

Malawi National Adaptation Plan

Fisheries Sector M&R Framework and Indicator Definition Sheets (IDS)



Ministry of Natural Resources

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Fisheries adaptation Actions and Indicators

Strategy 1: Sustainable Fishing Practices

Adaptation Action 1: Train fishers on gear selectivity and fishing seasons

Objective: Promote responsible and climate-sensitive fishing techniques to reduce overfishing and preserve fish stocks.

Level	SMART Indicator	Baseline (2024)	Target (2030)	Metric	Means of Verification
Output	# of fishers trained on gear selectivity and seasonal fishing (disaggregated by gender)	<50,000	≥100,000	Count	Training reports; Attendance registers (Fisheries Dept.), BVC Registers
Outcome	% reduction in illegal and unregulated fishing practices	High	≥40% reduction	%	Enforcement records; Co-management reports, reports on concluded court cases, Number of offences and offenders (reduction in population of illegal fishers and fishing units)
Impact	Fish biomass index in target lakes (kg/ha) disaggregated by lakes/ fish species	Declining	≥25% increase	Biomass index	Annual fish stock assessment reports

Adaptation Action 2: Adopt best fisheries management practices that are responsive to climate variability and disaster risk

Objective: Strengthen the resilience and sustainability of fishery systems by institutionalizing adaptive management approaches that integrate climate risk, ecosystem variability, and disaster preparedness into fisheries governance.

Indicator Level	SMART Indicator	Baseline (2024)	Target (2030)	Metric	Means of Verification (MoV)
Output	# of fisheries management guidelines revised to incorporate climate variability and disaster risk	2	≥5	Count	Fisheries Department publications; Gazette notices; Technical guidelines
Output	# of District and Local Fisheries Management Plans developed using climate-resilient approaches	12	≥30	Count	District Development Plans; Co-management documentation
Output	# of climate warnings and bulletins targeting fishers	Winter only targeting Mwera winds	Throughout the year – warnings to include other climate extremes	count	DCCMS reports
Outcome	% of fisheries grounds implementing adaptive management practices (e.g. flexible seasons, gear limits, habitat protection)	<20%	≥80%	%	Fisheries monitoring reports; Enforcement audits, BVCs reports
Outcome	% of fisheries management decisions (closures, quotas, restocking, early warning	Low	≥70%	%	Decision records; Climate-informed action logs, weather information (DCCMS)

	systems) made using climate or disaster risk data				
Impact	% improvement in fish stock sustainability index in managed areas	Declining	≥30% improvement	Index score	Biomass assessments; Catch-per-unit-effort (CPUE) data, changes in fish species composition
Impact	% reduction in fisheries-related losses during climate-related disasters (e.g. floods, droughts)	High	≥30%	%	DoDMA and Fisheries Loss and Damage Assessment Reports, Post-disaster needs assessment report
Impact	# of fishers integrating climate in their planning	<10%	>50%	count	Survey- DCCMS/Fisheries

Strategy 2: Protect/Restore Aquatic Habitats

Adaptation Action 3: Restore community-led wetland/ sanctuaries

Objective: Rehabilitate degraded aquatic ecosystems to support breeding grounds and climate regulation.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	Hectares of sanctuary areas restored by communities	50 ha	≥2,000 ha	Area (ha)	Environmental monitoring reports; Forestry and Fisheries data
Outcome	% reduction in sedimentation in spawning areas	High	≥50%	%	Water quality assessment tests; Hydrology reports
Impact	Increase in spawning success rate of key species	Low	≥40%	%	Fisheries breeding seasonality reports

Adaptation Action 4: Implement upstream conservation to reduce climate-induced erosion and sedimentation into water bodies.

Objective: Improve water quality and flow for aquatic ecosystems through integrated upstream land management.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of upstream conservation projects implemented in key water bodies	3	≥30	Count	District Environmental Reports; NGO project logs, project progress reports
Outcome	% reduction in nutrient and sediment runoff into water bodies	High	≥60%	%	Water quality monitoring reports
Impact	% improvement in habitat health index (e.g., dissolved oxygen, pH)	Low	≥30%	Index score	Aquatic health reports (DoF, MNRCC), Water quality assessment reports

Strategy 3: Aquaculture Development

Adaptation Action 5: Construct fishponds with climate-resilient infrastructure

Objective: Promote resilient aquaculture systems as an alternative to pressure on capture fisheries.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of climate-resilient fishponds constructed	2000	≥5,000 by 2030	Count	Project completion reports; Fisheries Dept. records
Outcome	% increase in fish production from aquaculture	45%	≥150%	Metric tons	Aquaculture production surveys
Impact	% reduction in dependence on wild capture for local fish consumption	High	≥50%	%	Household Fish consumption surveys; Fish Market data

Adaptation Action 6: Provide climate-smart agriculture extension using heat-tolerant and resilient species.

Objective: Strengthen aquaculture productivity and resilience through improved technical support and access to climate-resilient inputs.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of fish farmers receiving climate-smart extension support and quality fingerlings	15,000	≥50,000	Count	Extension service records; Fingerling distribution logs
Outcome	% increase in survival rate of fingerlings in climate-affected areas	Low	≥70%	%	Field monitoring reports; Farmer records
Impact	% contribution of aquaculture to national fish supply	7.5%	≥25% by 2030	%	Fisheries production data (DoF Annual Reports)

Strategy 4: Reduced Pollution

Adaptation Action 7: Install waste control systems to protect climate-stressed aquatic ecosystems.

Objective: Improve infrastructure for waste containment and treatment at fish landing and market sites.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
Output	# of waste control systems installed or upgraded in fisheries hubs	25	≥80 by 2027	Count	Infrastructure project logs, Project completion reports
Outcome	% of waste properly managed at landing sites with new systems	20%	≥90%	%	Waste management audits; Fisheries inspection reports
Impact	% reduction in fish disease incidence linked to pollution	70%	≥40%	%	Fish health monitoring data; Field vet reports

Strategy 5: Monitoring and Regulation

Adaptation Action 8: Install systems to monitor climate impacts on fish stocks and lake conditions

Objective: Improve real-time data collection for adaptive fisheries and aquatic ecosystem management.

Level	SMART Indicator	Baseline	Target	Metric	Means of Verification
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Output	# of monitoring technologies (e.g. e-catch logs, sensors, remote gauges) installed for climate impacts on fish stocks and lake conditions	100	≥250 by 2030	Count	Technology inventory logs; Procurement reports
Outcome	% increase in data collection frequency and geographic coverage	Low	≥75%	%	Monitoring schedules; GIS data
Impact	% increase in data-informed fisheries decisions (quota, closures, restocking)	Low	≥80%	%	Policy reviews; Fisheries regulation reports

Fisheries Sector – Indicator Definition Sheets

The Fisheries Sector IDSs provide the technical framework for systematically monitoring progress in strengthening the climate resilience and sustainability of Malawi's fisheries and aquaculture systems.

Each IDS standardizes the indicator definition, measurement unit, calculation methodology, baseline, target, data source, means of verification, collection method, reporting frequency, disaggregation and responsible institution.

Together, the sheets support consistent assessment of changes in fish production, aquatic ecosystem condition, climate-resilient fisheries and aquaculture practices, livelihood resilience and the capacity of fisheries-dependent communities and institutions to manage climate-related risks.

STRATEGY 1: Sustainable Fishing Practices

Adaptation Action 1: Train fishers on gear selectivity and fishing seasons

Objective: Promote responsible and climate-sensitive fishing techniques to reduce overfishing and preserve fish stocks.

IDS 1 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of fishers trained on gear selectivity and seasonal fishing (disaggregated by gender)
Indicator Definition	Number of unique fishers who complete a recognized training session on selective fishing gear and climate-sensitive or seasonal fishing requirements during the reporting period.
Purpose / Relevance to Adaptation	Tracks the reach of capacity building intended to improve compliance with responsible fishing practices, reduce pressure on fish stocks, and strengthen climate-sensitive fisheries management.
Metric / Unit of Measurement	Count of unique fishers trained; persons.
Calculation Method	Count each fisher once after verified completion of an eligible training session. Consolidate attendance lists across providers and remove duplicate participants using available identifiers.
Formula	Total trained fishers = Σ unique fishers with verified completion of eligible training
Numerator	Number of unique fishers with verified completion of eligible training.
Denominator	Not applicable (count indicator).
Baseline	<50,000

Field	Description
Baseline Year	2024
Target	≥100,000
Target Year	2030
Data Source(s)	Training attendance databases/registers; Fisheries Department training records; Beach Village Committee (BVC) registers.
Means of Verification	Training reports; Attendance registers (Fisheries Dept.), BVC Registers
Data Collection Method	Compile participant-level attendance records from Fisheries Department, district and BVC training activities; verify topic coverage and completion status; deduplicate records before aggregation.
Disaggregation	Gender; district; water body/lake; age group where available; training topic.
Reporting Frequency	Annual, with routine recording after each training event.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF). Supporting data providers: District Fisheries Offices, BVCs and implementing partners.
Data Quality / Verification	Reconcile attendance registers with training reports; check duplicate names/identifiers; confirm that sessions covered gear selectivity and seasonal fishing; retain signed or otherwise authenticated attendance evidence.
Methodological Notes / Assumptions	A “trained fisher” should meet a minimum completion criterion defined in the training protocol. Repeat attendance by the same fisher should not inflate the cumulative number unless the framework explicitly changes to training episodes.
Link to Adaptation Result	Demonstrates expanded fisher capacity to apply responsible and climate-sensitive fishing techniques under Adaptation Action 1.

