate extremes	>24 hours	<24 hours	Number of reported faults due to climate event	Faults -ESCOM

Infrastructure Sector – Indicator Definition Sheets

The Infrastructure Sector IDSs provide the technical basis for monitoring the implementation and effectiveness of climate-resilient infrastructure interventions under the Malawi NAP.

They establish standardized definitions, measurement approaches, baselines, targets, data sources, verification requirements and institutional responsibilities for each approved indicator.

The IDSs support consistent assessment of whether infrastructure systems and assets are becoming more resilient to climate hazards, whether climate-related damage and disruption are being reduced, and whether climate-risk considerations are being progressively integrated into infrastructure planning, investment, construction and maintenance.

STRATEGY 1: Climate-Resilient Infrastructure

Adaptation Action 1: Mandatory Climate Risk and Vulnerability Assessment for all NTMP projects and programmes

Objective: Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

INF-AA1-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	% of NTMP projects conducting CRVAs before approval
Indicator Definition	Percentage of NTMP projects conducting CRVAs before approval.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.
Metric / Unit of Measurement	% of total NTMP projects
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	12%
Baseline Year	2024
Target	100%

Field	Description
Target Year	2030
Data Source(s)	CRVA reports; Project Approval Files (Min. of Transport & Roads Authority)
Means of Verification	CRVA reports; Project Approval Files (Min. of Transport & Roads Authority)
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works; Roads Authority.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

INF-AA1-02 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Updated Climate Adaptation for Roads (CAFRG, 2020) Guidelines integrating CRVA at the project planning and feasibility stage of the road design process.
Indicator Definition	Measures whether the CAFRG guidelines have been updated to integrate CRVA at the project planning and feasibility stages of road design.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2024
Target	Yes

Field	Description
Target Year	2030
Data Source(s)	CRVA reports; (Check for CRVA integrated at the project planning and feasibility stage of the road design process) Updated Climate Adaptation for Roads (CAFRG, 2020) Guidelines
Means of Verification	CRVA reports; (Check for CRVA integrated at the project planning and feasibility stage of the road design process) Updated Climate Adaptation for Roads (CAFRG, 2020) Guidelines
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

INF-AA1-03 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of NTMP projects with designs revised based on CRVA findings
Indicator Definition	Percentage of NTMP projects with designs revised based on CRVA findings.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of total NTMP projects
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2024
Target	≥70%

Field	Description
Target Year	2030
Data Source(s)	Design documentation; Engineering review reports
Means of Verification	Design documentation; Engineering review reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

INF-AA1-04 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in climate-induced delays or cost overruns in NTMP infrastructure
Indicator Definition	Percentage reduction in climate-induced delays or cost overruns in NTMP infrastructure.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction compared to baseline period
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	Unknown
Baseline Year	2024
Target	≥50%
Target Year	2030
Data Source(s)	Infrastructure Performance Reports; M&E Unit (MoTPW); Auditor General's office

Field	Description
Means of Verification	Infrastructure Performance Reports; M&E Unit (MoTPW); Auditor General's office
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works; Auditor General's Office.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2024 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Ensure that all NTMP projects undergo formal Climate Risk and Vulnerability Assessments (CRVA) before implementation to reduce climate-related infrastructure risks.

Adaptation Action 2: Update transport design standards to withstand projected floods, heat stress and extreme rainfall.

Objective: Ensure climate considerations are integrated into infrastructure design standards to improve resilience.

INF-AA2-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of transport design standards updated to withstand projected floods, heat stress and extreme rainfall.
Indicator Definition	Number of transport design standards updated to withstand projected floods, heat stress and extreme rainfall.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure climate considerations are integrated into infrastructure design standards to improve resilience.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	1
Baseline Year	2025

Field	Description
Target	≥10 by 2026
Target Year	2026
Data Source(s)	Approved Technical Guidelines; Malawi Bureau of Standards publications; COST Malawi
Means of Verification	Approved Technical Guidelines; Malawi Bureau of Standards publications; COST Malawi
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Malawi Bureau of Standards; COST Malawi.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Ensure climate considerations are integrated into infrastructure design standards to improve resilience.

INF-AA2-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of public infrastructure projects using updated transport design standards
Indicator Definition	Percentage of public infrastructure projects using updated transport design standards.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% adoption
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	5%
Baseline Year	2025

Field	Description
Target	≥80% by 2030
Target Year	2030
Data Source(s)	Engineering certification; Procurement compliance reports
Means of Verification	Engineering certification; Procurement compliance reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure climate considerations are integrated into infrastructure design standards to improve resilience.

INF-AA2-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Increase in % of new infrastructure with resilience rating ≥ B (national standard)
Indicator Definition	Measures the increase in the percentage of new infrastructure achieving resilience rating B or higher under the national standard.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	Rating index
Calculation Method	Assess new infrastructure using the national resilience rating system and determine the share rated B or higher.
Formula	(New infrastructure rated ≥ B ÷ Total new infrastructure assessed) × 100
Numerator	Number of new infrastructure assets rated B or higher.
Denominator	Total number of new infrastructure assets assessed.
Baseline	TBD
Baseline Year	2025
Target	≥90%
Target Year	TBD
Data Source(s)	Infrastructure audit reports; Resilience scorecard (DoPWD, DoDMA)

Field	Description
Means of Verification	Infrastructure audit reports; Resilience scorecard (DoPWD, DoDMA)
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	DoDMA.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Apply the approved national resilience rating methodology consistently.
Link to Adaptation Result	Ensure climate considerations are integrated into infrastructure design standards to improve resilience.

Adaptation Action 3: Integrate climate hazard scenarios into transport planning and investment decisions.

Objective: Integrate climate risk assessments and responses into sector-wide transport planning and implementation.

INF-AA3-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of national and district transport plans integrating climate hazard scenarios
Indicator Definition	Number of national and district transport plans integrating climate hazard scenarios.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to integrate climate risk assessments and responses into sector-wide transport planning and implementation.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	2
Baseline Year	2025
Target	≥10
Target Year	TBD

Field	Description
Data Source(s)	Ministry of Transport Plans; District Infrastructure Profiles; Sector CRVA with a gender focus and a methodology of prioritizing adaptation investment in critical transport networks.
Means of Verification	Ministry of Transport Plans; District Infrastructure Profiles; Sector CRVA with a gender focus and a methodology of prioritizing adaptation investment in critical transport networks.
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works; Relevant City/District Councils.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Integrate climate risk assessments and responses into sector-wide transport planning and implementation.

