SHARED

Calculations and Decision Rules

Companion to the Software Requirements Specification

Version 1.6

Published methods and pending decisions through Institution review

This appendix states how the prototype calculates results and how the proposed system should handle the related decisions. Read it with the main SRS. Each method shows its source, required inputs, calculation or steps, example, limits and approval needs. A correct sample calculation is not evidence of local scientific acceptance.

The main SRS, appendix and controlled registers form one Version 1.6 review package. The 57 family IDs, 820 candidate decisions and 139 method IDs are retained. Repeated examples use one family definition. Use the registers for exact inputs, units, source links, scope and pending approval.

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1 Using this appendix

The Word, PDF and web editions describe the same method content. The following registers are controlled parts of Version 1.6 and must travel with the appendix. The main coverage workbook remains the design coverage record.

Decision_Register.csv All 820 decision examples, exact configured inputs and limits, units, source roles, owners and pending approval. Open online

Method_References.csv All 139 existing reference definitions, formulas or procedures, inputs, limits and original source links. These are candidate methods, not a claim of equivalence to an implemented family. Open online

Calculation_Sources.csv The full source register, with title, URL, locator, source role and access status. Open online

Government publication and Institution publication identify direct support for the stated core method. Record the publisher, edition and exact page or section. Validation required identifies project rules, adaptations or incomplete support. A data or background source alone does not support a formula. Published methods need no repeat proof; confirm local settings and intended use. Developers test copying, arithmetic and input handling. Section 6 separates these checks from client and expert decisions.

Source IDs LOCAL SRS in the registers retain their original legacy chapter labels. They refer to the earlier separate chapter set, not to the current 14 chapter numbering. The PROTO source identifies the prototype function and decision ID; SRS identifies this main SRS. No source citation grants legal, financial or scientific authority.

Inputs and limits

Use the same population, entity, boundary, period, definition, unit and source edition for a comparison. Keep the numerator and denominator visible. Preserve original values, missing reasons, uncertainty and access rights. No data is different from a measured zero. Do not infer a complete population from a partial snapshot or sum incompatible quantities.

All family inputs are required unless an approved method explicitly permits absence. The Decision Register records each current numeric input bound and whole number constraint. These are prototype guards, not scientifically recommended ranges. Generic units in a sample must be replaced by the exact approved institutional definition. Keep calculation precision; round only for display under an agreed rule. No default weights, rates, risk categories, warning levels or legal limits become official through this appendix.

Examples use invented values to check arithmetic. They are not institutional observations or recommendations. The wider proposed procedure in each family may need more data and specialist processing than the displayed example. Where the prototype only plots inputs or completeness, that limitation is stated explicitly.

Read a family in this order: question; exact formula; inputs and units; worked example; effect of an input change; wider proposed procedure; limits; source category. The example explains the prototype rule. It does not demonstrate every part of the wider procedure.

2 Shared calculations and business rules

Counts and source coverage

Count records only within the selected source and filters. Distinct count uses the reviewed identity key. Coverage reports supplied observations and requested rows separately. A snapshot total is not the population total.

Example One person with two memberships and three support episodes counts as one person, two memberships and three episodes.

Category Validation required. Source PublicDashboardModel.metric/uniqueRows; SrsDemonstration.coverage; ReportModel.execute. Requirements FR076 FR077 FR097. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Weighted means and pooled rates

Weighted mean = sum of weight × value divided by sum of valid weights. For a pooled rate, sum compatible numerators and denominators, then divide. Missing weights or a zero total denominator withhold the result.

Example Values 10 and 20 with weights 1 and 3 give 17.5. Rates 1/2 and 9/10 pool to 10/12, or 83.3333 percent.

Category Institution publication. Publisher United Nations Statistics Division (Final Draft). Source DecisionSupportModel.project SURVEY; SRS 5.4. Requirements FR099 FR103. Sources PROTO, SRS, S91.

Review Published core needs no repeat proof. Confirm local inputs, units and settings under E01; E02/E03 where relevant. See Section 6.

Basic crop yield

Production in tonnes divided by matching positive harvested hectares gives t/ha. Do not mix cultivated, sown and harvested area. Reject negative production or zero area.

Example 400 t / 100 ha = 4 t/ha.

Category Validation required. Source SrsCalculations.yield; YIELD input contract. Requirements FR082 FR103. Sources PROTO, SRS, S67.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Break even and margin ratios

For the stated variable cost scope, break even price = variable cost / positive saleable output. Margin ratio = 100 × gross margin / positive revenue. A break even yield uses cost per hectare divided by the applicable positive net price. State which fixed costs are excluded.

Example Variable cost LKR 70000 and 1000 kg give LKR 70/kg. LKR 30000 gross margin on LKR 100000 revenue gives 30 percent.

Category Validation required. Source SRS 5.4; MARGIN; NF022; proposed algebra from the stated gross margin identity. Requirements FR082 FR103. Sources SRS, S76. Published components: Institution publication - Food and Agriculture Organization of the United Nations (FAO) (S76).

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Percentage variance and target progress

Percentage variance = 100 × (actual − plan) / plan for a nonzero plan. Progress from a baseline = 100 × (actual − baseline) / (target − baseline) for unequal target and baseline. Target achievement = 100 × actual / target for a nonzero target. These are different measures. Keep underachievement and values over 100 percent visible unless an approved display rule says otherwise.

Example Actual 120 and plan 100 give +20 and +20 percent. Baseline 20, actual 60 and target 100 give 50 percent progress and 60 percent target achievement.

Category Validation required. Source SrsCalculations.variance; SRS 5.4; NF171. Requirements FR103 FR124. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Reviewed weighted criteria

Normalize each criterion as (value − worst) / (best − worst). Score = 100 × sum of weight × normalized value. Weights must be finite, nonnegative and total one within 0.000000001. Anchors must differ; every required input must lie between its anchors. Exclude infeasible options first. The prototype rounds the score to four decimals before ranking. Rank = one plus the number of strictly higher displayed scores; ties have equal rank.

Example A benefit criterion with worst 0, best 100 and value 80 scores 80. A cost criterion with worst 100, best 0 and value 20 also scores 80. Equal options both rank 1.

Category Validation required. Source SrsCalculations.weighted; SrsDemonstration.compareDecision. Requirements FR102 FR105. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Annual cash flows and payback

For years 0 to n, discounted flow = signed cash flow / (1 + rate fraction) raised to the year. NPV is the sum. The prototype accepts 2 to 51 annual flows and rate above −1 through 1. Its paybackYear is the first year greater than zero with nonnegative cumulative undiscounted cash flow. It is not discounted payback or fractional payback. Do not use it for an unusual flow pattern without a reviewed rule.

Example Flows −100, 60, 60 at 10 percent give NPV 4.1322 and undiscounted payback year 2.

Category Validation required. Source SrsCalculations.cashFlow; FINANCE; NF145 NF147 NF157. Requirements FR103 FR105. Sources PROTO, SRS, S81. Published components: Institution publication - Food and Agriculture Organization of the United Nations (FAO) (S81).

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Cost per additional observed outcome

Observed change = actual − baseline. Cost per additional unit = nonnegative comparable cost / observed change only when that change is positive. A decrease, no change or missing value withholds this ratio. This rule alone does not establish causation or handle a lower is better indicator.

Example Cost LKR 10000, baseline 20 and actual 60 give change 40 and LKR 250 per additional observed unit.

Category Validation required. Source SrsCalculations.costOutcome. Requirements FR103 FR125. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Rainfall missing values and comparable pairs

Calculate a supplied value mean using only explicitly supplied readings; retain the supplied count. A required complete period mean stays unavailable if any required period is missing. Paired analysis uses only compatible pairs and reports their count. A real zero is retained.

Example Example rainfall 1200, 1300, missing, 1400, 1500 mm gives supplied mean 1350 mm and coverage 4/5. With the corresponding cultivation series, paired coverage is 3/5.

Category Validation required. Source SrsCalculations.rainfall; SRS rainfall acceptance example. Requirements FR099 FR103. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Statistical summaries in retained method references

For sorted valid observations, median is the middle value or mean of the two middle values. Sample standard deviation uses sum of squared deviations divided by n − 1 before taking the square root. CV percent = 100 × sample standard deviation / positive mean, with n at least 2 and a meaningful zero. Quartiles need a named algorithm. Shannon sample diversity uses −sum of p × natural log(p), omitting zero terms. These definitions are proposed reference methods; the simple decision plots do not perform them all.