IDS 2 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in illegal and unregulated fishing practices
Indicator Definition	Percentage decrease in the measured level of illegal and unregulated fishing practices relative to the 2024 reference level, using a consistent enforcement or compliance measure.
Purpose / Relevance to Adaptation	Assesses whether training, co-management and enforcement are translating into reduced non-compliant fishing pressure that can compound climate stress on fish stocks.
Metric / Unit of Measurement	Percentage reduction (%) from the quantified 2024 reference level.
Calculation Method	Establish a quantitative 2024 reference value from a consistent measure such as verified offences, offenders, illegal fishing units or an approved composite compliance rate. Compare the current value with that reference.
Formula	$((2024 \text{ reference level} - \text{Current level}) \div 2024 \text{ reference level}) \times 100$
Numerator	Difference between the quantified 2024 reference level and the current measured level of illegal/unregulated fishing.
Denominator	Quantified 2024 reference level for the selected compliance measure.
Baseline	High
Baseline Year	2024
Target	≥40% reduction
Target Year	2030
Data Source(s)	Fisheries enforcement databases; offence and offender records; co-management/BVC compliance reports; court case records.
Means of Verification	Enforcement records; Co-management reports, reports on concluded court cases, Number of offences and offenders (reduction in population of illegal fishers and fishing units)
Data Collection Method	Extract standardized enforcement and co-management records for the same fishing grounds and reporting period; validate concluded cases and offence classifications; aggregate using the approved compliance measure.
Disaggregation	Water body/lake; district; offence type; fishing gear/unit type; fisher category where available.
Reporting Frequency	Annual; quarterly management review where enforcement data permit.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF). Supporting data providers: fisheries enforcement units, District Fisheries Offices, BVCs and relevant justice/enforcement institutions.
Data Quality / Verification	Use stable offence definitions and comparable enforcement coverage; reconcile enforcement logs with concluded case records; document changes in patrol effort because increased enforcement can temporarily increase recorded offences.

Field	Description
Methodological Notes / Assumptions	The source baseline is qualitative (“High”) while the target is a percentage reduction. The IDS therefore retains “High” but requires a quantified 2024 reference measure to be reconstructed and locked before percentage-change reporting.
Link to Adaptation Result	Shows reduced unsustainable fishing pressure and improved compliance, contributing to preservation of fish stocks under Adaptation Action 1.

IDS 3 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	Fish biomass index in target lakes (kg/ha) disaggregated by lakes/ fish species
Indicator Definition	Estimated fish biomass per unit area in target lakes, reported in kilograms per hectare and disaggregated by lake and fish species, with change assessed against the 2024 reference condition.
Purpose / Relevance to Adaptation	Measures the ecological response of fish stocks to improved fishing practices and management, providing an impact-level signal of stock recovery and resilience.
Metric / Unit of Measurement	Fish biomass index (kg/ha) and percentage change from the quantified 2024 reference index.
Calculation Method	Apply the same scientifically approved stock-assessment method in baseline and reporting years to estimate biomass (kg/ha) by target lake and species; calculate percentage change from the 2024 reference value.
Formula	$\text{Biomass change (\%)} = ((\text{Current biomass index} - \text{2024 biomass index}) \div \text{2024 biomass index}) \times 100$
Numerator	Difference between current and 2024 biomass index (kg/ha).
Denominator	Quantified 2024 biomass index (kg/ha).
Baseline	Declining
Baseline Year	2024
Target	≥25% increase
Target Year	2030
Data Source(s)	Fish stock assessment datasets; scientific survey records; lake/species biomass estimates.
Means of Verification	Annual fish stock assessment reports
Data Collection Method	Conduct standardized fish stock assessments in target lakes using the approved sampling design, effort and analytical model; calculate biomass indices by lake and species.
Disaggregation	Lake/water body; fish species; sampling zone; season where relevant.
Reporting Frequency	Annual, aligned with the national fish stock assessment cycle.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), through the fisheries research/stock-assessment function; supporting research institutions and District Fisheries Offices as applicable.
Data Quality / Verification	Use consistent sampling gear, stations, season and analytical method; document confidence intervals and survey effort; undertake technical review of biomass estimates before trend comparison.
Methodological Notes / Assumptions	The source baseline is qualitative (“Declining”), so a numeric 2024 biomass index is required for the ≥25% increase calculation. The qualitative baseline remains the official source baseline and should not be replaced in the IDS.

Field	Description
Link to Adaptation Result	Demonstrates recovery or stabilization of fish stocks, the intended impact of more responsible and climate-sensitive fishing.

Adaptation Action 2: Adopt best fisheries management practices that are responsive to climate variability and disaster risk

Objective: Strengthen the resilience and sustainability of fishery systems by institutionalizing adaptive management approaches that integrate climate risk, ecosystem variability, and disaster preparedness into fisheries governance.

IDS 4 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of fisheries management guidelines revised to incorporate climate variability and disaster risk
Indicator Definition	Number of official fisheries management guidelines that have been formally revised and issued with explicit provisions on climate variability and disaster risk.
Purpose / Relevance to Adaptation	Tracks institutional mainstreaming of climate and disaster risk into the normative instruments that guide fisheries management.
Metric / Unit of Measurement	Count of revised and formally issued guidelines.
Calculation Method	Count each distinct guideline once when revision is completed, approved through the applicable process, and the final instrument contains identifiable climate-variability and/or disaster-risk provisions.
Formula	Total revised guidelines = Σ verified guidelines meeting all eligibility criteria
Numerator	Number of qualifying revised fisheries management guidelines.
Denominator	Not applicable (count indicator).
Baseline	2
Baseline Year	2024
Target	≥ 5
Target Year	2030
Data Source(s)	Fisheries Department policy/guideline register; approved technical guidance; gazetted or formally issued instruments.
Means of Verification	Fisheries Department publications; Gazette notices; Technical guidelines
Data Collection Method	Review the official inventory of fisheries guidelines; compare revised documents with previous versions; verify approval/issuance status and presence of climate/disaster-risk content.
Disaggregation	Guideline type; management topic; issuing level/authority; climate or disaster-risk theme addressed.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF). Supporting institutions: relevant policy/legal units and technical partners involved in guideline revision.

Field	Description
Data Quality / Verification	Verify document version, approval date and official issuance; use a documented checklist to confirm substantive climate/disaster-risk integration rather than simple mention of climate change.
Methodological Notes / Assumptions	Only formally completed and issued revisions should count. Drafts, concept notes and duplicate versions should be reported separately but excluded from the indicator total.
Link to Adaptation Result	Demonstrates institutionalization of adaptive and risk-informed fisheries governance under Adaptation Action 2.

IDS 5 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of District and Local Fisheries Management Plans developed using climate-resilient approaches
Indicator Definition	Number of district and local fisheries management plans completed through an approved planning process and incorporating defined climate-resilient fisheries management approaches.
Purpose / Relevance to Adaptation	Measures the translation of national adaptive fisheries principles into subnational and local management planning.
Metric / Unit of Measurement	Count of completed climate-resilient fisheries management plans.
Calculation Method	Count each distinct district or local plan once when it is completed/approved and passes a documented climate-resilience content check (for example climate risk, flexible management, habitat protection, preparedness or early warning).
Formula	Total climate-resilient plans = Σ verified district/local plans meeting eligibility criteria
Numerator	Number of qualifying district and local fisheries management plans.
Denominator	Not applicable (count indicator).
Baseline	12
Baseline Year	2024
Target	≥ 30
Target Year	2030
Data Source(s)	District fisheries planning records; District Development Plans; local/co-management planning documentation.
Means of Verification	District Development Plans; Co-management documentation
Data Collection Method	Obtain final plans from districts and co-management structures; screen against an agreed climate-resilience checklist; record plan jurisdiction, approval status and date.
Disaggregation	District; local management unit/BVC; water body; plan status; resilience measure included.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF). Supporting data providers: District Councils/District Fisheries Offices and fisheries co-management structures.
Data Quality / Verification	Confirm that plans are final rather than draft; avoid double counting updated versions of the same plan; apply the same climate-resilience screening criteria across districts.
Methodological Notes / Assumptions	The phrase “using climate-resilient approaches” should be operationalized through a minimum content checklist approved by the fisheries planning function.
Link to Adaptation Result	Shows expansion of climate-resilient fisheries planning at district and local levels under Adaptation Action 2.