INF-AA3-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of new transport projects based on climate-informed plans
Indicator Definition	Percentage of new transport projects based on climate-informed plans.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of total projects
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	15%
Baseline Year	2025
Target	≥90%

Field	Description
Target Year	TBD
Data Source(s)	Project design records; Funding proposals, Project documents
Means of Verification	Project design records; Funding proposals, Project documents
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Integrate climate risk assessments and responses into sector-wide transport planning and implementation.

INF-AA3-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% increase in network reliability during climate shocks (floods, storms)
Indicator Definition	Percentage increase in network reliability during climate shocks (floods, storms).
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% uptime
Calculation Method	Measure current operational uptime during climate shocks and compare it with the baseline.
Formula	(Operational time during climate shocks ÷ Required service time during climate shocks) × 100
Numerator	Operational time during climate shocks.
Denominator	Total required service time during climate shocks.
Baseline	Low
Baseline Year	2025
Target	≥75%
Target Year	TBD
Data Source(s)	Transport service logs; Disaster impact reports
Means of Verification	Transport service logs; Disaster impact reports

Field	Description
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Project or plan type; location; implementing institution.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry responsible for Transport and Public Works; DoDMA.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Integrate climate risk assessments and responses into sector-wide transport planning and implementation.

Adaptation Action 4: Construct climate-adaptive multipurpose dams to reduce flood risk and drought impacts on infrastructure.

Objective: Enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.

INF-AA4-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of climate-adaptive multipurpose dams constructed with climate resilience design
Indicator Definition	Number of climate-adaptive multipurpose dams constructed with climate resilience design.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2024
Target	≥5
Target Year	2030
Data Source(s)	Infrastructure project reports; DWR records
Means of Verification	Infrastructure project reports; DWR records

Field	Description
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Dam/location; district; climate hazard.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works; Department of Water Resources.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.

INF-AA4-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% increase in water storage capacity in drought-prone districts
Indicator Definition	Percentage increase in water storage capacity in drought-prone districts.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% volume
Calculation Method	Compare the current value with the established baseline and calculate the percentage improvement.
Formula	$((\text{Current value} - \text{Baseline value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the current value and baseline value.
Denominator	Baseline value.
Baseline	Low
Baseline Year	2024
Target	$\geq 40\%$
Target Year	2030
Data Source(s)	Hydrological assessments; DWR database
Means of Verification	Hydrological assessments; DWR database
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Dam/location; district; climate hazard.
Reporting Frequency	Annual.

Field	Description
Responsible Institution(s)	Department of Water Resources.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2024 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.

INF-AA4-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in water stress-related service disruptions
Indicator Definition	Percentage reduction in water stress-related service disruptions.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2024
Target	$\geq 70\%$
Target Year	2030
Data Source(s)	Water service delivery reports; DWR & district reports
Means of Verification	Water service delivery reports; DWR & district reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Dam/location; district; climate hazard.
Reporting Frequency	Annual.
Responsible Institution(s)	Department of Water Resources; Relevant City/District Councils.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.

Field	Description
Methodological Notes / Assumptions	Quantify the 2024 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Enhance year-round water availability for domestic, agricultural, and infrastructure use, particularly during droughts.

STRATEGY 2: Flood and Storm Defenses

Adaptation Action 5: Construct flood protection infrastructure such as river embankments in high-risk river basins.

Objective: Reduce flood-related damage to infrastructure and nearby settlements.

INF-AA5-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Length (km) of embankments, basins and culverts constructed
Indicator Definition	Total length of embankments, basins and culverts constructed.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to reduce flood-related damage to infrastructure and nearby settlements.
Metric / Unit of Measurement	Total km
Calculation Method	Sum the verified length of completed embankments, basins and culverts.
Formula	Σ verified kilometres constructed
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	TBD
Baseline Year	2025
Target	≥ 150 km by 2029
Target Year	2029
Data Source(s)	Public Works and MoTPW project reports
Means of Verification	Public Works and MoTPW project reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.

Field	Description
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Reduce flood-related damage to infrastructure and nearby settlements.

INF-AA5-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in annual floodwater intrusion into infrastructure
Indicator Definition	Percentage reduction in annual floodwater intrusion into infrastructure.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% change
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	DoDMA flood impact reports
Means of Verification	DoDMA flood impact reports
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	DoDMA.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Reduce flood-related damage to infrastructure and nearby settlements.

INF-AA5-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Estimated annual economic losses due to flood damage (USD)
Indicator Definition	Annual economic losses attributable to flood damage, measured in US dollars.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	USD
Calculation Method	Sum the verified annual financial value recorded for the indicator.
Formula	Σ verified annual value
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	US\$ 45M
Baseline Year	2025
Target	≤US\$ 15M
Target Year	TBD
Data Source(s)	Post-disaster economic assessments
Means of Verification	Post-disaster economic assessments
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	DoDMA.
Data Quality / Verification	Reconcile reported financial values with official financial or assessment records.
Methodological Notes / Assumptions	Use consistent valuation and reporting-period rules.
Link to Adaptation Result	Reduce flood-related damage to infrastructure and nearby settlements.

Adaptation Action 6: Rehabilitate urban drainage systems

Objective: Improve stormwater flow and flood prevention in rapidly urbanising areas.

INF-AA6-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	% of major urban drainage networks rehabilitated
Indicator Definition	Percentage of major urban drainage networks rehabilitated.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to improve stormwater flow and flood prevention in rapidly urbanising areas.
Metric / Unit of Measurement	% coverage
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	10%
Baseline Year	2025
Target	≥85%
Target Year	TBD
Data Source(s)	City Council progress reports; MoLGRD records
Means of Verification	City Council progress reports; MoLGRD records
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual.
Responsible Institution(s)	Relevant City/District Councils.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Improve stormwater flow and flood prevention in rapidly urbanising areas.