Example For 10, 20, 30, median and mean are 20, sample SD is 10 and CV is 50 percent. For two equally common species, Shannon index is ln(2), about 0.6931.

Category Validation required. Source NF077 NF086 NF109 NF114 NF115; DISTRIBUTION and VOLATILITY catalogue. Requirements FR099 FR103. Sources SRS, S84. Published components: Government publication - United States National Institute of Standards and Technology (NIST) (S84).

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Spatial measurements and intersection

The prototype uses its spatial engine on WGS84 coordinates. Area in square metres is divided by 10000 for hectares. Line length and point distance use kilometres. Intersection area is measured from the actual intersected polygons. Point containment uses the library boundary rule. These are spherical exploratory estimates. A projected authoritative analysis needs a separately approved service and CRS.

Example An intersection of 200000 square metres is 20 ha. An empty intersection is zero area. Different geographic roles cannot be substituted.

Category Validation required. Source SpatialModel.vector; GeographicWorkflow.analyse/compareHistory. Requirements SH-GEO-FEAT-008 SH-GEO-FEAT-012 FR066. Sources PROTO, SRS, S85, S86, S87, S89, S90.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Buffers proximity and spatial limits

Buffer and point proximity radius must be above zero and no more than 20 km; the buffer uses 24 steps. Viewport vector analysis requires 1 to 749 loaded features and excludes demonstration geometry. Count nearby valid points within the chosen radius and report excluded or unsupported features. These are prototype workload limits, not environmental buffer rules.

Example A point at distance 1.5 km is included by a 2 km radius; one at 2.5 km is excluded. A 0 km radius is rejected.

Category Validation required. Source SpatialModel.vector. Requirements FR066 FR074. Sources PROTO, SRS, S86, S88.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Raster pairs and change

Both rasters must retain native aligned width, height, bounding box, CRS, unit and kind. Preview supports EPSG:4326 and at most 262144 cells per grid; no resampling is performed. For each valid pair count changed cells. Continuous mean difference = sum of later minus earlier values divided by paired count. Classified grids produce transition counts. Missing pairs are excluded and counted, not set to zero. Cell counts are not automatically hectares.

Example Earlier cells 1, missing, 3 and later cells 2, 4, 3 give 2 pairs, 1 missing pair, 1 changed cell and mean difference 0.5.

Category Validation required. Source SpatialModel.rasterCheck/rasterCompare. Requirements FR067 FR074. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Reservoir ratios and capacity

Storage percentage = 100 × effective storage / positive active capacity. Capacity composition accepts positive gross capacity, nonnegative dead and effective volumes, and dead plus effective no greater than gross. Remaining volume = gross − dead − effective. Labels must match the source definitions.

Example Gross 100, dead 10 and effective 60 leave 30 in the stated source volume unit. Effective 60 / active 90 gives 66.6667 percent.

Category Validation required. Source WaterModel.ratio/capacity. Requirements FR099 FR103. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Source water level thresholds

Use the source station unit and ordered alert, minor and major thresholds. At or above major select the major band, else at or above minor the minor band, else at or above alert the alert band, else below the source alert band. Missing or unordered thresholds withhold the band. This display is not a new warning.

Example For source thresholds 2, 3 and 4 m, a 3 m reading is in the minor threshold band.

Category Validation required. Source WaterModel.status; DisasterModel.delta. Requirements FR103 FR134. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Observation age and endpoint trend

Age in minutes = max(0, as of time − observation time) / 60000. A future timestamp is still a quality issue requiring review. Endpoint trend = (last value − first value) / elapsed hours for the same station and basin with verified, identical units and a positive elapsed time. It is not regression, a forecast or a warning.

Example A 2 m to 3 m change over 2 hours gives +0.5 m/hour.

Category Validation required. Source DisasterModel.age/latest/trend; WaterModel.stationRecords. Requirements FR055 FR099 FR103. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Official warning display

Only a nonsynthetic public actual alert or update, without a superseding record, and with at least one interval containing as of time is active. The valid from boundary is inclusive and valid to is exclusive. Derived values and stale warnings must not become official alerts.

Example A warning valid from 10:00 to 12:00 is active at 10:00 and inactive at 12:00.

Category Validation required. Source DisasterModel.active/publicRows. Requirements FR134 FR135. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Dashboard aggregation and display

Apply source, period and place filters first. Sum only a declared additive measure within compatible category groups. Count rows separately from distinct identities. Melt named compatible measure columns into chart points. A scatter requires both values. Missing numbers stay absent with a missing count; incomplete snapshots stay marked partial. Funding chart separates disbursed grant from grant not yet disbursed and requires grant no less than paid.

Example Grant 100 and disbursed 60 show 60 disbursed and 40 not disbursed. Unknown amounts do not create a zero total.

Category Validation required. Source PublicDashboardModel.project/metric/chartModel; IrrigationModel.chart; ApprovedChartModel.project. Requirements FR099 FR100. Sources PROTO, SRS.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Report joins and reproducibility

Use a reviewed record, geography and period, or identity and period grain. Combine at most four sources with one to twelve chosen measures, at most 500 rows per source and 2000 result rows. Reject duplicate matching keys and unsupported aggregation before joining. Retain unmatched source rows and exact input versions. Changed plans or sources invalidate their review. Limits are prototype input guards.

Example Two source rows with the same join key are rejected before they can multiply a total. An unmatched observation stays missing.

Category Validation required. Sources PROTO, SRS. Requirements FR094 to FR098. See Section 8 for custom queries and charts.

Review Local definitions and method changes: E01; E02/E03 where relevant. Developer checks arithmetic and input handling. See Section 6.

Numeric and date validation

Keep zero distinct from blank. Reject booleans and nonfinite numbers as measurements. Respect each declared type, minimum, maximum, precision and scale; integer fields require safe whole numbers. Provider decimal inputs default to at most 15 significant digits and 8 fractional digits, and reject exponent notation. Validate real calendar dates. Use the exact field contract, not a displayed rounded number, for acceptance.

Example 0 is accepted as a reading. A blank, false and an impossible calendar date are rejected.

Category Validation required. Source SrsCalculations.number; ProviderWorkflows.validate; SrsDemonstration.validate; DecisionSupportModel.validate. Requirements FR038 FR058 FR103. Sources PROTO, SRS.

Review Developer tests valid, invalid and missing inputs. C04 confirms allowed values; expert review applies only to scientific limits.

Identity and competing source claims

An independent steward reviews both source identities before adding a relationship. Preserve the separate objects, source claims and histories. A preferred claim records a purpose and reason; it does not delete alternatives. Similar names do not prove identity.

Example Two reviewed records can be linked as related source identities while both original claims remain visible.

Category Validation required. Source SrsDemonstration.linkIdentity/preferClaim. Requirements FR029 FR030 FR033. Sources PROTO, SRS.

Review C02/C04 confirm identity keys, source owners and conflict resolution. Developer tests matching and preserved versions.

Document suggestions and source purpose

Match existing field labels or keys after normalizing text. Rank possible destination forms by count of matched fields, then form name. This is a name match aid, not a scientific or confidence score. Conflicting values, ambiguous numbers and incompatible units require a person to resolve them. Guidance text cannot supply a measured observation. Independent field mapping review and value review are separate.

Example A document stating two different values for rainfall creates a conflict requiring a checked choice; it does not average them.

Category Validation required. Source DocumentSlotModel.matches/rank/values; SrsDemonstration.reviewMapping/mappingKey. Requirements FR046 FR047 FR048 FR049 FR050. Sources PROTO, SRS.

Review C04/C05 confirm source rights and permitted purpose. Developer tests evidence links and restricted outputs.

Feed mapping and duplicate events

Freeze the reviewed source, destination dataset and version, field list, event/time/value keys, protocol, schema and device mapping. Preserve original raw keys and values. A changed contract invalidates mapping review. Replay uses the stable event identity to return the original receipt or reject changed content under that identity. A typed or sample payload is not a provider receipt.

Example Replay of the same event returns the same receipt; the same event key with different measured content is rejected.

Category Validation required. Source SrsDemonstration.feedContract/reviewFeedMapping/feedReplay/importAtomic. Requirements FR051 FR052 FR053 FR054 FR055 FR056. Sources PROTO, SRS.