IDS 6 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of climate warnings and bulletins targeting fishers
Indicator Definition	Number of climate and weather warnings or bulletins specifically prepared for or disseminated to fishers, including hazards beyond the currently referenced winter Mwera winds.
Purpose / Relevance to Adaptation	Tracks provision of actionable climate information that enables fishers to adjust fishing activities, safety measures and operational planning in response to climate extremes.
Metric / Unit of Measurement	Count of fisher-targeted warnings/bulletins, supplemented by annual temporal and hazard coverage.
Calculation Method	Count distinct fisher-targeted warnings/bulletins issued during the year. In addition, assess whether relevant warning coverage is maintained throughout the year and includes the applicable climate extremes, because the source target is coverage-based rather than a numeric count.
Formula	Bulletin count = Σ distinct fisher-targeted warnings/bulletins issued; Coverage (%) = $(\text{Relevant periods/hazards covered} \div \text{Relevant periods/hazards requiring coverage}) \times 100$
Numerator	Number of distinct warnings/bulletins issued; for supplementary coverage, number of relevant periods/hazards with fisher-targeted warning coverage.
Denominator	Not applicable for the count; for supplementary coverage, total relevant periods/hazards requiring coverage.
Baseline	Winter only targeting Mwera winds
Baseline Year	2024
Target	Throughout the year – warnings to include other climate extremes
Target Year	2030
Data Source(s)	DCCMS warning/bulletin archive; dissemination logs; Fisheries Department communication records.
Means of Verification	DCCMS reports
Data Collection Method	Compile all fisher-targeted warning products from DCCMS and fisheries dissemination channels; classify by date, hazard, geography and audience; remove duplicates/reissues as defined in the reporting protocol.
Disaggregation	Hazard type; month/season; lake/water body; district; dissemination channel.
Reporting Frequency	Quarterly and annual, with event-based recording when warnings are issued.
Responsible Institution(s)	Proposed lead: DCCMS for climate warning production, with Department of Fisheries (DoF) supporting targeting and dissemination to fishing communities.
Data Quality / Verification	Verify issue date, hazard content and intended fisher audience; distinguish a new warning from repeated dissemination of the same warning; maintain an auditable archive of products.

Field	Description
Methodological Notes / Assumptions	The source baseline and target are qualitative/time-coverage statements while the source metric is count. The IDS therefore reports the count but assesses the target through year-round and multi-hazard coverage without replacing the source wording.
Link to Adaptation Result	Demonstrates improved climate-risk information services for fishers, supporting adaptive management and disaster preparedness under Adaptation Action 2.

IDS 7 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% of fisheries grounds implementing adaptive management practices (e.g. flexible seasons, gear limits, habitat protection)
Indicator Definition	Percentage of defined fisheries grounds in the reporting universe that are actively implementing at least one approved adaptive management practice responsive to climate variability or ecosystem condition.
Purpose / Relevance to Adaptation	Measures the extent to which adaptive fisheries management is being applied operationally across fishing grounds rather than remaining only in policy or planning documents.
Metric / Unit of Measurement	Percentage (%) of fisheries grounds implementing qualifying adaptive management practices.
Calculation Method	Define the official inventory of fisheries grounds. Count grounds with documented implementation of at least one qualifying practice during the reporting period and divide by the total grounds in scope.
Formula	$(\text{Fisheries grounds implementing adaptive practices} \div \text{Total fisheries grounds in scope}) \times 100$
Numerator	Number of fisheries grounds with verified implementation of at least one qualifying adaptive management practice.
Denominator	Total number of fisheries grounds included in the reporting universe.
Baseline	<20%
Baseline Year	2024
Target	≥80%
Target Year	2030
Data Source(s)	Fisheries monitoring databases; enforcement audit records; BVC/co-management reports; management-plan implementation records.
Means of Verification	Fisheries monitoring reports; Enforcement audits, BVCs reports
Data Collection Method	Use monitoring and enforcement records to assess each fisheries ground against an approved practice checklist; record implementation evidence by ground and practice type.
Disaggregation	Lake/water body; district; fisheries ground; adaptive practice type.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF). Supporting data providers: District Fisheries Offices, fisheries enforcement units and BVC/co-management structures.
Data Quality / Verification	Maintain a stable denominator or document changes to the official inventory; require evidence of actual implementation, not only planned measures; sample-check reported ground status.

Field	Description
Methodological Notes / Assumptions	A fisheries ground should count only where the adaptive practice was in force or implemented during the reporting period. The minimum qualifying evidence should be standardized nationally.
Link to Adaptation Result	Shows practical uptake of adaptive fisheries management across fisheries grounds under Adaptation Action 2.

IDS 8 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% of fisheries management decisions (closures, quotas, restocking, early warning systems) made using climate or disaster risk data
Indicator Definition	Percentage of documented fisheries management decisions in scope that explicitly use climate, weather, hydrological or disaster-risk information as an input to the decision.
Purpose / Relevance to Adaptation	Assesses whether climate and disaster-risk evidence is being integrated into operational fisheries decision-making.
Metric / Unit of Measurement	Percentage (%) of qualifying management decisions that are climate/disaster-risk informed.
Calculation Method	Review all management decisions in the defined reporting universe. Classify a decision as climate/disaster-risk informed only when the decision record cites or documents use of relevant climate, weather, hydrological or disaster-risk data.
Formula	$(\text{Climate/disaster-risk-informed decisions} \div \text{Total fisheries management decisions reviewed}) \times 100$
Numerator	Number of qualifying fisheries management decisions with documented use of climate or disaster-risk data.
Denominator	Total number of fisheries management decisions reviewed in the reporting period.
Baseline	Low
Baseline Year	2024
Target	≥70%
Target Year	2030
Data Source(s)	Decision registers; management meeting records; climate-informed action logs; DCCMS weather/climate information; closure/quota/restocking records.
Means of Verification	Decision records; Climate-informed action logs, weather information (DCCMS)
Data Collection Method	Compile decision records for closures, quotas, restocking and early-warning actions; apply a standard evidence checklist to confirm data use; record data source and decision type.
Disaggregation	Decision type; water body/lake; district; hazard/data source; management level.
Reporting Frequency	Annual, with routine logging at the time each decision is made.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), with DCCMS and disaster-risk institutions providing climate/risk data as applicable.
Data Quality / Verification	Require traceable evidence linking the data to the decision; avoid counting decisions where climate information was available but not demonstrably used; periodically audit decision records.
Methodological Notes / Assumptions	The source baseline is qualitative ("Low"). A quantitative 2024 baseline proportion should be reconstructed from the same decision universe and evidence rule to support trend analysis.

Field	Description
Link to Adaptation Result	Demonstrates evidence-based, climate-responsive fisheries governance under Adaptation Action 2.

IDS 9 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% improvement in fish stock sustainability index in managed areas
Indicator Definition	Percentage improvement in an officially defined fish stock sustainability index for managed areas relative to the 2024 reference index.
Purpose / Relevance to Adaptation	Measures whether adaptive management is improving the biological sustainability of fish stocks in areas subject to management interventions.
Metric / Unit of Measurement	Fish stock sustainability index score and percentage improvement from baseline.
Calculation Method	Calculate the sustainability index using the same approved methodology in each reporting cycle, drawing on biomass, CPUE and species-composition evidence as applicable; compare the current index with the quantified 2024 reference index.
Formula	$((\text{Current sustainability index} - \text{2024 sustainability index}) \div \text{2024 sustainability index}) \times 100$
Numerator	Difference between current and quantified 2024 sustainability index scores.
Denominator	Quantified 2024 sustainability index score.
Baseline	Declining
Baseline Year	2024
Target	≥30% improvement
Target Year	2030
Data Source(s)	Fish biomass assessments; CPUE datasets; catch and species-composition monitoring records; managed-area stock assessments.
Means of Verification	Biomass assessments; Catch-per-unit-effort (CPUE) data, changes in fish species composition
Data Collection Method	Compile standardized biological and catch-effort datasets for managed areas; calculate the index under the approved method; document component scores and data completeness.
Disaggregation	Managed area; lake/water body; fish species/stock; index component.
Reporting Frequency	Annual or aligned with the stock-assessment cycle.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), fisheries research/stock-assessment function, with supporting research institutions as applicable.
Data Quality / Verification	Use the same index definition, component indicators and weighting over time; retain underlying component data; conduct technical review and sensitivity checks where index construction changes.
Methodological Notes / Assumptions	The source baseline is “Declining” and does not provide a numeric index. A numeric 2024 reference index must be established before the ≥30% improvement can be calculated. If no formal sustainability index exists, its components and weighting must be approved and fixed before use.

Field	Description
Link to Adaptation Result	Shows whether climate-responsive fisheries management is improving long-term stock sustainability in managed areas.