INF-AA6-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in flood incidents in target urban areas

Field	Description
Indicator Definition	Percentage reduction in flood incidents in target urban areas.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	# of cases
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	$\geq 75\%$
Target Year	TBD
Data Source(s)	DoDMA incident logs; city disaster reports
Means of Verification	DoDMA incident logs; city disaster reports
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	DoDMA.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Improve stormwater flow and flood prevention in rapidly urbanising areas.

INF-AA6-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in service interruption in urban public infrastructure
Indicator Definition	Percentage reduction in service interruption in urban public infrastructure.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% time restored

Field	Description
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	Urban infrastructure operation logs
Means of Verification	Urban infrastructure operation logs
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; city/district; climate hazard.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Improve stormwater flow and flood prevention in rapidly urbanising areas.

STRATEGY 3: Upgrading and Maintenance

Adaptation Action 7: Adopt and implement demonstration projects using climate-resilient material standards, e.g prefab.

Objective: Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Climate-resilient material standards adopted and gazetted
Indicator Definition	Measures whether climate-resilient material standards have been formally adopted and gazetted.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

Field	Description
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2026)
Target Year	2026
Data Source(s)	Official Gazette; Malawi Bureau of Standards
Means of Verification	Official Gazette; Malawi Bureau of Standards
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Malawi Bureau of Standards.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-02 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of demonstration infrastructure projects using alternative materials
Indicator Definition	Number of demonstration infrastructure projects using alternative materials.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria

Field	Description
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	≥10 (by 2028)
Target Year	2028
Data Source(s)	Project documentation; MoTPW reports
Means of Verification	Project documentation; MoTPW reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; district; material type.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-03 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of new public infrastructure using approved resilient materials
Indicator Definition	Percentage of new public infrastructure using approved resilient materials.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of certified projects
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	15%

Field	Description
Baseline Year	2025
Target	≥90%
Target Year	TBD
Data Source(s)	Construction permits; Procurement audits
Means of Verification	Construction permits; Procurement audits
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; district; material type.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-04 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	# of districts adopting alternative materials in public construction
Indicator Definition	Number of districts adopting alternative materials in public construction.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	≥15
Target Year	TBD
Data Source(s)	Procurement and design records
Means of Verification	Procurement and design records

Field	Description
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Infrastructure type; district; material type.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-05 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% decrease in infrastructure failure due to weather extremes
Indicator Definition	Percentage decrease in infrastructure failure due to weather extremes.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	Infrastructure performance reviews; Asset condition surveys
Means of Verification	Infrastructure performance reviews; Asset condition surveys
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Infrastructure type; district; material type.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.

Field	Description
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

INF-AA7-06 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Cost-effectiveness index of prefab vs traditional infrastructure
Indicator Definition	Ratio comparing the cost-effectiveness of prefab infrastructure with traditional infrastructure.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	Ratio
Calculation Method	Compare the cost-effectiveness value for prefab infrastructure with the equivalent value for traditional infrastructure.
Formula	Cost-effectiveness of prefab infrastructure ÷ Cost-effectiveness of traditional infrastructure
Numerator	Cost-effectiveness value for prefab infrastructure.
Denominator	Cost-effectiveness value for traditional infrastructure.
Baseline	Baseline <1
Baseline Year	2025
Target	>1.5 by 2030
Target Year	2030
Data Source(s)	Independent engineering evaluations
Means of Verification	Independent engineering evaluations
Data Collection Method	Review and compile the relevant financial, engineering or assessment records.
Disaggregation	Infrastructure type; district; material type.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry responsible for Transport and Public Works.
Data Quality / Verification	Verify that comparable cost and performance inputs are used for both infrastructure options.

Field	Description
Methodological Notes / Assumptions	Use comparable lifecycle cost and performance assumptions for prefab and traditional infrastructure.
Link to Adaptation Result	Enhance infrastructure durability through adoption of construction material standards that withstand climate stresses.

Strategy 4: Assessing vulnerability and integrating the findings into the Integrated Resource Plan

Adaptation Action 8: Conduct energy-sector climate vulnerability assessment to inform IRP.

Objective: Assess and document climate risks across energy infrastructure assets.

INF-AA8-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	National energy-sector climate vulnerability assessment report completed
Indicator Definition	Measures whether the national energy-sector climate vulnerability assessment report has been completed.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to assess and document climate risks across energy infrastructure assets.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2025)
Target Year	2025
Data Source(s)	Ministry of Energy/ESCOM report archive; EGENCO
Means of Verification	Ministry of Energy/ESCOM report archive; EGENCO
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; ESCOM; EGENCO.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.

Field	Description
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Assess and document climate risks across energy infrastructure assets.

INF-AA8-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	# of energy sector strategies informed by the VA report
Indicator Definition	Number of energy sector strategies informed by the VA report.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	≥5
Target Year	TBD
Data Source(s)	Energy policy documents
Means of Verification	Energy policy documents
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Assess and document climate risks across energy infrastructure assets.

INF-AA8-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% of energy infrastructure retrofitted following VA findings
Indicator Definition	Percentage of energy infrastructure retrofitted following VA findings.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥70%
Target Year	TBD
Data Source(s)	Implementation tracking; Ministry of Energy, M&E reports
Means of Verification	Implementation tracking; Ministry of Energy, M&E reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Assess and document climate risks across energy infrastructure assets.

Strategy 5: Develop standards for climate resilience of generation, transmission and distribution infrastructure, and off-grid systems including the integration of climate resilience into feasibility studies and grid codes.

Adaptation Action 9: Update the grid code to incorporate climate change considerations

Objective: Ensure power system operations, planning, and protection align with future climate conditions.

INF-AA9-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	National grid code revised and gazetted with climate provisions
Indicator Definition	Measures whether the national grid code has been revised and gazetted with climate provisions.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure power system operations, planning, and protection align with future climate conditions.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2026)
Target Year	2026
Data Source(s)	Government Gazette; Energy Regulatory Authority records
Means of Verification	Government Gazette; Energy Regulatory Authority records
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; MERA / Energy Regulatory Authority.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Ensure power system operations, planning, and protection align with future climate conditions.