Review C04 confirms field mapping and source contract. Developer tests duplicates, rejected rows and safe retries.

Review independence and stale evidence

Authors cannot perform protected independent reviews of their own work. Actions require the correct role, institution, state and exact record version. Revisions preserve predecessors and clear checks tied to changed evidence. A saved sample or a successful arithmetic check does not approve a scientific method.

Example A revised input version cannot reuse an approval for the earlier values.

Category Validation required. Source SrsDemonstration.role/independent/review/revise; ProviderWorkflows.review; DecisionSupportModel.adviceTransition. Requirements FR050 FR107 FR113 FR121. Sources PROTO, SRS.

Review C02 confirms reviewer roles. Developer tests separation of roles, changed versions and stale evidence.

Dependencies and project authorization

Check required people, prerequisites, finance, conditions and institutional authorization before activating work. Block cyclic dependencies and unavailable prerequisites. Track recommendation, authorized decision, performed work and verified outcome separately.

Example A task with an unfinished required prerequisite remains blocked.

Category Validation required. Source SrsDemonstration.dependency/dependenciesComplete/authorize/activate. Requirements FR105 FR110 FR111 FR112 FR114 FR115. Sources PROTO, SRS.

Review C01/C02 confirm scope, roles and approval steps. Developer tests dependencies and authorization rules.

Actual progress and outcome evidence

Only the assigned person records progress on open work. Require nonnegative quantity, unit, observation date, evidence and actual geographic support. A reviewer checks the submitted observation independently before it becomes verified progress. Outcome learning records observed results and source against the decision version.

Example Repeating identical progress evidence returns the existing entry; changed content under the same evidence identity is rejected.

Category Validation required. Source SrsDemonstration.progress/reviewProgress/outcome. Requirements FR120 FR121 FR123 FR124 FR125. Sources PROTO, SRS.

Review C10 confirms progress and outcome definitions. Developer tests evidence links and calculations.

PES verification and payment evidence

A recorded payment requires reviewed evidence, an authorized or active agreement, matching verified service evidence and a source payment reference. Client authority, rights, rates and funding are separate decisions. The prototype records evidence and transfers no money.

Example A service verification for another agreement cannot support a payment record.

Category Validation required. Source SrsDemonstration.recordPayment; PES. Requirements FR092 FR093. Sources PROTO, SRS, S60, S61.

Review E03/C10 confirm rights, service evidence, rates, funding and payment authority. Developer tests the agreed rules.

Closure handover and reopening

Freeze the closure checklist and source versions. Verify each required item independently, with current receiving evidence where needed. Close only after all checks and authority requirements pass. Changing the checklist or linked evidence invalidates its checks. Reopening or a revision keeps the prior closure and history.

Example A receiving asset changed after its review blocks closure until the new evidence is checked.

Category Validation required. Source PrototypeCompletion.closureSignature; SrsDemonstration.prepareClosure/fulfil/linkHandover/close/reopen. Requirements FR126 FR127 FR128. Sources PROTO, SRS.

Review C02/C11 confirm receiving roles and closure evidence. Developer tests the agreed workflow.

Source rights and publication

Apply scoped permissions for source, recipient, purpose, area, right, field list and validity period. A matching deny overrides an allow. Dataset provider views also require the active policy, role and institution. Public knowledge requires Published state, Public classification, unexpired rights and eligible citations recursively. Cycles, withdrawn sources and missing evidence block publication. No organization membership gives unrestricted access.

Example Expiry of a parent source removes dependent public guidance from the eligible list.

Category Validation required. Source SrsCalculations.permit; ProviderWorkflows.permitted; SrsDemonstration.sourceEligible/publishableSource. Requirements FR095 FR106 FR133 FR134. Sources PROTO, SRS.

Review C04/C05 confirm permitted use and audiences. Developer tests publication and source withdrawal.

Feedback appeal and safeguarding

Use the approved receiving institution and response policy. Retain the original feedback, evidence, response, independent appeal and final disposition. A response or attendance record is not consent. Publication checks remove restricted or sensitive content.

Example An unresolved appeal remains open with its accountable receiver.

Category Validation required. Source SrsDemonstration.submitFeedback/respondFeedback/appealFeedback/resolveAppeal; CONSENT. Requirements FR135 FR136. Sources PROTO, SRS, S47.

Review C05/C09 confirm privacy, receiving roles and appeals. Developer tests the agreed workflow.

Optional offline work background jobs and recovery

If the client selects offline operation, retain the base version and original evidence under approved protection and retention. Send stale or changed content to conflict review. Atomic receipts prevent a committed import being repeated. Queued jobs can be cancelled or retried; recover a lost response using its existing receipt. Additional channels and offline synchronisation remain proposed options under C01/C06/C07. Operational evidence is still required.

Example Retry after a lost response returns the committed receipt and does not import a second copy.

Category Validation required. Source SrsDemonstration.queueOffline/syncOffline/importAtomic/jobAction. IDs FR139 FR140 FR141 FR145 FR148 SH-GEO-FEAT-017. Sources PROTO, SRS.

Review C01/C06/C07/C08 confirm the selected options and targets. Developer tests the agreed implementation.

Acceptance and release decisions

Mock design coverage means the screen behavior is shown. It does not prove production implementation, local scientific validity, consultation, legal permission, service operations or formal acceptance. Client and experts approve this SRS and its appendix as one version through Institution review; no separate TOR review or UI reviewer gate is added.

Example An arithmetically correct erosion example still needs local factor and method approval before an operational decision.

Category Validation required. Source SRS Chapter 12 acceptance and Chapter 13 review decisions; Institution review. Requirements FR150 FR151 FR152 FR153 FR154 FR155 FR156. Sources SRS, PROTO.

Review C11 records final acceptance after the relevant C01 to C12 and E01 to E03 decisions. Developer evidence does not grant approval.

3 Calculation families

Find the family by its existing ID. Inputs below show a representative configured decision. The Decision Register supplies every decision specific input, unit and bound, including the crop water, productivity, trend and cash balance variants. Read the shared rules in Section 2 with each family. All source codes resolve in Calculation Sources and the web source register.

CHANGE Comparable change

Decision example. Prioritize bathymetric surveys and desilting appraisal.

$$\text{change} = \text{current} - \text{baseline}$$

Inputs and units. Earlier surveyed capacity on the same datum (m³); Later surveyed capacity on the same datum (m³).

Worked example. DEC-DP05-008 — Laggala Pallegama — reservoir sedimentation, 2025. Earlier surveyed capacity on the same datum = 900,000 m³; Later surveyed capacity on the same datum = 860,000 m³. Difference = -40,000 m³; Relative change = -4.444 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Earlier surveyed capacity on the same datum = 900,001. Difference = -40,001 m³. Without Earlier surveyed capacity on the same datum, the required result is withheld.

Procedure. Later/comparison value minus Earlier/source value. Relative change = 100 × difference / Earlier/source value when the earlier value is positive.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. land change, change, publication revision.

OVERLAY Spatial constraint screening

Decision example. Refer proposed developments overlapping constraints.

$$\text{overlap share} = 100 \times \text{overlap area} \div \text{footprint area}$$

Inputs and units. Assessed footprint or frame (ha); Reported common overlap, counted once (ha); Boundary edition; Constraint definition; Matching source frame, boundary and period evidence; Area/count source and matching definition reference.

Worked example. DEC-DP01-002 — Laggala Pallegama — development screening, 2025. Assessed footprint or frame = 75 ha; Reported common overlap, counted once = 18 ha; Boundary edition = Sample boundary1; Constraint definition = Sample constraint class; Matching source frame, boundary and period evidence = Provided; Area/count source and matching definition reference = Fictional matched survey return / edition 1. Overlap share = 24 %; Overlapping area = 18 ha. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Assessed footprint or frame = 75.75. Overlap share = 23.762 %. Without Assessed footprint or frame, the required result is withheld.

Procedure. 100 × union of constraint overlap / proposal footprint. Count intersecting constraint areas once. The areas/counts are supplied records; this decision view does not calculate intersections, distances or locations.

Limits. Geometry preparation must use matching coordinate systems, dated boundary editions and valid spatial predicates. Overlap supports referral; it does not determine ownership, permission or site safety. A static reference image does not verify these supplied measurements or boundaries.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. overlay, mahaweli plan, mahaweli reservation, point overlay, well proximity.