IDS 10 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in fisheries-related losses during climate-related disasters (e.g. floods, droughts)
Indicator Definition	Percentage reduction in fisheries-related economic and/or physical losses attributable to climate-related disasters relative to a consistent 2024 reference level.
Purpose / Relevance to Adaptation	Measures whether climate-risk integration and preparedness are reducing disaster impacts on fisheries assets, production and livelihoods.
Metric / Unit of Measurement	Percentage reduction (%) in standardized fisheries-related disaster losses.
Calculation Method	Define a consistent loss measure (preferably inflation-adjusted monetary value, or a separately reported standardized physical loss measure). Compare current event/annual losses with the quantified 2024 reference level using comparable hazard and exposure accounting.
Formula	$((2024 \text{ reference losses} - \text{Current fisheries-related disaster losses}) \div 2024 \text{ reference losses}) \times 100$
Numerator	Difference between quantified 2024 reference losses and current fisheries-related disaster losses.
Denominator	Quantified 2024 reference level of fisheries-related disaster losses.
Baseline	High
Baseline Year	2024
Target	≥30%
Target Year	2030
Data Source(s)	DoDMA loss and damage databases; Fisheries Department loss assessments; post-disaster needs assessments; district disaster reports.
Means of Verification	DoDMA and Fisheries Loss and Damage Assessment Reports, Post-disaster needs assessment report
Data Collection Method	Following relevant disasters, apply a standardized fisheries loss-and-damage assessment; consolidate verified asset, production and livelihood losses; aggregate annually using the approved loss measure.
Disaggregation	Hazard type; district; lake/water body; loss category (assets, production, gear/vessels, livelihoods); affected group where available.
Reporting Frequency	After major climate-related disasters and annual consolidation.
Responsible Institution(s)	Proposed joint responsibility: Department of Fisheries (DoF) and DoDMA, with District Councils and post-disaster assessment teams as supporting data providers.
Data Quality / Verification	Use common valuation rules, avoid double counting between sector and PDNA datasets, document event severity and exposure differences, and retain supporting assessment records.

Field	Description
Methodological Notes / Assumptions	The source baseline is qualitative (“High”). A quantified 2024 loss reference is required for percentage reduction. Because disaster severity varies year to year, interpretation should consider exposure and hazard intensity alongside the raw reduction.
Link to Adaptation Result	Demonstrates reduced fisheries losses and greater disaster resilience under climate-responsive fisheries management.

IDS 11 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	# of fishers integrating climate in their planning
Indicator Definition	Number of fishers who can demonstrate that climate or weather information is incorporated into their fishing or livelihood planning decisions during the reporting period.
Purpose / Relevance to Adaptation	Tracks behavioural uptake of climate information by fishers, linking climate services to practical planning and risk reduction.
Metric / Unit of Measurement	Count of fishers (source metric), with supplementary percentage of surveyed fishers because the source baseline and target are expressed as percentages.
Calculation Method	Through a standardized survey, count fishers meeting a defined climate-integration criterion (for example documented or consistently reported use of forecasts/warnings to adjust timing, location, gear, safety or livelihood decisions). Also calculate the share among surveyed fishers for target comparison.
Formula	Count = Σ surveyed fishers meeting integration criterion; Share (%) = (Fishers meeting criterion $\div$ Total fishers surveyed) $\times$ 100
Numerator	Number of surveyed fishers meeting the approved climate-integration criterion.
Denominator	For the supplementary percentage, total number of fishers surveyed; not applicable to the count itself.
Baseline	<10%
Baseline Year	2024
Target	>50%
Target Year	2030
Data Source(s)	DCCMS/Fisheries fisher surveys; extension and climate-service feedback surveys; BVC records where relevant.
Means of Verification	Survey- DCCMS/Fisheries
Data Collection Method	Administer a representative or consistently designed fisher survey; apply the same behavioural criterion; record evidence/examples of climate-informed planning and aggregate count and share.
Disaggregation	Gender; age group; district; lake/water body; fishing activity; type of climate information used.
Reporting Frequency	Annual or biennial survey, with annual reporting where data are available.
Responsible Institution(s)	Proposed joint responsibility: Department of Fisheries (DoF) and DCCMS, with District Fisheries Offices/BVCs supporting survey implementation.
Data Quality / Verification	Use a consistent survey instrument and sampling frame; distinguish actual use from awareness; validate self-reported practices through follow-up questions or records where feasible.

Field	Description
Methodological Notes / Assumptions	There is a source wording/unit mismatch: the indicator and metric are a count, while the baseline (<10%) and target (>50%) are percentages. The IDS retains the source indicator and values and therefore requires both count and percentage reporting; target achievement should be assessed against the percentage unless the framework formally clarifies otherwise.
Link to Adaptation Result	Shows that climate information is changing fisher planning behaviour, strengthening preparedness and adaptive capacity.

STRATEGY 2: Protect/Restore Aquatic Habitats

Adaptation Action 3: Restore community-led wetland/ sanctuaries

Objective: Rehabilitate degraded aquatic ecosystems to support breeding grounds and climate regulation.

IDS 12 - Output

Field	Description
Indicator Level	Output
Indicator Name	Hectares of sanctuary areas restored by communities
Indicator Definition	Total area, in hectares, of aquatic sanctuary or wetland areas restored through verified community-led restoration activities and meeting the agreed restoration criteria.
Purpose / Relevance to Adaptation	Measures the scale of community restoration of degraded aquatic habitats that support fish breeding, ecosystem function and climate resilience.
Metric / Unit of Measurement	Area restored (hectares, ha).
Calculation Method	Map and verify restored sanctuary areas that meet the approved ecological/restoration completion criteria. Sum non-overlapping restored area during the reporting period or cumulatively, as specified by the reporting protocol.
Formula	Total restored area (ha) = Σ verified non-overlapping hectares meeting restoration criteria
Numerator	Total verified hectares of sanctuary/wetland area restored.
Denominator	Not applicable (area indicator).
Baseline	50 ha
Baseline Year	2025
Target	$\geq 2,000$ ha
Target Year	2030
Data Source(s)	GIS/restoration maps; community restoration records; environmental monitoring datasets; Forestry and Fisheries spatial data.
Means of Verification	Environmental monitoring reports; Forestry and Fisheries data
Data Collection Method	Collect project/community restoration records; georeference restored sites; verify area using GIS, field measurements or remote sensing; confirm restoration completion and community involvement.
Disaggregation	District; water body/wetland; sanctuary type; restoration approach; community/group.
Reporting Frequency	Annual, with site-level recording upon verification of restoration works.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), with community/BVC structures, District Councils and relevant forestry/environmental authorities as supporting partners.

Field	Description
Data Quality / Verification	Prevent overlap/double counting through geospatial boundaries; verify hectares independently where feasible; apply a consistent definition of “restored” and retain before/after evidence.
Methodological Notes / Assumptions	The baseline year is set to 2025 under the IDS harmonization convention because the source row provides no explicit baseline year. The source baseline value (50 ha) is unchanged.
Link to Adaptation Result	Demonstrates expansion of restored breeding and refuge habitat under Adaptation Action 3.

IDS 13 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in sedimentation in spawning areas
Indicator Definition	Percentage decrease in a consistently measured sedimentation indicator in designated fish spawning areas relative to the quantified 2025 reference condition.
Purpose / Relevance to Adaptation	Assesses whether restoration and catchment management are reducing sediment stress that can degrade spawning habitat and reproductive success.
Metric / Unit of Measurement	Percentage reduction (%) in an approved sedimentation measure (e.g., sediment deposition rate, turbidity/suspended solids proxy where validated).
Calculation Method	Select and document a standardized sedimentation measure and monitoring locations. Compare the current average/median value for the same sites and season with the quantified 2025 reference value.
Formula	$((2025 \text{ reference sedimentation level} - \text{Current sedimentation level}) \div 2025 \text{ reference sedimentation level}) \times 100$
Numerator	Difference between quantified 2025 reference and current sedimentation level.
Denominator	Quantified 2025 reference sedimentation level at the monitored spawning sites.
Baseline	High
Baseline Year	2025
Target	≥50%
Target Year	2030
Data Source(s)	Water-quality monitoring datasets; hydrology/sediment monitoring records; spawning-area site measurements.
Means of Verification	Water quality assessment tests; Hydrology reports
Data Collection Method	Sample sedimentation/turbidity at fixed spawning sites using the approved protocol and comparable seasonal timing; aggregate site results under a documented rule.
Disaggregation	Spawning area; lake/water body; district; sediment parameter; season.
Reporting Frequency	At least seasonal with annual reporting; more frequent during high-runoff periods where feasible.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), with water-resources/environmental monitoring institutions and District Councils providing supporting data.
Data Quality / Verification	Use calibrated equipment and fixed sites; apply consistent sampling season/frequency; document upstream disturbances and hydrological conditions; conduct laboratory QA/QC where samples are analyzed.
Methodological Notes / Assumptions	The source baseline is qualitative (“High”), so a quantified 2025 sedimentation reference measure must be established for the ≥50% reduction calculation. The same parameter and units must be maintained over time.
Link to Adaptation Result	Shows improved spawning-habitat condition resulting from community-led habitat restoration and associated conservation measures.