INF-AA9-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of grid operations adhering to new climate provisions
Indicator Definition	Percentage of grid operations adhering to new climate provisions.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥85%
Target Year	TBD
Data Source(s)	Grid operator compliance reports
Means of Verification	Grid operator compliance reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure power system operations, planning, and protection align with future climate conditions.

INF-AA9-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in weather-induced power outages

Field	Description
Indicator Definition	Percentage reduction in weather-induced power outages.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	ESCOM fault data; Outage response logs
Means of Verification	ESCOM fault data; Outage response logs
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Ensure power system operations, planning, and protection align with future climate conditions.

Adaptation Action 10: Update the Mini-grid regulatory framework to include climate resilience measures
Objective: Ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.

INF-AA10-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Mini-grid regulatory framework revised and climate resilience integrated
Indicator Definition	Measures whether the mini-grid regulatory framework has been revised to integrate climate resilience.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2026)
Target Year	2026
Data Source(s)	Gazette notice; Energy Regulatory Authority publications
Means of Verification	Gazette notice; Energy Regulatory Authority publications
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; MERA / Energy Regulatory Authority.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.

INF-AA10-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of new mini-grids compliant with updated climate-resilient standards
Indicator Definition	Percentage of new mini-grids compliant with updated climate-resilient standards.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of installations
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥90%
Target Year	TBD
Data Source(s)	Licensing records; Site audit reports
Means of Verification	Licensing records; Site audit reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.

INF-AA10-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% of mini-grid systems sustaining operation during climate shocks

Field	Description
Indicator Definition	Percentage of mini-grid systems sustaining operation during climate shocks.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% uptime
Calculation Method	Determine the proportion of required operating time or facilities that remain operational during climate shocks.
Formula	(Operational time/facilities during climate shocks ÷ Total required time/facilities assessed) × 100
Numerator	Operational time or facilities maintaining service during climate shocks.
Denominator	Total required operating time or facilities assessed.
Baseline	Low
Baseline Year	2025
Target	≥80%
Target Year	TBD
Data Source(s)	ESCOM off-grid monitoring reports
Means of Verification	ESCOM off-grid monitoring reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Define and document the denominator consistently before annual reporting.
Link to Adaptation Result	Ensure off-grid and mini-grid energy systems are designed and regulated to withstand climate-related hazards.

Adaptation Action 11: Develop climate resilient standards for the generation, transmission and distribution infrastructure and off grid system

Objective: Institutionalize engineering and operational standards for a resilient power system.

INF-AA11-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	National standards for climate-resilient energy infrastructure published
Indicator Definition	Measures whether national standards for climate-resilient energy infrastructure have been published.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to institutionalize engineering and operational standards for a resilient power system.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2025)
Target Year	2025
Data Source(s)	Malawi Bureau of Standards; DoE publications
Means of Verification	Malawi Bureau of Standards; DoE publications
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; Malawi Bureau of Standards.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Institutionalize engineering and operational standards for a resilient power system.

INF-AA11-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of public-funded energy infrastructure built to new standards
Indicator Definition	Percentage of public-funded energy infrastructure built to new standards.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of total
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥95%
Target Year	TBD
Data Source(s)	Project inspection reports; Procurement evaluations
Means of Verification	Project inspection reports; Procurement evaluations
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Institutionalize engineering and operational standards for a resilient power system.

INF-AA11-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in damages to energy systems from extreme weather
Indicator Definition	Percentage reduction in damages to energy systems from extreme weather.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	$\geq 70\%$
Target Year	TBD
Data Source(s)	Post-disaster energy assessments
Means of Verification	Post-disaster energy assessments
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Institutionalize engineering and operational standards for a resilient power system.

Strategy 6: Develop standard procedures to coordinate responses to disasters affecting the energy sector, including a clear communication strategy between energy agencies and Department of Disaster Management Affairs (DoDMA), load shedding procedures, emergency repairs, and coordination with actions under the responsibility of DoDMA, including early warning systems

Adaptation Action 12: Develop disaster response procedures (with clear governance institutional structure with top management representation)

Objective: Strengthen preparedness and response mechanisms for energy sector disasters.

INF-AA12-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	National disaster response protocol for energy sector finalized and endorsed and aligned to National DRM framework
Indicator Definition	Measures whether the energy-sector disaster response protocol has been finalized, endorsed and aligned with the National DRM framework.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to strengthen preparedness and response mechanisms for energy sector disasters.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2026)
Target Year	2026
Data Source(s)	DoE/DoDMA joint protocol
Means of Verification	DoE/DoDMA joint protocol
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; DoDMA.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Strengthen preparedness and response mechanisms for energy sector disasters.

INF-AA12-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of energy utilities trained on new response protocol
Indicator Definition	Percentage of energy utilities trained on new response protocol.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥100% by 2027
Target Year	2027
Data Source(s)	Training logs; Capacity building reports
Means of Verification	Training logs; Capacity building reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Strengthen preparedness and response mechanisms for energy sector disasters.

INF-AA12-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Average recovery time of energy systems post-disaster
Indicator Definition	Average time required to restore energy systems after a disaster.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	Avg. hours
Calculation Method	Calculate the average elapsed time between service disruption and restoration for recorded disaster events.
Formula	Σ recovery hours $\div$ Number of recorded recovery events
Numerator	Total recovery hours across recorded events.
Denominator	Number of recorded recovery events.
Baseline	>72 hrs
Baseline Year	2025
Target	<24 hrs by 2028
Target Year	2028
Data Source(s)	Incident and recovery logs (DoE, ESCOM)
Means of Verification	Incident and recovery logs (DoE, ESCOM)
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy; ESCOM.
Data Quality / Verification	Verify event timestamps and restoration/response records.
Methodological Notes / Assumptions	Use consistent start and end points when calculating response or recovery time.
Link to Adaptation Result	Strengthen preparedness and response mechanisms for energy sector disasters.

Adaptation Action 13: Map energy infrastructure exposed to floods, storms and heat.

Objective: Improve energy sector risk planning by identifying and mapping vulnerable zones.