COVERAGE Coverage and unmet need

Decision example. Commission missing divisional land-use plans.

$$\text{coverage} = 100 \times \text{served eligible units} \div \text{eligible units}$$

Inputs and units. Divisions in this reporting record (divisions); Divisions with a current applicable plan (divisions); Divisions whose plan status is unknown (divisions).

Worked example. DEC-DP01-003 — Laggala Pallegama — planning coverage, 2025. Divisions in this reporting record = 1 divisions; Divisions with a current applicable plan = 0 divisions; Divisions whose plan status is unknown = 0 divisions. Verified coverage = 0 %; Known uncovered = 1 divisions; Unknown coverage = 0 divisions. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Divisions with a current applicable plan = 1. Verified coverage = 100 %. Without Divisions in this reporting record, the required result is withheld.

Procedure. 100 × distinct covered eligible units / eligible frame. Known uncovered = frame − covered − unknown.

Limits. Count each eligible unit once for the selected service and period. Received messages, attendance, adoption and outcomes are separate measures.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. coverage, feature changes.

MISMATCH Independent evidence reconciliation

Decision example. Resolve conflicting parcel and cultivator records.

$$unresolved\ comparisons\ =\ count(missing\ or\ conflicting\ equivalence)$$

Inputs and units. Original source value/definition; Comparison source value/definition; Original version; Comparison version; Do the two source records have documented matching meanings?

Worked example. DEC-DP04-005 - Laggala Pallegama — paddy register, 2025. Original source value/definition = Parcel ID: primary register entry; Comparison source value/definition = Parcel ID: conflicting source return; Original version = Sample version1; Comparison version = Sample version2; Do the two source records have documented matching meanings? = Unresolved. Source comparisons needing review = 1 items. The original record says “Parcel ID: primary register entry”; the comparison says “Parcel ID: conflicting source return”. Their matching meaning has not been established. Obtain the source definitions and supporting records before reconciling them. Next check: Resolve source disagreement. Realistic sample data.

Changed example. Do the two source records have documented matching meanings? = Documented. Source comparisons needing review = 0 items. Next check: Refer documented equivalence. Without Original source value/definition, The original record says “Not provided”; the comparison says “Parcel ID: conflicting source return”. The example marks their meanings as matching. Check the supporting definitions and comparison basis before any record correction.

Procedure. Compare original definitions, identifiers, units and versions against documented equivalence evidence. Preserve conflicts and unresolved mappings; do not subtract category labels or silently merge records.

Method sources. Validation required. DD-LOCAL - SHARED domain decision contracts. Domain decision rules and matching fictional examples.

Domain variants. field map case, mismatch, series mismatch, numeric mismatch, lineage, location mismatch, schema mismatch, affected lots.

EROSION Erosion model comparison

Decision example. Target detailed soil-loss assessment in planning units.

$$\text{soil loss} = R \times K \times LS \times C \times P$$

Inputs and units. Rainfall erosivity (MJ mm/(ha h year)); Soil erodibility (t ha h/(ha MJ mm)); Slope-length and steepness factor (ratio); Cover-management factor (fraction); Support-practice factor (fraction).

Worked example. DEC-DP01-016 — Laggala Pallegama — land degradation, 2025. Rainfall erosivity = 950 MJ mm/(ha h year); Soil erodibility = 0.035 t ha h/(ha MJ mm); Slope-length and steepness factor = 2.8 ratio; Cover-management factor = 0.24 fraction; Support-practice factor = 0.7 fraction. Estimated annual sheet/rill loss = 15.641 t/ha/year. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Rainfall erosivity = 951. Estimated annual sheet/rill loss = 15.657 t/ha/year. Without Rainfall erosivity, the required result is withheld.

Procedure. $R \times K \times LS \times C \times P$, using a mutually consistent SI factor set.

Limits. This USLE factor product is not a full RUSLE2 run, measured loss, delivered sediment, gully loss or landslide forecast. Local factors and uncertainty need review.

Method sources. Verified published formula. USLE factor product. Government publication — United States Department of Agriculture Forest Service. 1980 technical publication SA-TP 11; Universal Soil Loss Equation, printed page 2; metric conversion appendix, printed page 40. https://www.ars.usda.gov/ARSUserFiles/60600505/RUSLE/A%20guide%20for%20predicting%20sheet%20and%20rill%20erosion%20on%20forest%20land.pdf. The historical source verifies the factor product. Local factor choice and suitability still need confirmation; this is not a full RUSLE2 implementation.

Domain variants. erosion.

OPTIONS Alternative appraisal

Decision example. Compare potential settlement areas.

$$\text{affordability difference} = \text{available budget} - \text{estimated option cost}$$

Inputs and units. Option cost (LKR); Available budget (LKR); Mandatory constraints; Potential benefit and its evidence or assumption; Resource needs and adverse effects; Required records

available for this option; Reference for the required records; Applicable conditions, check result and supporting reference.

Worked example. DEC-DP01-007 - Infill near existing services, 2025. Option cost = 1,500,000 LKR; Available budget = 1,800,000 LKR; Mandatory constraints = Met; Potential benefit and its evidence or assumption = Use existing nearby roads and services.; Resource needs and adverse effects = Check vacant-site capacity, tenure and pressure on existing services.; Required records available for this option = Not provided; Reference for the required records = Not provided; Applicable conditions, check result and supporting reference = Not provided. Budget remaining after option = 300,000 LKR. There is not enough information to choose this option. Obtain the records and evidence about conditions listed below. The supplied budget less cost is 300,000 LKR. Next check: Obtain the missing records before choosing. Realistic sample data.

Changed example. Required records available for this option = Documented for comparison; Reference for the required records = DEMO-DOMAIN-RECORDS; Applicable conditions, check result and supporting reference = DEMO-CONSTRAINT-REVIEW; Mandatory constraints = Met. Budget remaining after option = 300,000 LKR. Next check: Compare the documented trade-offs with the responsible reviewer. Without Reference for the required records, There is not enough information to choose this option. Obtain the records and evidence about conditions listed below. The supplied budget less cost is 300,000 LKR.

Procedure. Compare each alternative's stated benefit, adverse effects, domain evidence and mandatory constraints. Where cost and budget are supplied, budget balance = budget − option cost. A budget balance alone does not determine domain feasibility or select an option.

Limits. A budget surplus does not establish a suitable settlement location.

Method sources. Validation required. DD-LOCAL - SHARED domain decision contracts. Domain decision rules and matching fictional examples.

Domain variants. options.

COMPOSITION Composition without false aggregation

Decision example. Plan seed support around observed rice-category uptake.

$$\text{category share} = 100 \times \text{category count} \div \text{sum of compatible category counts}$$

Inputs and units. Distinct eligible original plots (plots); Sown area recorded separately (ha).

Worked example. DEC-DP03-001 — Bg 300, 2025. Distinct eligible original plots = 107 plots; Sown area recorded separately = 115 ha. Plot count = 107 plots; Share of eligible plots = 18.259 %; Share of recorded sown area = 14.303 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Distinct eligible original plots = 108. Plot count = 108 plots. Without Distinct eligible original plots, the required result is withheld.

Procedure. Plot share =100 × distinct eligible plots in category / eligible plots in all categories. Sown-area shares use a separate hectare denominator; grouped inputs do not verify plot identity.

Limits. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. fragmentation, erosion area, rice plots, variety area, export composition, feedback.

TREND Trend with uncertainty

Decision example. Review long-term trends in homogeneous station records.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

display the observed value against its recorded observation period

Inputs and units. Comparable observation (°C).

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Comparable observation = 28.381. Observed value = 28.381 °C. Without Comparable observation, the required result is withheld.

Procedure. Display dated air temperatures and their mean/sample standard deviation in °C. Celsius has an arbitrary zero; do not report relative percentage change or a coefficient of variation.

Limits. Match definitions, methods, grade, location and reference basis. Gaps are not joined. Descriptive variation is not a forecast, causal effect or significant trend.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. trend, groundwater trend.

COST Unit cost and cost drivers

Decision example. Compare conservation cost per verified treated hectare.

$$unit\ cost\ =\ (labour\ +\ materials\ +\ other\ costs)\ \div\ verified\ output$$

Inputs and units. Labour cost (LKR); Material/input cost (LKR); Other non-overlapping cost (LKR); Verified matching hectares (ha).