IDS 14 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	Increase in spawning success rate of key species
Indicator Definition	Percentage increase in the reproductive or spawning success rate of defined key fish species in target habitats relative to the quantified 2025 reference rate.
Purpose / Relevance to Adaptation	Measures the biological response of key species to restored sanctuary and spawning habitats.
Metric / Unit of Measurement	Spawning success rate (%) and percentage increase from the 2025 reference rate.
Calculation Method	Define a species-appropriate spawning success measure (for example proportion of monitored spawning events/sites producing viable recruitment) and apply it consistently. Compare the current rate with the quantified 2025 reference rate.
Formula	$((\text{Current spawning success rate} - \text{2025 spawning success rate}) \div \text{2025 spawning success rate}) \times 100$
Numerator	Difference between current and quantified 2025 spawning success rates.
Denominator	Quantified 2025 spawning success rate for the same key species/site set.
Baseline	Low
Baseline Year	2025
Target	≥40%
Target Year	2030
Data Source(s)	Fisheries breeding and seasonality monitoring records; spawning-site surveys; recruitment/juvenile monitoring datasets.
Means of Verification	Fisheries breeding seasonality reports
Data Collection Method	Monitor defined key species at fixed or comparable spawning sites during the appropriate breeding season; calculate the approved success rate and aggregate by species and site.
Disaggregation	Fish species; lake/water body; spawning site; breeding season.
Reporting Frequency	Seasonal during breeding periods, with annual synthesis.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), fisheries research/monitoring function, with local co-management groups supporting field observation where appropriate.
Data Quality / Verification	Use consistent species definitions, monitoring windows and sampling effort; document detection probability and ecological disturbances; technically review derived success rates.
Methodological Notes / Assumptions	The source baseline is qualitative (“Low”) while the target is ≥40%. The IDS interprets the target operationally as improvement/increase consistent with the indicator wording, but a numeric 2025 reference spawning-success rate must be established and the precise success metric formally defined.
Link to Adaptation Result	Provides an impact-level measure that restored aquatic habitats are improving reproduction of key fish species.

Adaptation Action 4: Implement upstream conservation to reduce climate-induced erosion and sedimentation into water bodies.

Objective: Improve water quality and flow for aquatic ecosystems through integrated upstream land management.

IDS 15 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of upstream conservation projects implemented in key water bodies
Indicator Definition	Number of distinct upstream conservation projects implemented in catchments draining to identified key water bodies and designed to reduce erosion, sedimentation or related climate-driven runoff pressures.
Purpose / Relevance to Adaptation	Tracks implementation of catchment interventions intended to improve downstream water quality and aquatic habitat resilience.
Metric / Unit of Measurement	Count of implemented qualifying conservation projects.
Calculation Method	Count each distinct project once after implementation has commenced and meets the agreed eligibility criteria for location and erosion/sediment/runoff reduction purpose.
Formula	Total upstream conservation projects = Σ verified qualifying projects implemented
Numerator	Number of verified qualifying upstream conservation projects.
Denominator	Not applicable (count indicator).
Baseline	3
Baseline Year	2025
Target	≥ 30
Target Year	2030
Data Source(s)	District environmental/project registers; watershed/catchment programme databases; implementing-partner project records.
Means of Verification	District Environmental Reports; NGO project logs, project progress reports
Data Collection Method	Compile projects from district and partner records; verify geographic linkage to key water bodies, implementation status and conservation objective; deduplicate projects reported by multiple institutions.
Disaggregation	Catchment/water body; district; conservation intervention type; implementing entity; project status.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed coordination: relevant environmental/natural-resource and forestry authorities with Department of Fisheries (DoF) and District Councils; implementing partners provide project records.

Field	Description
Data Quality / Verification	Use a unique project registry; verify project location and implementation status; exclude proposals or unfunded plans; document multi-district projects to prevent double counting.
Methodological Notes / Assumptions	The baseline year is 2025 under the harmonization convention because the source row does not state a year. A clear definition of “implemented” should distinguish commenced, completed and maintained projects.
Link to Adaptation Result	Shows scaled upstream conservation action to reduce climate-induced erosion and protect downstream fisheries habitats.

IDS 16 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% reduction in nutrient and sediment runoff into water bodies
Indicator Definition	Percentage decrease in standardized nutrient and sediment runoff loads or concentrations entering target water bodies relative to the quantified 2025 reference condition.
Purpose / Relevance to Adaptation	Measures whether upstream conservation is reducing runoff pressures that degrade aquatic habitat and water quality under climate variability.
Metric / Unit of Measurement	Percentage reduction (%) in approved nutrient and sediment runoff indicators.
Calculation Method	Monitor agreed nutrient parameters (such as nitrogen/phosphorus) and sediment parameters at fixed inflow/catchment points. Calculate change against 2025 reference values. Where multiple parameters are used, report each separately and use an approved aggregation rule for the headline indicator.
Formula	For each parameter: $((2025 \text{ reference value} - \text{Current value}) \div 2025 \text{ reference value}) \times 100$
Numerator	Difference between quantified 2025 reference and current nutrient/sediment runoff value.
Denominator	Quantified 2025 reference value for the same parameter/site/season.
Baseline	High
Baseline Year	2025
Target	≥60%
Target Year	2030
Data Source(s)	Water-quality monitoring datasets; catchment runoff monitoring records; laboratory results; hydrological flow records where load calculations are used.
Means of Verification	Water quality monitoring reports
Data Collection Method	Sample fixed inflow/catchment sites using consistent timing and methods; analyze nutrient and sediment parameters; pair concentrations with flow data where loads are calculated.
Disaggregation	Water body; catchment/inflow; district; parameter; season/hydrological condition.
Reporting Frequency	Seasonal or quarterly, with annual reporting.
Responsible Institution(s)	Proposed lead: relevant water/environmental monitoring authority, with Department of Fisheries (DoF), natural-resource institutions and District Councils using the results for fisheries habitat management.
Data Quality / Verification	Use accredited/controlled laboratory procedures where applicable; calibrate field equipment; keep sites and seasons comparable; distinguish concentration from total load and do not combine them without a defined method.
Methodological Notes / Assumptions	The source baseline is qualitative (“High”), so numerical 2025 reference values are required. “Nutrient and sediment runoff” combines multiple parameters; each should be reported transparently and any composite rule must be approved before use.

Field	Description
Link to Adaptation Result	Demonstrates reduced catchment-derived pollution and sediment stress on aquatic ecosystems under Adaptation Action 4.

IDS 17 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% improvement in habitat health index (e.g., dissolved oxygen, pH)
Indicator Definition	Percentage improvement in an approved aquatic habitat health index for target water bodies, based on consistently measured water-quality and ecological parameters such as dissolved oxygen and pH.
Purpose / Relevance to Adaptation	Provides an integrated impact measure of whether upstream conservation is improving the condition and resilience of aquatic habitats.
Metric / Unit of Measurement	Habitat health index score and percentage improvement from the 2025 reference index.
Calculation Method	Calculate the habitat health index using a formally defined set of parameters, normalization rules and weights; compare the current index with the quantified 2025 reference index.
Formula	$((\text{Current habitat health index} - \text{2025 habitat health index}) \div \text{2025 habitat health index}) \times 100$
Numerator	Difference between current and quantified 2025 habitat health index scores.
Denominator	Quantified 2025 habitat health index score.
Baseline	Low
Baseline Year	2025
Target	≥30%
Target Year	2030
Data Source(s)	Aquatic health monitoring datasets; DoF/MNRCC records; water-quality assessment data; laboratory/field measurements.
Means of Verification	Aquatic health reports (DoF, MNRCC), Water quality assessment reports
Data Collection Method	Measure index parameters at fixed sites using approved protocols; validate laboratory/field results; calculate and document component and composite index scores.
Disaggregation	Water body; monitoring site; district; index component/parameter; season.
Reporting Frequency	At least annual, supported by seasonal/quarterly water-quality measurements where available.
Responsible Institution(s)	Proposed joint technical responsibility: Department of Fisheries (DoF) and relevant environmental/water-quality authorities, with District Councils supporting local monitoring.
Data Quality / Verification	Use consistent parameter sets, thresholds and weights; calibrate instruments; apply laboratory QA/QC; retain component-level data so changes in the index can be explained.
Methodological Notes / Assumptions	The source baseline is qualitative ("Low") and the exact index is not defined. A numeric 2025 baseline and a formally approved index methodology are therefore prerequisites for defensible ≥30% improvement reporting.
Link to Adaptation Result	Shows improved aquatic ecosystem condition attributable to reduced upstream erosion, sediment and nutrient pressures.