INF-AA13-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Disaster-prone areas (exposed to floods, storms and heat) mapped and integrated into energy planning
Indicator Definition	Percentage of disaster-prone areas exposed to floods, storms and heat that are mapped and integrated into energy planning.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to improve energy sector risk planning by identifying and mapping vulnerable zones.
Metric / Unit of Measurement	% mapped
Calculation Method	Determine the proportion of identified disaster-prone areas that have been mapped and integrated into energy planning.
Formula	(Mapped and integrated high-risk areas ÷ Total identified high-risk areas) × 100
Numerator	Number/area of identified high-risk zones mapped and integrated into planning.
Denominator	Total identified high-risk zones.
Baseline	Partial
Baseline Year	2025
Target	100% (by 2027)
Target Year	2027
Data Source(s)	GIS database; DoE and DoDMA maps
Means of Verification	GIS database; DoE and DoDMA maps
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy; DoDMA.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Define and document the denominator consistently before annual reporting.
Link to Adaptation Result	Improve energy sector risk planning by identifying and mapping vulnerable zones.

INF-AA13-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of new energy projects located outside high-risk zones
Indicator Definition	Percentage of new energy projects located outside high-risk zones.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	Unknown
Baseline Year	2025
Target	≥90% by 2027
Target Year	2027
Data Source(s)	EIA reports; Project site assessments
Means of Verification	EIA reports; Project site assessments
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Define and document the denominator consistently before annual reporting.
Link to Adaptation Result	Improve energy sector risk planning by identifying and mapping vulnerable zones.

INF-AA13-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in energy asset damage in previously high-risk zones
Indicator Definition	Percentage reduction in energy asset damage in previously high-risk zones.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	%
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60% by 2030
Target Year	2030
Data Source(s)	Post-disaster infrastructure assessments
Means of Verification	Post-disaster infrastructure assessments
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Improve energy sector risk planning by identifying and mapping vulnerable zones.

Strategy 11: Strengthen technical capacity to integrate climate resilience at all stages of the infrastructure life cycle

Adaptation Action 14: Prepare communication system/strategy on disaster warnings and ensure that all energy entities are working within the structure of the National DRM framework

Objective: Integrate energy sector early warning communications within the national DRM system.

INF-AA14-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	National communication protocol for energy disaster warnings adopted
Indicator Definition	Measures whether a national communication protocol for energy disaster warnings has been adopted.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to integrate energy sector early warning communications within the national DRM system.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2025)
Target Year	2025
Data Source(s)	DoE/DoDMA protocol publication
Means of Verification	DoE/DoDMA protocol publication
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy; DoDMA.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Integrate energy sector early warning communications within the national DRM system.

INF-AA14-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of energy agencies linked to DRM alert system (e.g. DoDMA, DCCMS)
Indicator Definition	Percentage of energy agencies linked to DRM alert system (e.g. DoDMA, DCCMS).
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	10%
Baseline Year	2025
Target	100% by 2026
Target Year	2026
Data Source(s)	Communication logs; Alert delivery records
Means of Verification	Communication logs; Alert delivery records
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Integrate energy sector early warning communications within the national DRM system.

INF-AA14-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% improvement in coordinated response time across agencies

Field	Description
Indicator Definition	Percentage improvement in coordinated response time across agencies.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% time improvement
Calculation Method	Compare the current value with the established baseline and calculate the percentage improvement.
Formula	$((\text{Current value} - \text{Baseline value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the current value and baseline value.
Denominator	Baseline value.
Baseline	Low
Baseline Year	2025
Target	$\geq 70\%$ faster coordination by 2026
Target Year	2026
Data Source(s)	Response time audits; DRM coordination logs
Means of Verification	Response time audits; DRM coordination logs
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	DoDMA.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Integrate energy sector early warning communications within the national DRM system.

STRATEGY 7: Integrating energy storage into power generation and transmission

Adaptation Action 15: Prepare mechanisms on preparedness and response in line with ODSS Early Warning framework

Objective: Ensure energy infrastructure response is aligned with national early warning protocols.

INF-AA15-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Sector-specific response mechanisms aligned with ODSS framework
Indicator Definition	Measures whether sector-specific preparedness and response mechanisms are aligned with the ODSS framework.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure energy infrastructure response is aligned with national early warning protocols.
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2025)
Target Year	2025
Data Source(s)	Preparedness and Response Guidelines; MoE documents
Means of Verification	Preparedness and Response Guidelines; MoE documents
Data Collection Method	Review the official approval, publication or policy record.
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Ensure energy infrastructure response is aligned with national early warning protocols.

INF-AA15-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of early warning triggers followed by energy sector action within 12 hrs
Indicator Definition	Percentage of early warning triggers followed by energy sector action within 12 hrs.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	<20%
Baseline Year	2025
Target	≥90%
Target Year	TBD
Data Source(s)	DoE response logs; ODSS reports
Means of Verification	DoE response logs; ODSS reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure energy infrastructure response is aligned with national early warning protocols.

INF-AA15-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in asset loss/downtime from unanticipated shocks

Field	Description
Indicator Definition	Percentage reduction in asset loss/downtime from unanticipated shocks.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	%
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	$\geq 60\%$
Target Year	TBD
Data Source(s)	Infrastructure continuity reports; Emergency repair logs
Means of Verification	Infrastructure continuity reports; Emergency repair logs
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Ensure energy infrastructure response is aligned with national early warning protocols.

Adaptation Action 16: Integrating energy storage into power generation and transmission

Objective: Promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.

INF-AA16-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of BESS installations integrated into power infrastructure
Indicator Definition	Number of BESS installations integrated into power infrastructure.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	≥15 by 2030
Target Year	2030
Data Source(s)	ESCOM/DoE project reports
Means of Verification	ESCOM/DoE project reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy; ESCOM.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.

INF-AA16-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of renewable energy projects with storage-enabled balancing
Indicator Definition	Percentage of renewable energy projects with storage-enabled balancing.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥60% by 2030
Target Year	2030
Data Source(s)	System integration records; Grid performance reports
Means of Verification	System integration records; Grid performance reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.