Worked example. DEC-DP02-017 — Laggala Pallegama — conservation economics, 2025. Labour cost = 180,000 LKR; Material/input cost = 255,000 LKR; Other non-overlapping cost = 62,000 LKR; Verified matching hectares = 5.4 ha. Cost per matching unit = 92,037.037 LKR/ha; Total cost = 497,000 LKR. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Labour cost = 180,001. Cost per matching unit = 92,037.222 LKR/ha. Without Labour cost, the required result is withheld.

Procedure. Sum non-overlapping costs, then divide by the matching verified quantity for the same currency and accounting period.

Limits. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. cost ha, survey cost, damage loss, food basket, input expenditure, cost output, tonne km, verification cost.

WATER Crop water requirement

Decision example. Prepare crop-stage irrigation recommendations.

$$ETc = ETo \times Kc$$

$$net = max(0, ETc + DP + dS - (P - RO) - CR)$$

$$gross = net \times area \times 10 \div efficiency$$

ETo is reference evapotranspiration; Kc is the crop coefficient; DP is deep percolation or the stated paddy allowance; dS is the desired increase in stored water; P minus RO is rainfall after runoff; CR is capillary contribution. Net is in mm/day; area is in ha; efficiency is a fraction. Set inapplicable allowances to zero.

Inputs and units. Irrigated crop area (ha); Reference evapotranspiration (mm/day); Crop coefficient (ratio); Rainfall reaching the field after runoff (mm/day); Deep percolation and paddy allowance (mm/day); Capillary contribution (mm/day); Desired change in stored soil water (mm/day); Field application efficiency (fraction).

Worked example. DEC-DP03-003 — Laggala Pallegama — irrigation advice, 2025. Irrigated crop area = 85 ha; Reference evapotranspiration = 4.5 mm/day; Crop coefficient = 1.1 ratio; Rainfall reaching the field after runoff = 1.6 mm/day; Deep percolation and paddy allowance = 2 mm/day; Capillary contribution = 0 mm/day; Desired change in stored soil water = 0 mm/day; Field application efficiency = 0.68 fraction. Gross daily irrigation requirement = 6,687.5 m³/day; Net field requirement = 5.35 mm/day. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Irrigated crop area = 85.85. Gross daily irrigation requirement = 6,754.375 m³/day. Without Irrigated crop area, the required result is withheld.

Procedure. ETc = ETo × Kc. Net = max(0, ETc + percolation + desired storage increase − rainfall after runoff − capillary contribution). Gross = net × hectares ×10 / application efficiency.

Limits. The full local balance, rooting depth, stress, crop stage and operating constraints still matter. The paddy allowance is explicit and must be zero where inapplicable. This is not an authorized reservoir release.

Method sources. Verified published component. Crop evapotranspiration ETc component. Institution publication — Food and Agriculture Organization of the United Nations. Chapter 5, Crop coefficient approach, equation 56. https://www.fao.org/4/X0490E/x0490e0a.htm. This verifies the ETc component only. Local water-balance allowances, coefficients and operating decisions still need confirmation.

Domain variants. water.

VARIANCE Plan versus actual

Decision example. Investigate differences between planned and actual use.

$$\text{variance} = \text{actual} - \text{plan}$$

Inputs and units. Hectares planned for the selected land-use class (ha); Hectares observed in that same class (ha).

Worked example. DEC-DP01-017 — Laggala Pallegama — plan implementation, 2025. Hectares planned for the selected land-use class = 100 ha; Hectares observed in that same class = 90 ha. Difference = -10 ha; Relative change = -10 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Hectares planned for the selected land-use class = 101. Difference = -11 ha. Without Hectares planned for the selected land-use class, the required result is withheld.

Procedure. Observed value minus Planned value. Relative change = 100 × difference / Planned value when the earlier value is positive.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. variance, dated variance, cost progress.

REPEAT Repeated support or overlapping claims

Decision example. Review repeated farmer assistance before new allocation.

$$overlap = max(0, min(end1, end2) - max(start1, start2) + 1)$$

Inputs and units. Permitted recipient/service reference; Support purpose; Earlier support period begins; Earlier support period ends; Other support period begins; Other support period ends; Same purpose and qualifying unit.

Worked example. DEC-DP04-002 — Laggala Pallegama — support overlap, 2025. Permitted recipient/service reference = Laggala Pallegama — support overlap; Support purpose = Sample seasonal input support; Earlier support period begins = 2025-01-01; Earlier support period ends = 2025-06-30; Other support period begins = 2025-05-01; Other support period ends = 2025-08-31; Same purpose and qualifying unit = Yes. Overlapping days = 61 days. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Other support period begins = 2025-01-01; Other support period ends = 2025-06-30. Overlapping days = 181 days. Without Permitted recipient/service reference, the required result is withheld.

Procedure. Compare the same permitted entity, purpose and qualifying unit. Intersect dated support intervals; overlapping support is a review flag, not proof of duplicate entitlement.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. repeat.

QUEUE Age due date and response

Decision example. Clear delayed farmer-service requests.

$$past\ due = max(0, assessment\ date - due\ date), when\ open$$

Inputs and units. Received or defect observed; Recorded due date; Assessment date; Case/work closed; Documented critical unresolved condition; Responsible office or maintainer; Actual closure date when closed.

Worked example. DEC-DP04-004 — Laggala Pallegama — agrarian services, 2025. Received or defect observed = 2025-04-01; Recorded due date = 2025-06-01; Assessment date = 2025-06-30; Case/work closed = No; Documented critical unresolved condition = Unknown; Responsible office or maintainer = Proposed responsible office; Actual closure date when closed = . Open days past due = 29 days; Calendar age = 90 days. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Received or defect observed = 2025-03-31. Calendar age = 91 days. Without Received or defect observed, the required result is withheld.

Procedure. Open age = assessment date − received date. Days past due = max(0, assessment date − recorded due date) for open cases. Show documented critical conditions separately.

Limits. Example due dates are not legal service standards. Do not alter statutory deadlines by silently subtracting pauses, or infer severity from age alone.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. queue.

FRESH Observation freshness and completeness

Decision example. Repair incomplete soil and weather observation coverage.

$$\text{completeness} = 100 \times \text{valid received observations} \div \text{scheduled observations}$$

Inputs and units. Expected observations in the window (observations); Distinct valid observations (observations); Latest valid observation; Assessment date; Required observation interval (days).

Worked example. DEC-DP02-014 — Laggala Pallegama — monitoring network, 2025. Expected observations in the window = 30 observations; Distinct valid observations = 24 observations; Latest valid observation = 2025-06-28; Assessment date = 2025-06-30; Required observation interval = 1 days. Completeness = 80 %; Age of latest observation = 2 days; Missing observations = 6 observations. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Expected observations in the window = 31. Completeness = 77.419 %. Without Expected observations in the window, the required result is withheld.

Procedure. Completeness = 100 × valid / expected. Age = assessment date − latest valid observation; compare with the explicitly supplied interval.

Limits. A recent observation does not fill earlier gaps. Unknown schedule or observation time cannot establish freshness.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. fresh.

BALANCE Physical mass or water balance

Decision example. Review storage consequences of proposed releases.

$$closing\ storage = opening + inflows - releases/transfers - other\ outflows$$

Inputs and units. Opening storage (m³); All measured inflows and transfers in (m³); Releases and transfers out (m³); Evaporation and other outflows (m³); Independently observed closing storage (m³).

Worked example. DEC-DP05-004 — Laggala Pallegama — reservoir operation, 2025. Opening storage = 160,000 m³; All measured inflows and transfers in = 48,000 m³; Releases and transfers out = 35,000 m³; Evaporation and other outflows = 9,000 m³; Independently observed closing storage = 163,500 m³. Calculated closing storage = 164,000 m³; Observed minus calculated closing = -500 m³. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Opening storage = 160,001. Calculated closing storage = 164,001 m³. Without Opening storage, the required result is withheld.

Procedure. Calculated closing = opening + inflows − releases/transfers − other outflows. Residual = independently observed closing − calculated closing.

Limits. Use the same physical boundary, period and units. A residual is a reconciliation issue, not automatically a measured loss.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. cash balance, balance, aquifer balance, cash timing.