STRATEGY 3: Aquaculture Development

Adaptation Action 5: Construct fishponds with climate-resilient infrastructure

Objective: Promote resilient aquaculture systems as an alternative to pressure on capture fisheries.

IDS 18 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of climate-resilient fishponds constructed
Indicator Definition	Number of fishponds completed and operational that meet the approved minimum climate-resilient infrastructure/design criteria for aquaculture systems.
Purpose / Relevance to Adaptation	Tracks expansion of aquaculture infrastructure designed to withstand climate stresses and provide an alternative source of fish production.
Metric / Unit of Measurement	Count of completed climate-resilient fishponds.
Calculation Method	Count each newly constructed fishpond once after physical verification of completion and compliance with the defined climate-resilience criteria.
Formula	Total climate-resilient fishponds = Σ verified completed ponds meeting resilience criteria
Numerator	Number of verified completed fishponds meeting the climate-resilient design standard.
Denominator	Not applicable (count indicator).
Baseline	2000
Baseline Year	2025
Target	$\geq 5,000$ by 2030
Target Year	2030
Data Source(s)	Aquaculture project registers; Fisheries Department pond records; construction completion/inspection records; geotagged site inventory where available.
Means of Verification	Project completion reports; Fisheries Dept. records
Data Collection Method	Register each pond at project completion; inspect against a standardized resilience checklist; record location, ownership, production system and operational status.
Disaggregation	District; production system/pond type; ownership/beneficiary type; gender of owner/manager where available.
Reporting Frequency	Annual, with routine recording at completion/commissioning.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), aquaculture function; supporting data providers: District Fisheries Offices, projects/implementing partners and beneficiary organizations.

Field	Description
Data Quality / Verification	Verify physical existence and operational status; use unique site identifiers/geolocation; avoid counting rehabilitated ponds as new unless the protocol explicitly includes upgrades; apply the same resilience criteria.
Methodological Notes / Assumptions	The baseline year is 2025 under the harmonization convention. “Climate-resilient” must be defined through a minimum technical checklist (e.g., water management, drainage/flood protection, heat/water-stress considerations) approved for national reporting.
Link to Adaptation Result	Demonstrates increased climate-resilient aquaculture infrastructure under Adaptation Action 5.

IDS 19 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% increase in fish production from aquaculture
Indicator Definition	Percentage increase in total aquaculture fish production relative to the established 2025 production reference, using production measured in metric tonnes as the underlying quantity.
Purpose / Relevance to Adaptation	Measures whether investment in resilient aquaculture infrastructure is increasing fish production and reducing pressure on capture fisheries.
Metric / Unit of Measurement	Metric tonnes of aquaculture production (raw measure) and percentage increase from the 2025 reference production (target metric).
Calculation Method	Sum verified aquaculture production in metric tonnes for the reporting year and compare it with the quantified 2025 reference production using the same production coverage and estimation method.
Formula	$((\text{Current aquaculture production (t)} - \text{2025 aquaculture production (t)}) \div \text{2025 aquaculture production (t)}) \times 100$
Numerator	Difference between current and 2025 aquaculture production in metric tonnes.
Denominator	Quantified 2025 aquaculture production in metric tonnes.
Baseline	45%
Baseline Year	2025
Target	≥150%
Target Year	2030
Data Source(s)	Aquaculture production survey datasets; farm production records; Fisheries Department aquaculture statistics.
Means of Verification	Aquaculture production surveys
Data Collection Method	Collect farm/production-unit output using the national aquaculture survey/statistical system; validate sample expansion or census methods; aggregate production in metric tonnes.
Disaggregation	Fish species; district; production system; farm scale/ownership category where available.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), aquaculture/statistics function, with District Fisheries Offices and aquaculture producers supporting data collection.
Data Quality / Verification	Apply consistent production definitions, reporting period and estimation methods; check outliers against farm records; reconcile survey estimates with administrative production data where possible.

Field	Description
Methodological Notes / Assumptions	The source row contains a measurement mismatch: the indicator and target are percentages, the baseline is “45%”, while the source metric is “Metric tons”. The IDS retains the source baseline and target but requires a quantified 2025 production level in tonnes for the percentage-increase formula. The meaning of the source “45%” baseline should be formally clarified rather than assumed.
Link to Adaptation Result	Shows growth in aquaculture output as a resilient alternative to wild capture fisheries.

IDS 20 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in dependence on wild capture for local fish consumption
Indicator Definition	Percentage reduction in the share or quantity of local fish consumption supplied by wild-capture fisheries relative to the quantified 2025 reference dependence level.
Purpose / Relevance to Adaptation	Measures whether expanded aquaculture is diversifying fish supply and reducing pressure on climate-stressed wild fish stocks.
Metric / Unit of Measurement	Percentage reduction (%) in wild-capture dependence; underlying share of local fish consumption sourced from wild capture.
Calculation Method	Estimate the proportion of local fish consumption supplied by wild capture using consistent household consumption and market-supply data; compare the current proportion with the quantified 2025 reference proportion.
Formula	$((2025 \text{ wild-capture dependence} - \text{Current wild-capture dependence}) \div 2025 \text{ wild-capture dependence}) \times 100$
Numerator	Difference between quantified 2025 and current wild-capture dependence rates.
Denominator	Quantified 2025 wild-capture dependence rate.
Baseline	High
Baseline Year	2025
Target	≥50%
Target Year	2030
Data Source(s)	Household fish-consumption surveys; fish market/source data; national fisheries and aquaculture supply statistics.
Means of Verification	Household Fish consumption surveys; Fish Market data
Data Collection Method	Use household and market surveys to estimate consumption by supply source; reconcile with national production/import/export data where feasible; apply the same source-classification rule over time.
Disaggregation	District/region; household group; fish source (wild capture/aquaculture/imported); species where feasible.
Reporting Frequency	Annual where market data permit; household survey cycle with annual interpolation/administrative updates if necessary.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), with national statistics/household survey functions and market authorities as supporting data providers.
Data Quality / Verification	Use consistent consumption and supply-source definitions; account for imports and inter-district trade; triangulate household survey results with market and production data.
Methodological Notes / Assumptions	The source baseline is qualitative (“High”). A numeric 2025 dependence rate is required before a ≥50% reduction can be calculated. The denominator should represent the same local-consumption universe in baseline and reporting years.

Field	Description
Link to Adaptation Result	Demonstrates reduced reliance on wild capture and greater resilience/diversification of fish supply under Adaptation Action 5.

Adaptation Action 6: Provide climate-smart agriculture extension using heat-tolerant and resilient species.

Objective: Strengthen aquaculture productivity and resilience through improved technical support and access to climate-resilient inputs.

IDS 21 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of fish farmers receiving climate-smart extension support and quality fingerlings
Indicator Definition	Number of unique fish farmers receiving qualifying climate-smart aquaculture extension support and quality fingerlings during the reporting period.
Purpose / Relevance to Adaptation	Tracks access to technical support and resilient inputs needed to improve aquaculture productivity under climate stress.
Metric / Unit of Measurement	Count of unique fish farmers supported.
Calculation Method	Count each farmer once per reporting period when records verify receipt of climate-smart extension support and quality fingerlings under the defined programme criteria.
Formula	Total supported fish farmers = Σ unique farmers meeting support criteria
Numerator	Number of unique fish farmers with verified receipt of qualifying support.
Denominator	Not applicable (count indicator).
Baseline	15,000
Baseline Year	2025
Target	$\geq 50,000$
Target Year	2030
Data Source(s)	Aquaculture extension registers; fingerling distribution logs; farmer beneficiary databases; District Fisheries Office records.
Means of Verification	Extension service records; Fingerling distribution logs
Data Collection Method	Merge extension-service and fingerling-distribution records using farmer identifiers where available; confirm eligibility and remove duplicates before aggregation.
Disaggregation	Gender; age group; district; fish species; farm/production system; type of extension support.
Reporting Frequency	Annual, with continuous administrative recording.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), aquaculture extension function; supporting data providers: District Fisheries Offices, hatcheries and implementing partners.
Data Quality / Verification	Reconcile extension and distribution records; verify fingerling quality/source where required; deduplicate beneficiaries; conduct sample beneficiary checks.

Field	Description
Methodological Notes / Assumptions	The baseline year is 2025 under the harmonization convention. The reporting protocol should define the minimum climate-smart extension package and what constitutes “quality fingerlings”.
Link to Adaptation Result	Demonstrates expanded access to climate-smart aquaculture knowledge and resilient production inputs under Adaptation Action 6.