INF-AA16-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% improvement in grid stability index during VRE fluctuations
Indicator Definition	Percentage improvement in grid stability index during VRE fluctuations.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% improvement
Calculation Method	Compare the current value with the established baseline and calculate the percentage improvement.
Formula	$((\text{Current value} - \text{Baseline value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the current value and baseline value.
Denominator	Baseline value.
Baseline	Low
Baseline Year	2025
Target	≥50% by 2030
Target Year	2030
Data Source(s)	National Grid Stability Reports
Means of Verification	National Grid Stability Reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Promote deployment of Battery Energy Storage Systems (BESS) to enhance grid flexibility and renewable integration.

Adaptation Action 17: To conduct grid studies for all prospective VRE projects

Objective: Ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.

INF-AA17-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	# of grid impact studies completed for VRE projects
Indicator Definition	Number of grid impact studies completed for VRE projects.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.
Metric / Unit of Measurement	Count
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	≥30 by 2028
Target Year	2028
Data Source(s)	DoE project approval files
Means of Verification	DoE project approval files
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.

INF-AA17-02 (Outcome)

Field	Description
Indicator Level	Outcome

Field	Description
Indicator Name	% of VRE investments supported by grid readiness plans
Indicator Definition	Percentage of VRE investments supported by grid readiness plans.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥80%
Target Year	TBD
Data Source(s)	Planning approvals; ESCOM capacity study reports
Means of Verification	Planning approvals; ESCOM capacity study reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.

INF-AA17-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in project delays or system instability from VRE
Indicator Definition	Percentage reduction in project delays or system instability from VRE.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.

Field	Description
Metric / Unit of Measurement	%
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	System operation logs; Energy project M&E data
Means of Verification	System operation logs; Energy project M&E data
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy; ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Ensure variable renewable energy (VRE) projects are integrated through sound grid impact assessments.

Adaptation Action 18: Develop Ancillary services market framework

Objective: Enable market-based provision of grid balancing, frequency, and voltage control.

INF-AA18-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Ancillary services market framework developed and adopted
Indicator Definition	Measures whether an ancillary services market framework has been developed and adopted.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to enable market-based provision of grid balancing, frequency, and voltage control.

Field	Description
Metric / Unit of Measurement	Binary
Calculation Method	Review the relevant approved record and confirm whether the required action has been completed.
Formula	Yes = requirement achieved; No = requirement not achieved
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	No
Baseline Year	2025
Target	Yes (by 2026)
Target Year	2026
Data Source(s)	TBD
Means of Verification	TBD
Data Collection Method	TBD
Disaggregation	Not applicable.
Reporting Frequency	Annual until achieved.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify formal approval, publication or adoption against the official record.
Methodological Notes / Assumptions	Count the indicator as achieved only when the required instrument or action is formally approved or operational.
Link to Adaptation Result	Enable market-based provision of grid balancing, frequency, and voltage control.

INF-AA18-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% of power producers participating in ancillary market
Indicator Definition	Percentage of power producers participating in ancillary market.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.

Field	Description
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	0%
Baseline Year	2025
Target	≥10%
Target Year	TBD
Data Source(s)	Licensing and participation logs Regulatory Authority records; DoE documentation
Means of Verification	Licensing and participation logs Regulatory Authority records; DoE documentation
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy; MERA / Energy Regulatory Authority.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Enable market-based provision of grid balancing, frequency, and voltage control.

INF-AA18-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% improvement in reliability of electricity supply (SAIDI/SAIFI)
Indicator Definition	Percentage improvement in reliability of electricity supply (SAIDI/SAIFI).
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% improvement
Calculation Method	Compare the current value with the established baseline and calculate the percentage improvement.
Formula	((Current value – Baseline value) ÷ Baseline value) × 100
Numerator	Difference between the current value and baseline value.

Field	Description
Denominator	Baseline value.
Baseline	Low
Baseline Year	2025
Target	≥40%
Target Year	TBD
Data Source(s)	ESCOM service quality reports
Means of Verification	ESCOM service quality reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Enable market-based provision of grid balancing, frequency, and voltage control.

STRATEGY 8: Diversification of energy source from hydro source to other renewables

Adaptation Action 19: Reduce climate vulnerability of power supply through renewable energy diversification

INF-AA19-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Installed non-hydro renewable generation capacity
Indicator Definition	Installed non-hydro renewable electricity generation capacity.
Purpose / Relevance to Adaptation	Supports a more diversified and climate-resilient national power supply.
Metric / Unit of Measurement	Megawatts (MW)
Calculation Method	Sum the installed non-hydro renewable generation capacity that is commissioned and operational.
Formula	Σ installed non-hydro renewable capacity (MW)
Numerator	Not applicable.
Denominator	Not applicable.

Field	Description
Baseline	120 MW
Baseline Year	2025
Target	600 MW
Target Year	TBD
Data Source(s)	MERA generation licensing database; ESCOM and IPP commissioning reports
Means of Verification	MERA generation licensing database; ESCOM and IPP commissioning reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM; MERA / Energy Regulatory Authority; Independent Power Producers.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Supports a more diversified and climate-resilient national power supply.

INF-AA19-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	Share of national electricity generation capacity coming from non-hydro sources
Indicator Definition	Percentage share of national electricity generation capacity coming from non-hydro sources.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	Percentage (%)
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	18%

Field	Description
Baseline Year	2025
Target	45%
Target Year	TBD
Data Source(s)	MERA energy statistics; Malawi Energy Balance reports
Means of Verification	MERA energy statistics; Malawi Energy Balance reports
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	MERA / Energy Regulatory Authority.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Supports a more diversified and climate-resilient national power supply.

INF-AA19-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Reduction in electricity supply disruption during drought and low-flow years
Indicator Definition	Percentage reduction in electricity supply disruption during drought and low-flow years.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction in annual unserved energy / load shedding hours
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	Baseline load shedding hours in 2025
Baseline Year	2025
Target	40% reduction
Target Year	TBD

Field	Description
Data Source(s)	ESCOM system operation reports; System Average Interruption Duration Index (SAIDI)
Means of Verification	ESCOM system operation reports; System Average Interruption Duration Index (SAIDI)
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Supports a more diversified and climate-resilient national power supply.