SURVIVAL Cohort survival and retention

Decision example. Target maintenance to poorly surviving planting cohorts.

Calculation or steps. lower = 100 × survivors ÷ cohort; upper = 100 × (survivors + unknown) ÷ cohort.

Inputs and units. Original cohort (plants); Known surviving original members (plants); Known failed original members (plants); Original members with unknown follow-up (plants); Replacements in a separate cohort (plants).

Worked example. DEC-DP07-003 — Laggala Pallegama — restoration survival, 2025. Original cohort = 450 plants; Known surviving original members = 351 plants; Known failed original members = 70 plants; Original members with unknown follow-up = 29 plants; Replacements in a separate cohort = 18 plants. Confirmed survival lower bound = 78 %; Survival upper bound = 84.444 %; Unknown follow-up = 29 plants. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Known surviving original members = 352; Known failed original members = 69. Confirmed survival lower bound = 78.222 %. Without Original cohort, the required result is withheld.

Procedure. Lower =100 × known survivors / original cohort. Upper =100 × (known survivors + unknown) / original cohort. Survivors + known failures + unknown = original cohort; replacements do not enter it.

Limits. These bounds account for unknown status; they are not statistical confidence intervals. Use actual follow-up dates and distinguish cohort membership from repeated visits.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. survival, business retention, followup retention.

ANOMALY Departure from a reviewed reference

Decision example. Issue evidence packages for local agricultural advisories.

$$\text{departure} = \text{current observation} - \text{comparable baseline}$$

Inputs and units. Comparable seasonal rainfall reference (mm); Observed seasonal rainfall (mm).

Worked example. DEC-DP02-013 — Laggala Pallegama — agroclimate advice, 2025. Comparable seasonal rainfall reference = 120 mm; Observed seasonal rainfall = 84 mm. Difference = -36 mm; Relative change = -30 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Comparable seasonal rainfall reference = 121. Difference = -37 mm. Without Comparable seasonal rainfall reference, the required result is withheld.

Procedure. Later/comparison value minus Comparable reference value. Relative change = 100 × difference / Comparable reference value when the earlier value is positive.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. anomaly.

SPELL Dry or wet spell duration

Decision example. Identify prolonged rainfall spells requiring advisory review.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$dry\ run\ continues\ only\ across\ observed\ consecutive\ dry\ days$$

Inputs and units. Observation day; Daily rainfall (mm); Example dry-day threshold (mm); Day classified as dry when rainfall.

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Daily rainfall = 4.04. Daily rainfall = 4.04 mm. Without Observation day, the required result is withheld.

Procedure. Count consecutive dated observations satisfying the stated rainfall rule. Missing days interrupt a spell; do not count unknown rain as zero.

Limits. The example threshold is configurable and is not an official warning criterion.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. spell.

SPI Standardized precipitation index

Decision example. Determine where historical rainfall supports SPI analysis.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$completeness\ =\ 100\ \times\ valid\ monthly\ observations\ \div\ expected\ observations$$

Inputs and units. Complete comparable baseline years (years); Expected monthly observations (observations); Valid comparable monthly observations (observations); Proposed accumulation period; Station history and series homogeneity checked; Distribution fit and zero-rainfall handling documented.

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Valid comparable monthly observations = 351. Baseline completeness = 97.5 %. Without Complete comparable baseline years, the required result is withheld.

Procedure. Show valid/expected monthly coverage and complete baseline years. Assess distribution fit, zero rainfall, timescale and homogeneity separately; no SPI is invented.

Limits. WMO recommends a long rainfall record, ideally at least30 years. Readiness counts alone do not validate the fitted SPI method.

Method sources. Validation required. S82 — WMO No 1090; SPI calculation and interpretation guidance; DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. spi.

LOSS Loss measurement by supply chain stage

Decision example. Select crop stages needing loss-reduction measures.

Calculation or steps. unaccounted = input − output − by-products − closing stock − transfers out; share = 100 × unaccounted ÷ input.

Inputs and units. Batch input on stated moisture basis (kg); Saleable output (kg); Usable by-product (kg); Closing stock (kg); Documented transfers out (kg).

Worked example. DEC-DP03-014 — Laggala Pallegama — post-harvest loss, 2025. Batch input on stated moisture basis = 1,200 kg; Saleable output = 970 kg; Usable by-product = 85 kg; Closing stock = 45 kg; Documented transfers out = 20 kg. Unaccounted physical share = 6.667 %; Unaccounted mass = 80 kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Batch input on stated moisture basis = 1,201. Unaccounted physical share = 6.744 %. Without Batch input on stated moisture basis, the required result is withheld.

Procedure. Unaccounted = input − saleable output − usable by-products − closing stock − transfers out. Share =100 × unaccounted / input.

Limits. Use a consistent moisture basis and process boundary. Unaccounted mass is not automatically avoidable food loss or spoilage.

Method sources. Validation required. S57 — Full method locator not established; DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. loss.

MARGIN Enterprise gross margin and break even

Decision example. Identify crop enterprises with weak gross margins.

$$\text{gross margin} = \text{saleable quantity} \times \text{realized unit price} - \text{variable cost}$$

Inputs and units. Saleable output (kg); Realized price (LKR/kg); Variable costs (LKR); Matching crop area (ha); Crop and saleable-output basis.

Worked example. DEC-DP03-017 — Laggala Pallegama — farm income, 2025. Saleable output = 4,500 kg; Realized price = 110 LKR/kg; Variable costs = 360,000 LKR; Matching crop area = 1 ha; Crop and saleable-output basis = Paddy rough rice / fictional one-hectare crop enterprise / same season. Enterprise gross margin = 135,000 LKR; Gross margin per hectare = 135,000 LKR/ha; Variable-cost break-even price = 80 LKR/kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Saleable output = 4,501. Enterprise gross margin = 135,110 LKR. Without Saleable output, the required result is withheld.

Procedure. Gross margin = saleable output × realized price − variable costs. Divide by matching hectares for margin/ha; variable-cost break-even price = variable costs / output.

Limits. Keep fixed costs, family-labour opportunity cost, taxes and financing identifiable. Gross margin is not net profit. Crop, prices and costs are fictional coherent enterprise assumptions. Gross margin excludes fixed and financing costs; it is not household income or net profit.

Method sources. Verified published formula. Enterprise gross margin. Institution publication — Food and Agriculture Organization of the United Nations. Chapter 4, Gross margin and section 4.7.1. https://www.fao.org/4/W7365E/w7365e07.htm. Per-hectare and variable-cost break-even outputs are algebraic rearrangements. Local costs, prices and interpretation still need confirmation.

Domain variants. margin.

SUITABILITY Expert reviewed suitability

Decision example. Shortlist land uses compatible with local conditions.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Land polygon; Land polygon evidence reference; soil depth; soil depth evidence reference; slope degrees; slope degrees evidence reference; rainfall; rainfall evidence reference; water access; water access evidence reference; crop requirements; crop requirements evidence reference.

Worked example. DEC-DP01-005 — Laggala Pallegama — agricultural suitability, 2025. Land polygon = Missing; Land polygon evidence reference = ; soil depth = Documented; soil depth evidence reference = Sample Laggala Pallegama field register / 2025; slope degrees = Documented; slope degrees evidence reference = Sample Laggala Pallegama field register / 2025; rainfall = Documented; rainfall evidence reference = Sample Laggala Pallegama field register / 2025; water access = Documented; water access evidence reference = Sample Laggala Pallegama field register / 2025; crop requirements = Documented; crop requirements evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Land polygon = Documented; Land polygon evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Land polygon, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. suitability.

QUALITY Applicable quality limit comparison

Decision example. Refer nutrient and acidity limitations for agronomic advice.

Calculation or steps. lower bound ≤ matching measured result ≤ upper bound.

Inputs and units. Parameter and applicable use; Measured result (pH); Example lower comparison bound (pH); Example upper comparison bound (pH); Original and limit unit; Sampling and analytical method/version; Limit source, version and use; Parameter, unit, use and averaging period match; Result is below a reporting/detection limit; Averaging interval, sampling depth or process basis; Sample and site reference; Sample observation date.