IDS 22 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% increase in survival rate of fingerlings in climate-affected areas
Indicator Definition	Percentage increase in the survival rate of stocked fingerlings in defined climate-affected aquaculture areas relative to the quantified 2025 reference survival rate.
Purpose / Relevance to Adaptation	Measures whether climate-smart extension and resilient inputs are improving biological performance under climate stress.
Metric / Unit of Measurement	Fingerling survival rate (%) and percentage increase from the 2025 reference rate.
Calculation Method	For monitored production units, calculate survival as the number of live fingerlings at the agreed assessment point divided by the number initially stocked. Aggregate using the approved weighting method and compare with the 2025 reference survival rate.
Formula	Survival rate (%) = (Fingerlings surviving to assessment point ÷ Fingerlings stocked) × 100; Increase (%) = ((Current survival rate – 2025 survival rate) ÷ 2025 survival rate) × 100
Numerator	For survival rate: number of fingerlings surviving to the assessment point; for increase: difference between current and 2025 survival rates.
Denominator	For survival rate: number of fingerlings stocked; for increase: quantified 2025 survival rate.
Baseline	Low
Baseline Year	2025
Target	≥70%
Target Year	2030
Data Source(s)	Fish-farm monitoring records; stocking records; farmer production records; extension monitoring datasets.
Means of Verification	Field monitoring reports; Farmer records
Data Collection Method	Record initial stocking numbers and surviving fingerlings at a standardized post-stocking/production stage; verify a sample of farm records through field visits; aggregate by species and area.
Disaggregation	District; climate-affected area/hazard; fish species; production system; farm scale.
Reporting Frequency	Production-cycle/seasonal monitoring with annual aggregation.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), aquaculture extension/monitoring function, with fish farmers and District Fisheries Offices as primary data providers.
Data Quality / Verification	Use a consistent survival assessment point; validate stocking numbers and mortalities; document disease events and extreme climate conditions; avoid comparing farms with materially different production stages without adjustment.

Field	Description
Methodological Notes / Assumptions	The source baseline is qualitative (“Low”), so a quantified 2025 survival rate is required. The source target of $\geq 70\%$ should be interpreted consistently with the indicator wording; reporting should state both the current survival rate and the percentage increase from baseline.
Link to Adaptation Result	Shows improved resilience and productivity of aquaculture systems receiving climate-smart support.

IDS 23 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% contribution of aquaculture to national fish supply
Indicator Definition	Percentage of total national fish supply attributable to domestic aquaculture production during the reporting period.
Purpose / Relevance to Adaptation	Measures the structural contribution of aquaculture to national fish availability and diversification away from climate-sensitive capture fisheries.
Metric / Unit of Measurement	Percentage (%) of national fish supply from aquaculture.
Calculation Method	Divide domestic aquaculture fish supply by total national fish supply for the same period and coverage. The national supply denominator should use an approved balance consistent over time, specifying treatment of capture production, imports and exports.
Formula	$(\text{Domestic aquaculture fish supply} \div \text{Total national fish supply}) \times 100$
Numerator	Domestic aquaculture fish supply during the reporting period.
Denominator	Total national fish supply during the same reporting period under the approved supply definition.
Baseline	7.5%
Baseline Year	2025
Target	≥25% by 2030
Target Year	2030
Data Source(s)	DoF annual fisheries production statistics; aquaculture production data; capture fisheries statistics; trade/supply balance data where included in the national supply definition.
Means of Verification	Fisheries production data (DoF Annual Reports)
Data Collection Method	Compile annual aquaculture and total fish-supply statistics using harmonized units; reconcile subsector totals and apply the approved national fish-supply accounting boundary.
Disaggregation	Fish species; production system; district/region for supporting analysis.
Reporting Frequency	Annual.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), fisheries statistics function, with national statistics/trade data providers supporting the supply balance as needed.
Data Quality / Verification	Use consistent supply accounting boundaries; reconcile aquaculture totals across administrative and survey sources; document revisions to production estimates.
Methodological Notes / Assumptions	The source baseline is 7.5% and target is ≥25% by 2030. The denominator definition must remain stable; if imports/exports are included in “national fish supply”, the same treatment must be used at baseline and target reporting.
Link to Adaptation Result	Demonstrates increased national reliance on aquaculture as a climate-resilient source of fish supply.

STRATEGY 4: Reduced Pollution

Adaptation Action 7: Install waste control systems to protect climate-stressed aquatic ecosystems.

Objective: Improve infrastructure for waste containment and treatment at fish landing and market sites.

IDS 24 - Output

Field	Description
Indicator Level	Output
Indicator Name	# of waste control systems installed or upgraded in fisheries hubs
Indicator Definition	Number of waste control systems in fisheries landing, processing or market hubs that are newly installed or substantively upgraded and verified as functional.
Purpose / Relevance to Adaptation	Tracks infrastructure improvements intended to contain and treat waste in aquatic environments already stressed by climate impacts.
Metric / Unit of Measurement	Count of installed or upgraded functional waste control systems.
Calculation Method	Count each eligible system once after completion/upgrade and functional verification against the approved waste-control standard.
Formula	Total qualifying waste systems = Σ verified installed or upgraded functional systems
Numerator	Number of verified qualifying waste control systems.
Denominator	Not applicable (count indicator).
Baseline	25
Baseline Year	2025
Target	≥80 by 2027
Target Year	2027
Data Source(s)	Infrastructure project registers; fisheries-hub facility inventories; completion certificates; inspection/commissioning records.
Means of Verification	Infrastructure project logs, Project completion reports
Data Collection Method	Compile project completion records; inspect systems at fisheries hubs; confirm type, functionality and date of installation/upgrade; maintain a unique facility/system registry.
Disaggregation	District; fisheries hub/site; system type; new installation versus upgrade; operational status.
Reporting Frequency	Annual, with recording at completion/commissioning.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), with local authorities/fisheries-hub managers and environmental/waste-management institutions supporting implementation and verification.
Data Quality / Verification	Verify physical installation and functionality; use unique site/system identifiers; avoid double counting phased upgrades; conduct post-installation spot checks.

Field	Description
Methodological Notes / Assumptions	The target year is 2027 because it is explicitly stated in the source target. The baseline year is 2025 under the harmonization convention because no source baseline year is stated.
Link to Adaptation Result	Demonstrates expanded waste-management infrastructure protecting climate-stressed aquatic ecosystems under Adaptation Action 7.

IDS 25 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% of waste properly managed at landing sites with new systems
Indicator Definition	Percentage of waste generated at landing sites equipped with new or upgraded systems that is collected, contained, treated, recycled or disposed of in accordance with the approved waste-management standard.
Purpose / Relevance to Adaptation	Measures whether installed waste-control infrastructure is actually improving waste-management performance at fisheries landing sites.
Metric / Unit of Measurement	Percentage (%) of waste properly managed.
Calculation Method	Measure or estimate the quantity of waste generated and the quantity managed in compliance with the approved standard at eligible landing sites over the same period.
Formula	$(\text{Quantity of waste properly managed} \div \text{Total waste generated at eligible landing sites}) \times 100$
Numerator	Quantity of waste properly managed at landing sites with new/upgraded systems.
Denominator	Total quantity of waste generated at those landing sites during the same reporting period.
Baseline	20%
Baseline Year	2025
Target	≥90%
Target Year	2030
Data Source(s)	Waste audit records; landing-site waste logs; Fisheries inspection reports; facility operator records.
Means of Verification	Waste management audits; Fisheries inspection reports
Data Collection Method	Conduct standardized waste audits and review facility logs at eligible landing sites; classify waste streams and management method; aggregate quantities using consistent units.
Disaggregation	Landing site; district; waste type; management method; system type.
Reporting Frequency	Quarterly site monitoring with annual reporting.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF) with local authorities/site managers and relevant environmental/waste-management institutions as supporting data providers.
Data Quality / Verification	Use consistent waste measurement/estimation methods; verify operator records against site inspections; document unmeasured waste and illegal disposal; avoid mixing sites without new systems into the denominator.
Methodological Notes / Assumptions	“Properly managed” should be defined in a national/site standard specifying acceptable collection, containment, treatment, reuse/recycling and disposal practices.
Link to Adaptation Result	Shows operational effectiveness of waste-control investments in reducing pollution pressure on fisheries ecosystems.