Adaptation Action 20: Expand decentralized and off-grid renewable energy systems for climate resilience
INF-AA20-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Functional decentralized renewable energy systems installed (mini-grids and solar home systems)
Indicator Definition	Number of functional decentralized renewable energy systems installed, including mini-grids and solar home systems.
Purpose / Relevance to Adaptation	Improves resilient electricity access through decentralized and off-grid renewable energy systems.
Metric / Unit of Measurement	Number of systems
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	320 systems
Baseline Year	2025
Target	2,000 systems
Target Year	TBD
Data Source(s)	REA project completion reports; installer certification records

Field	Description
Means of Verification	REA project completion reports; installer certification records
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	REA.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Improves resilient electricity access through decentralized and off-grid renewable energy systems.

INF-AA20-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	Households, health centres and schools with reliable off-grid electricity access in climate-vulnerable areas
Indicator Definition	Number of households, health centres and schools with reliable off-grid electricity access in climate-vulnerable areas.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	Number of connections
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	65,000 connections
Baseline Year	2025
Target	350,000 connections
Target Year	TBD
Data Source(s)	REA and ESCOM connection databases; M&E surveys
Means of Verification	REA and ESCOM connection databases; M&E surveys
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	District; facility/connection type; technology.

Field	Description
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM; REA.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Improves resilient electricity access through decentralized and off-grid renewable energy systems.

INF-AA20-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Reduced service disruption to basic services (health, water, education) during climate shocks
Indicator Definition	Percentage of basic-service facilities maintaining power during climate shocks.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% of facilities maintaining power during flood/drought events
Calculation Method	Determine the proportion of required operating time or facilities that remain operational during climate shocks.
Formula	(Operational time/facilities during climate shocks ÷ Total required time/facilities assessed) × 100
Numerator	Operational time or facilities maintaining service during climate shocks.
Denominator	Total required operating time or facilities assessed.
Baseline	40%
Baseline Year	2025
Target	≥85%
Target Year	TBD
Data Source(s)	Facility operational reports; post-disaster assessments
Means of Verification	Facility operational reports; post-disaster assessments
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy.

Field	Description
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Improves resilient electricity access through decentralized and off-grid renewable energy systems.

Adaptation Action 21: Climate-proof energy infrastructure planning

INF-AA21-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	New and rehabilitated energy infrastructure designed using climate-resilient standards
Indicator Definition	Number of new and rehabilitated energy infrastructure projects designed using climate-resilient standards.
Purpose / Relevance to Adaptation	Strengthens climate resilience in energy infrastructure planning and investment decisions.
Metric / Unit of Measurement	Number of projects
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	3 projects
Baseline Year	2025
Target	30 projects
Target Year	2030
Data Source(s)	Engineering design approvals; procurement documents
Means of Verification	Engineering design approvals; procurement documents
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.

Field	Description
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Strengthens climate resilience in energy infrastructure planning and investment decisions.

INF-AA21-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	Energy infrastructure projects incorporating climate risk screening in investment decisions
Indicator Definition	Measures the percentage performance represented by: Energy infrastructure projects incorporating climate risk screening in investment decisions.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	% of new projects
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	15%
Baseline Year	2025
Target	≥90%
Target Year	2030
Data Source(s)	Public Investment Management system; project appraisal records
Means of Verification	Public Investment Management system; project appraisal records
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.

Field	Description
Link to Adaptation Result	Strengthens climate resilience in energy infrastructure planning and investment decisions.

INF-AA21-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Reduced climate-related damage to energy infrastructure assets
Indicator Definition	Percentage reduction in climate-related damage to energy infrastructure assets.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	% reduction in climate-related asset losses
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	Baseline damage costs in 2025
Baseline Year	2025
Target	50% reduction
Target Year	2030
Data Source(s)	ESCOM asset management reports; disaster damage and loss assessments
Means of Verification	ESCOM asset management reports; disaster damage and loss assessments
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Strengthens climate resilience in energy infrastructure planning and investment decisions.

Adaptation Action 22: Enable climate-responsive energy policy and financing

INF-AA22-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Public and private climate-responsive energy investment facilities operational
Indicator Definition	Number of operational public and private climate-responsive energy investment facilities.
Purpose / Relevance to Adaptation	Expands climate-responsive energy financing and strengthens power-system resilience.
Metric / Unit of Measurement	Number of facilities / windows
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	1 facility
Baseline Year	2025
Target	4 facilities
Target Year	TBD
Data Source(s)	Treasury and development partner financing agreements
Means of Verification	Treasury and development partner financing agreements
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	District; facility/connection type; technology.
Reporting Frequency	Annual.
Responsible Institution(s)	Treasury / Ministry responsible for Finance.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Expands climate-responsive energy financing and strengthens power-system resilience.

INF-AA22-02 (Outcome)

Field	Description
Indicator Level	Outcome

Field	Description
Indicator Name	Volume of climate-aligned energy finance mobilised annually
Indicator Definition	Annual volume of climate-aligned energy finance mobilised.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	MWK per year
Calculation Method	Sum the verified annual financial value recorded for the indicator.
Formula	Σ verified annual value
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	MWK 60 billion
Baseline Year	2025
Target	MWK 300 billion per year
Target Year	TBD
Data Source(s)	Climate finance tracking system; budget statements; development partner reports
Means of Verification	Climate finance tracking system; budget statements; development partner reports
Data Collection Method	Review and compile the relevant financial, engineering or assessment records.
Disaggregation	Financing source; facility type; investment category.
Reporting Frequency	Annual.
Responsible Institution(s)	Treasury / Ministry responsible for Finance.
Data Quality / Verification	Reconcile reported financial values with official financial or assessment records.
Methodological Notes / Assumptions	Use consistent valuation and reporting-period rules.
Link to Adaptation Result	Expands climate-responsive energy financing and strengthens power-system resilience.