Worked example. DEC-DP02-005 - Laggala Pallegama — soil fertility, 2025. Parameter and applicable use = Soil pH; Measured result = 6.2 pH; Example lower comparison bound = 5.5 pH; Example upper comparison bound = 7.5 pH; Original and limit unit = pH; Sampling and analytical method/version = Sample laboratory method; Limit source, version and use = Fictional comparison bounds; not a regulatory limit; Parameter, unit, use and averaging period match = Yes; Result is below a reporting/detection limit = No; Averaging interval, sampling depth or process basis = Sample stated sampling/averaging basis; Sample and site reference = Not provided; Sample observation date = Not provided. Measured value = 6.2 pH. The supplied Soil pH result is 6.2 pH. Its stated comparison range is 5.5 to 7.5 pH. Within example comparison bounds. Next check: Obtain the missing evidence listed below. Realistic sample data.

Changed example. Measured result = 6.262; Sample and site reference = DEMO-SAMPLE-REFERENCE; Sample observation date = 2025-06-12. Measured value = 6.262 pH. Next check: Review the sample, analytical method and comparison basis. Without Parameter and applicable use, No usable result. Parameter and applicable use

Procedure. Compare the measured value only with matching parameter, unit, use and averaging period. Retain limit source/version and censored-result status.

Limits. Example bounds establish no compliance or diagnosis. Ambient, drinking-water, effluent, crop, food, air and noise standards are not interchangeable. A censored result is not an exact zero.

Method sources. Validation required. DD-LOCAL - SHARED domain decision contracts. Domain decision rules and matching fictional examples.

Domain variants. quality.

SCHEDULE Resource constrained scheduling

Decision example. Schedule priority land-use map updates.

$$duration = end\ date - start\ date;\ check\ windows\ and\ conflicts$$

Inputs and units. Required resource; Task start; Task end; Earliest permitted start; Latest permitted finish; Required resource effort (hours); Available resource effort (hours); Predecessor task reference; Mandatory permits and prerequisites.

Worked example. DEC-DP01-020 — Laggala Pallegama — survey scheduling, 2025. Required resource = Watershed field team; Task start = 2025-06-01; Task end = 2025-06-04; Earliest permitted start = 2025-05-28; Latest permitted finish = 2025-06-08; Required resource effort = 16 hours; Available resource effort = 24 hours; Predecessor task reference = None; Mandatory permits and prerequisites = Met. Planned duration = 3 days; Resource hours remaining = 8 hours. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Required resource effort = 16.16. Resource hours remaining = 7.84 hours. Without Required resource, the required result is withheld.

Procedure. Check start/end order, operating window, effort, predecessor completion and overlapping bookings for the same resource. A conflict is flagged; no optimal schedule is invented.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. schedule.

YIELD Productivity and efficiency

Decision example. Select improvements for low water productivity.

Calculation or steps productivity = matching output ÷ resource input; multiply by 100 only for the declared output share variants.

Inputs and units. Saleable crop output (kg); Matching irrigation water input (m³).

Worked example. DEC-DP02-010 — Laggala Pallegama — on-farm irrigation, 2025. Saleable crop output = 19,780 kg; Matching irrigation water input = 7,200 m³. Crop water productivity = 2.747 kg/m³. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Saleable crop output = 19,781. Crop water productivity = 2.747 kg/m³. Without Saleable crop output, the required result is withheld.

Procedure. Saleable crop output / Matching irrigation water input, for the same product, process and period.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. water productivity, crop yield, pump energy, drilling, labour, export unit value, resource efficiency, mass conversion, process energy.

DISTRIBUTION Distribution and outlier review

Decision example. Identify markets requiring closer price-distribution study.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$mean = sum(x) \div n;\ sample\ SD = sqrt(sum((x - mean)\text{^}2) \div (n - 1))$$

Inputs and units. Comparable observation (LKR/kg).

Worked example. DEC-DP25-004 — Laggala Pallegama — market comparisons, 2025. Comparable observation = 104 LKR/kg. Observed value = 104 LKR/kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Comparable observation = 105. Observed value = 105 LKR/kg. Without Comparable observation, the required result is withheld.

Procedure. Display observations in dated order. Sample SD uses n−1; coefficient of variation = 100 × SD / positive mean.

Limits. Match definitions, methods, grade, location and reference basis. Gaps are not joined. Descriptive variation is not a forecast, causal effect or significant trend.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. distribution.

CONCENTRATION Concentration and dependence

Decision example. Identify excessive dependence on few export markets.

Calculation or steps concentration = sum of squared fractional category shares.

Inputs and units. Recorded export value in this distinct destination (LKR).

Worked example. DEC-DP26-002 — India, 2025. Recorded export value in this distinct destination = 90,000,000 LKR. Category amount = 90,000,000 LKR; Share of selected total = 45 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Recorded export value in this distinct destination = 90,000,001. Concentration (0–1) = 0.289. Without Recorded export value in this distinct destination, the required result is withheld.

Procedure. Category share = 100 × category amount / total compatible category amounts. HHI = sum of squared fractional shares, displayed on a 0–1 scale.

Limits. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy. The fictional selected spice-export portfolio is not a national export total. No institutional concentration threshold is supplied.

Method sources. Verified published component. HHI concentration component. Government publication — United States Department of Justice. Definition and four-firm worked example. https://www.justice.gov/atr/herfindahl-hirschman-index. The screen uses fractional shares on a 0–1 scale, equivalent to the published percentage-share score divided by 10000. Local exposure categories and policy thresholds are not verified by this source.

Domain variants. concentration.

MATCH Supply demand compatibility matching

Decision example. Match verified exporter offers with buyer requirements.

$$\text{supply difference} = \text{available uncommitted supply} - \text{requested demand}$$

Inputs and units. Offered product and grade; Required product and grade; Available uncommitted quantity (kg); Required quantity (kg); Supply available from; Supply available until; Delivery window begins; Delivery window ends; Required quality, rights and conditions.

Worked example. DEC-DP26-008 — Laggala Pallegama — buyer matching, 2025. Offered product and grade = Cleaned dry pepper / whole grain; Required product and grade = Cleaned dry pepper / whole grain; Available uncommitted quantity = 1,200 kg; Required quantity = 1,500 kg; Supply available from = 2025-06-01; Supply available until = 2025-06-20; Delivery window begins = 2025-06-05; Delivery window ends = 2025-06-18; Required quality, rights and conditions = Met. Supply minus demand = -300 kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Available uncommitted quantity = 1,201. Supply minus demand = -299 kg. Without Offered product and grade, the required result is withheld.

Procedure. Compare the same specification and unit, uncommitted quantity and overlapping delivery windows. Keep mandatory quality and use conditions explicit.

Limits. A candidate match does not reserve stock, appoint a person, authorize waste reuse or form a contract.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. match, human match, plot match.

CAPACITY Capacity gap assessment

Decision example. Allocate staff to agrarian centres with workload gaps.

$$\text{capacity balance} = \text{usable staffed capacity} - \text{required capacity}$$

Inputs and units. Demand in the selected period (staff hours); Rated capacity for that period (staff hours); Unavailable or restricted capacity (staff hours).

Worked example. DEC-DP04-014 — Laggala Pallegama — service centres, 2025. Demand in the selected period = 150 staff hours; Rated capacity for that period = 180 staff hours; Unavailable or restricted capacity = 45 staff hours. Usable capacity minus demand = -15 staff hours; Usable capacity = 135 staff hours. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Demand in the selected period = 151. Usable capacity minus demand = -16 staff hours. Without Demand in the selected period, the required result is withheld.

Procedure. Usable capacity = rated capacity − documented unavailable capacity. Surplus/shortfall = usable − matching demand.

Limits. Match peak/average basis, time window, skill, staffing, accessibility and other binding constraints. One aggregate capacity does not override a safety constraint.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. capacity.

RISK Reviewed risk and control assessment

Decision example. Prepare response options from authorized hydrological evidence.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. River levels; River levels evidence reference; official forecast; official forecast evidence reference; flood exposure; flood exposure evidence reference; warning protocol; warning protocol evidence reference; evacuation constraints; evacuation constraints

evidence reference; Documented unresolved critical condition; Evidence observation date; Existing control and its evidence; Competent recipient.