Field	Description
Indicator Level	Impact
Indicator Name	% reduction in fish disease incidence linked to pollution
Indicator Definition	Percentage reduction in the incidence rate of diagnosed fish disease cases assessed as linked to pollution, relative to the 2025 reference incidence rate.
Purpose / Relevance to Adaptation	Measures the downstream fish-health benefit of reduced pollution and improved waste management in fisheries hubs and aquatic ecosystems.
Metric / Unit of Measurement	Percentage reduction (%) in pollution-linked fish disease incidence.
Calculation Method	Calculate a standardized incidence rate using diagnosed pollution-linked disease cases over the defined fish population, farms/sites or surveillance units, then compare the current incidence with the 2025 reference incidence.
Formula	$((2025 \text{ disease incidence} - \text{Current disease incidence}) \div 2025 \text{ disease incidence}) \times 100$
Numerator	Difference between 2025 reference and current pollution-linked fish disease incidence rates.
Denominator	2025 reference pollution-linked fish disease incidence rate.
Baseline	70%
Baseline Year	2025
Target	≥40%
Target Year	2030
Data Source(s)	Fish-health surveillance data; veterinary/field diagnostic records; pollution monitoring records; fisheries inspection reports.
Means of Verification	Fish health monitoring data; Field vet reports
Data Collection Method	Compile diagnosed disease cases and exposure/population denominator data; apply agreed criteria for attributing/linking cases to pollution; calculate incidence consistently by site/species.
Disaggregation	Fish species; disease type; water body/site; district; pollution source/type; aquaculture versus wild stock where applicable.
Reporting Frequency	Quarterly surveillance with annual reporting; event-based investigation of outbreaks.
Responsible Institution(s)	Proposed joint responsibility: Department of Fisheries (DoF) and relevant veterinary/fish-health services, with environmental/water-quality authorities providing pollution evidence.
Data Quality / Verification	Use standardized case definitions and diagnostic methods; document the basis for pollution linkage; separate incidence from prevalence; investigate major reporting or surveillance changes.
Methodological Notes / Assumptions	The source baseline is 70% and the source target is ≥40% under an indicator worded as a “% reduction”. For operational reporting, the target is treated as the required reduction from the 2025 reference incidence, while the source values remain unchanged. If the source intended an absolute incidence target, that should be formally clarified.

Field	Description
Link to Adaptation Result	Demonstrates improved fish health associated with lower pollution pressure under Adaptation Action 7.

STRATEGY 5: Monitoring and Regulation

Adaptation Action 8: Install systems to monitor climate impacts on fish stocks and lake conditions

Objective: Improve real-time data collection for adaptive fisheries and aquatic ecosystem management.

IDS 27 Output

Field	Description
Indicator Level	Output
Indicator Name	# of monitoring technologies (e.g. e-catch logs, sensors, remote gauges) installed for climate impacts on fish stocks and lake conditions
Indicator Definition	Number of monitoring technology units installed and operational for collecting data on fish stocks, fishing activity, lake conditions or relevant climate impacts.
Purpose / Relevance to Adaptation	Tracks expansion of the monitoring infrastructure needed for timely, evidence-based adaptive fisheries management.
Metric / Unit of Measurement	Count of installed and operational monitoring technology units.
Calculation Method	Count each distinct technology unit once after installation, commissioning and confirmation that it is operational and assigned to an approved fisheries/climate monitoring purpose.
Formula	Total monitoring technologies = Σ verified installed and operational units
Numerator	Number of verified installed and operational monitoring technology units.
Denominator	Not applicable (count indicator).
Baseline	100
Baseline Year	2025
Target	≥ 250 by 2030
Target Year	2030
Data Source(s)	Technology asset/inventory registers; procurement records; installation/commissioning reports; system administration logs.
Means of Verification	Technology inventory logs; Procurement reports
Data Collection Method	Reconcile procurement and asset registers with field installation records; verify operational status, location and monitoring purpose; assign unique asset identifiers.
Disaggregation	Technology type; lake/water body; district/site; parameter monitored; operational status.
Reporting Frequency	Quarterly asset/status update with annual reporting.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), fisheries monitoring/data function, with DCCMS, water-monitoring institutions and ICT/technical partners supporting relevant systems.

Field	Description
Data Quality / Verification	Verify installed assets physically or through system logs; distinguish procured from installed and operational units; remove decommissioned/duplicate assets from current operational totals where the reporting protocol requires.
Methodological Notes / Assumptions	The baseline year is 2025 under the harmonization convention. The target year is 2030 because it is explicitly stated in the source target. The inventory should define whether a multi-sensor station counts as one system or multiple technology units.
Link to Adaptation Result	Demonstrates increased monitoring capacity for climate impacts on fish stocks and lake conditions under Adaptation Action 8.

IDS 28 - Outcome

Field	Description
Indicator Level	Outcome
Indicator Name	% increase in data collection frequency and geographic coverage
Indicator Definition	Percentage increase in the frequency of fisheries/climate data collection and in the geographic coverage of monitored fisheries areas relative to quantified 2025 reference levels.
Purpose / Relevance to Adaptation	Measures whether expanded monitoring technology is producing more frequent and spatially representative data for adaptive management.
Metric / Unit of Measurement	Percentage increase (%) in two dimensions: data-collection frequency and geographic coverage.
Calculation Method	Calculate change in collection frequency (e.g., valid observations or reporting cycles per defined period) and geographic coverage (e.g., monitored sites/areas as a share of the defined monitoring universe) separately against 2025. Report both dimensions; for headline target assessment, require both to meet the target unless an approved composite methodology is adopted.
Formula	Frequency increase (%) = ((Current frequency – 2025 frequency) ÷ 2025 frequency) × 100; Coverage increase (%) = ((Current coverage – 2025 coverage) ÷ 2025 coverage) × 100
Numerator	For each dimension, the difference between current and quantified 2025 frequency/coverage.
Denominator	Quantified 2025 reference frequency and quantified 2025 reference geographic coverage, respectively.
Baseline	Low
Baseline Year	2025
Target	≥75%
Target Year	2030
Data Source(s)	Monitoring schedules; sensor/e-catch system logs; GIS monitoring layers; field survey databases.
Means of Verification	Monitoring schedules; GIS data
Data Collection Method	Extract time-stamped observations and reporting cycles from monitoring systems; map active monitoring locations/areas in GIS; compare with the approved monitoring universe and 2025 reference.
Disaggregation	Lake/water body; district; monitoring parameter; technology/data source; frequency dimension versus coverage dimension.
Reporting Frequency	Quarterly monitoring review with annual headline reporting.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), fisheries monitoring/data function, with DCCMS, GIS and water-monitoring institutions supporting relevant datasets.
Data Quality / Verification	Use automated system logs where possible; verify active versus inactive sites; maintain a stable geographic denominator; document outages and changes in monitoring design.

Field	Description
Methodological Notes / Assumptions	The indicator combines two constructs and the source baseline is qualitative ("Low"). Quantified 2025 reference values are required for both. Do not average frequency and coverage without an approved weighting rule; the conservative reporting rule is to show both and assess the $\geq 75\%$ target against each dimension.
Link to Adaptation Result	Shows improved temporal and spatial availability of fisheries and lake-condition data needed for adaptive management.

IDS 29 - Impact

Field	Description
Indicator Level	Impact
Indicator Name	% increase in data-informed fisheries decisions (quota, closures, restocking)
Indicator Definition	Percentage increase in the proportion or number of qualifying fisheries decisions on quotas, closures, restocking and related measures that are demonstrably based on monitoring data, relative to the quantified 2025 reference.
Purpose / Relevance to Adaptation	Measures whether strengthened monitoring systems are influencing actual fisheries management decisions rather than only generating data.
Metric / Unit of Measurement	Percentage increase (%) in data-informed decision-making; underlying share of qualifying decisions supported by documented data.
Calculation Method	For each reporting period, classify fisheries decisions as data-informed when the decision record cites relevant monitoring evidence. Calculate the data-informed share, then compare that share with the quantified 2025 reference share.
Formula	Data-informed share (%) = $(\text{Data-informed decisions} \div \text{Total qualifying decisions}) \times 100$; Increase (%) = $((\text{Current share} - 2025 \text{ share}) \div 2025 \text{ share}) \times 100$
Numerator	For share: number of qualifying decisions with documented monitoring evidence; for increase: difference between current and 2025 data-informed shares.
Denominator	For share: total qualifying fisheries decisions; for increase: quantified 2025 data-informed decision share.
Baseline	Low
Baseline Year	2025
Target	$\geq 80\%$
Target Year	2030
Data Source(s)	Fisheries decision registers; management meeting minutes; monitoring dashboards/reports; quota, closure and restocking decision files.
Means of Verification	Policy reviews; Fisheries regulation reports
Data Collection Method	Compile all qualifying decision records; apply a standard evidence test for documented use of monitoring data; link each decision to the supporting dataset/report and calculate the share and change.
Disaggregation	Decision type; lake/water body; district/management area; data type/monitoring source.

Field	Description
Reporting Frequency	Annual, with routine evidence logging at each decision.
Responsible Institution(s)	Proposed lead: Department of Fisheries (DoF), management and monitoring/data functions, with relevant technical institutions providing supporting datasets.
Data Quality / Verification	Require traceable evidence of data use; keep the qualifying decision universe consistent; audit a sample of decision files; distinguish data-informed from decisions merely taken after data publication.
Methodological Notes / Assumptions	The source baseline is qualitative (“Low”), so a quantified 2025 reference share must be reconstructed. Because the indicator is worded as “% increase”, report both the absolute current share and the relative increase to avoid ambiguity.
Link to Adaptation Result	Demonstrates that improved fisheries monitoring is being translated into adaptive, evidence-based management decisions.