INF-AA22-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Increased resilience and sustainability of the national power system to climate variability
Indicator Definition	Percentage improvement in the resilience and sustainability of the national power system to climate variability.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	Composite resilience index (diversification, redundancy, climate screening)
Calculation Method	Compare the current value with the established baseline and calculate the percentage improvement.
Formula	$((\text{Current value} - \text{Baseline value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the current value and baseline value.
Denominator	Baseline value.
Baseline	Baseline index developed in 2025
Baseline Year	2025
Target	50% improvement over baseline
Target Year	TBD
Data Source(s)	National power system resilience assessments; Ministry of Energy performance reviews
Means of Verification	National power system resilience assessments; Ministry of Energy performance reviews
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	Ministry of Energy / Department of Energy.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Expands climate-responsive energy financing and strengthens power-system resilience.

STRATEGY 9: Strengthen grid infrastructure to withstand impact of climate change hazards

Adaptation Action 23: Migrate from wooden poles to steel/concrete powerline poles

Objective: Improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.

INF-AA23-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	% of power lines converted to steel/concrete poles
Indicator Definition	Percentage of power lines converted to steel/concrete poles.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.
Metric / Unit of Measurement	%
Calculation Method	Divide the number meeting the indicator criterion by the total relevant number assessed and multiply by 100.
Formula	(Number meeting indicator criterion ÷ Total relevant number assessed) × 100
Numerator	Number meeting the indicator criterion.
Denominator	Total relevant number assessed.
Baseline	5%
Baseline Year	2025
Target	≥75% by 2030
Target Year	2030
Data Source(s)	Infrastructure inventory (ESCOM)
Means of Verification	Infrastructure inventory (ESCOM)
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Verify the numerator and denominator against the underlying source records.
Methodological Notes / Assumptions	Use a consistent denominator across reporting periods.
Link to Adaptation Result	Improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.

INF-AA23-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in distribution system damage from climate events
Indicator Definition	Percentage reduction in distribution system damage from climate events.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	%
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	TBD
Data Source(s)	ESCOM fault reports; post-storm audits
Means of Verification	ESCOM fault reports; post-storm audits
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.

INF-AA23-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	% decrease in repair costs and outage time due to pole failure
Indicator Definition	Percentage decrease in repair costs and outage time due to pole failure.

Field	Description
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	%
Calculation Method	Compare the current value with the established baseline and calculate the percentage reduction.
Formula	$((\text{Baseline value} - \text{Current value}) \div \text{Baseline value}) \times 100$
Numerator	Difference between the baseline value and current value.
Denominator	Baseline value.
Baseline	High
Baseline Year	2025
Target	$\geq 50\%$
Target Year	TBD
Data Source(s)	Maintenance budgets; Energy regulator reports
Means of Verification	Maintenance budgets; Energy regulator reports
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	Ministry of Energy / Department of Energy; MERA / Energy Regulatory Authority; Treasury / Ministry responsible for Finance.
Data Quality / Verification	Use consistent baseline and current-period data and verify the underlying records.
Methodological Notes / Assumptions	Quantify the 2025 baseline using a consistent methodology before calculating change.
Link to Adaptation Result	Improve resilience of Transmission and distribution infrastructure to storms, termites, and wildfires.

Adaptation Action 24: Strengthen Climate and Weather Services for a Resilient Energy Sector in Malawi

Objective: Strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.

INF-AA24-01 (Output)

Field	Description
Indicator Level	Output
Indicator Name	Evidence-based operational decisions in energy generation and water management
Indicator Definition	Number of operational tools supporting evidence-based decisions in energy generation and water management.
Purpose / Relevance to Adaptation	Tracks delivery of the action required to strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.
Metric / Unit of Measurement	Number of tools
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	1
Target Year	TBD
Data Source(s)	ESCOM/DCCMS-An early warning system for energy sector in place
Means of Verification	ESCOM/DCCMS-An early warning system for energy sector in place
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM; DCCMS.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.

INF-AA24-02 (Outcome)

Field	Description
Indicator Level	Outcome
Indicator Name	Rapid alerts and response coordination
Indicator Definition	Measures establishment of a coordination strategy for rapid alerts and response coordination.
Purpose / Relevance to Adaptation	Measures whether implementation is translating into the intended adaptation outcome.
Metric / Unit of Measurement	Coordination strategy
Calculation Method	Count verified units or instances that meet the indicator criteria.
Formula	Total verified units/instances meeting the indicator criteria
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	0
Baseline Year	2025
Target	1
Target Year	TBD
Data Source(s)	Reports – ESCOM/DCCMS
Means of Verification	Reports – ESCOM/DCCMS
Data Collection Method	Review and compile the relevant administrative, project or monitoring records.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual.
Responsible Institution(s)	ESCOM; DCCMS.
Data Quality / Verification	Cross-check reported totals against the underlying administrative or project records.
Methodological Notes / Assumptions	Count only completed, verified and operational units where applicable.
Link to Adaptation Result	Strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.

INF-AA24-03 (Impact)

Field	Description
Indicator Level	Impact
Indicator Name	Improved response to power cuts emanated from climate extremes

Field	Description
Indicator Definition	Measures response performance to power cuts caused by climate extremes.
Purpose / Relevance to Adaptation	Measures the resulting improvement in climate resilience and reduction of climate-related impacts.
Metric / Unit of Measurement	Number of reported faults due to climate event
Calculation Method	Review recorded climate-related power-cut response data and compare the current response performance with the stated threshold.
Formula	Current reported response value
Numerator	Not applicable.
Denominator	Not applicable.
Baseline	>24 hours
Baseline Year	2025
Target	<24 hours
Target Year	TBD
Data Source(s)	Faults -ESCOM
Means of Verification	Faults -ESCOM
Data Collection Method	Review administrative records and relevant post-event reports.
Disaggregation	Energy infrastructure/technology type; location; implementing entity.
Reporting Frequency	Annual and after major climate events.
Responsible Institution(s)	ESCOM.
Data Quality / Verification	Verify event timestamps and restoration/response records.
Methodological Notes / Assumptions	Apply the stated metric and response-time threshold consistently in reporting.
Link to Adaptation Result	Strengthen the resilience of Malawi's energy sector to climate and weather-related shocks by enhancing access to and use of tailored meteorological services.