Worked example. DEC-DP05-006 — Laggala Pallegama — flood readiness, 2025. River levels = Missing; River levels evidence reference = ; official forecast = Documented; official forecast evidence reference = Sample Laggala Pallegama field register / 2025; flood exposure = Documented; flood exposure evidence reference = Sample Laggala Pallegama field register / 2025; warning protocol = Documented; warning protocol evidence reference = Sample Laggala Pallegama field register / 2025; evacuation constraints = Documented; evacuation constraints evidence reference = Sample Laggala Pallegama field register / 2025; Documented unresolved critical condition = Unknown; Evidence observation date = 2025-06-30; Existing control and its evidence = Sample documented control; Competent recipient = Responsible specialist / duty authority. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. River levels = Documented; River levels evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without River levels, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Show the hazard, exposure and verified controls separately. No generic score, probability, diagnosis, site clearance or official warning is derived from a count.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. risk.

INSPECT Inspection and evidence checklist

Decision example. Follow up incomplete conservation works.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Work ID; Work ID evidence reference; approved design; approved design evidence reference; inspection items; inspection items evidence reference; photographs; photographs evidence reference; completion evidence; completion evidence evidence reference.

Worked example. DEC-DP02-012 — Laggala Pallegama — conservation inspection, 2025. Work ID = Missing; Work ID evidence reference = ; approved design = Documented; approved design evidence reference = Sample Laggala Pallegama field register / 2025; inspection items = Documented; inspection items evidence reference = Sample Laggala Pallegama field register / 2025; photographs = Documented; photographs evidence reference = Sample Laggala Pallegama field register / 2025; completion evidence = Documented; completion evidence evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Work ID = Documented; Work ID evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Work ID, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. inspect.

ELIGIBILITY Rules based referral for authorized determination

Decision example. Refer land-conversion applications for determination.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Application ID; Application ID evidence reference; current use; current use evidence reference; proposed use; proposed use evidence reference; ownership evidence;

ownership evidence evidence reference; applicable rules; applicable rules evidence reference; objections; objections evidence reference.

Worked example. DEC-DP01-006 — Laggala Pallegama — land conversion, 2025. Application ID = Missing; Application ID evidence reference = ; current use = Documented; current use evidence reference = Sample Laggala Pallegama field register / 2025; proposed use = Documented; proposed use evidence reference = Sample Laggala Pallegama field register / 2025; ownership evidence = Documented; ownership evidence evidence reference = Sample Laggala Pallegama field register / 2025; applicable rules = Documented; applicable rules evidence reference = Sample Laggala Pallegama field register / 2025; objections = Documented; objections evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Application ID = Documented; Application ID evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Application ID, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. eligibility.

FINANCE Discounted cash flow appraisal

Decision example. Appraise reservoir rehabilitation cash-flow alternatives.

Calculation or steps NPV = sum of annual net cash flow ÷ (1 + discount rate fraction) raised to the year, for years 1 to n, less initial investment.

Inputs and units. Initial investment (LKR); Net cash flow year1 (LKR); Net cash flow year2 (LKR); Net cash flow year3 (LKR); Net cash flow year4 (LKR); Net cash flow year5 (LKR); Residual value at end of year5 (LKR); Example discount rate (%).

Worked example. DEC-DP05-017 — Base cash-flow scenario, 2025. Initial investment = 2,400,000 LKR; Net cash flow year1 = 400,000 LKR; Net cash flow year2 = 550,000 LKR; Net cash flow year3 = 680,000 LKR; Net cash flow year4 = 720,000 LKR; Net cash flow year5 = 760,000 LKR; Residual value at end of year5 = 120,000 LKR; Example discount rate = 8 %. Five-year net present value = 109,847.353 LKR. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Initial investment = 2,400,001. Five-year net present value = 109,846.353 LKR. Without Initial investment, the required result is withheld.

Procedure. NPV = −initial investment + sum of year1…5 net cash flows discounted at the stated annual rate, including residual value once in year5.

Limits. Match currency, price year, real/nominal basis and cash-flow timing. The example rate and five-year horizon are assumptions, not institutional financing terms; no credit approval follows.

Method sources. Verified published formula. Discounted cash-flow NPV. Institution publication — Food and Agriculture Organization of the United Nations. Sections 2.2.2 and 2.2.3, discounting and Net Present Value. https://www.fao.org/4/w8212e/w8212e06.htm. The five-year horizon, discount rate and cash assumptions are local settings. Verification does not approve an investment or loan.

Domain variants. finance.

DEBT Debt service assessment

Decision example. Assess debt-service coverage under lender-defined scenarios.

debt service coverage = cash available for debt service ÷ scheduled principal and interest

Inputs and units. Cash available for debt service (LKR); Scheduled principal for same period (LKR); Scheduled interest for same period (LKR); Repayment and cash-flow period.

Worked example. DEC-DP38-002 — Laggala Pallegama — repayment capacity, 2025. Cash available for debt service = 860,000 LKR; Scheduled principal for same period = 500,000 LKR; Scheduled interest for same period = 120,000 LKR; Repayment and cash-flow period = Sample annual period. Debt-service coverage = 1.387 ratio; Cash after scheduled debt service = 240,000 LKR. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Cash available for debt service = 860,001. Debt-service coverage = 1.387 ratio. Without Cash available for debt service, the required result is withheld.

Procedure. Debt-service coverage = cash available / (principal + interest) for the same period. Zero scheduled debt has no coverage ratio.

Limits. No lender covenant, credit decision, borrower eligibility or legal consequence is inferred. Seasonal repayment timing and downside scenarios remain explicit.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. debt.

FUNDING Funding and commitment reconciliation

Decision example. Reconcile provincial agriculture funding and verified activities.

$$funding\ gap\ =\ financing\ need\ -\ confirmed\ commitments$$

Inputs and units. Approved financing need (LKR); Confirmed commitments (LKR); Funds actually disbursed (LKR); Verified eligible expenditure (LKR).

Worked example. DEC-DP10-017 — Laggala Pallegama — budget delivery, 2025. Approved financing need = 3,500,000 LKR; Confirmed commitments = 2,650,000 LKR; Funds actually disbursed = 1,640,000 LKR; Verified eligible expenditure = 1,200,000 LKR. Unfunded need = 850,000 LKR; Committed but not disbursed = 1,010,000 LKR; Disbursed but not spent = 440,000 LKR. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Approved financing need = 3,500,001. Unfunded need = 850,001 LKR. Without Approved financing need, the required result is withheld.

Procedure. Unfunded = need − commitments. Undisbursed = commitments − disbursements. Unspent = disbursements − eligible spending.

Limits. Keep commitments, cash receipts, expenditure and verified physical outputs separate. Negative balances flag overcommitment or reconciliation; no automatic accounting adjustment.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. funding.

CARBON Carbon stock and stock change assessment

Decision example. Review inventory evidence for carbon-stock estimates.

carbon stock change = (current carbon density − baseline carbon density) × inventory area

Inputs and units. Earlier carbon density (t C/ha); Later carbon density (t C/ha); Same inventory area (ha); Included pools and allometry references.

Worked example. DEC-DP07-013 — Laggala Pallegama — forest carbon, 2025. Earlier carbon density = 100 t C/ha; Later carbon density = 90 t C/ha; Same inventory area = 85 ha; Included pools and allometry references = Sample matching biomass pools; source model required. Carbon stock change = -850 t C; Carbon-density change = -10 t C/ha. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Earlier carbon density = 101. Carbon stock change = -935 t C. Without Earlier carbon density, the required result is withheld.

Procedure. (Later carbon density − earlier carbon density) × same inventory area, with identical pools, method and boundaries.

Limits. Inventory plots, allometry and uncertainty remain required evidence. Stock change is not an issued carbon credit, additionality test or payable service.

Method sources. Verified published component. Carbon stock-difference component. Institution publication — Intergovernmental Panel on Climate Change. Section 2.3.1.1, equation 2.8, stock-difference method. https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_02_Ch2_Generic.pdf. The screen reports the period total. IPCC annualisation requires elapsed years. Pools, inventory inputs and local application still need confirmation.

Domain variants. carbon.

SOILCARBON Soil carbon stock comparison

Decision example. Select sites for comparable soil-carbon monitoring.

Calculation or steps soil carbon stock = carbon percent ÷ 100 × bulk density × depth × 10000 × (1 − coarse fragment percent ÷ 100).

Inputs and units. Soil organic carbon (%); Fine-earth bulk-density basis (t/m³); Sample depth (m); Coarse-fragment volume fraction (%); Sampling depth, design and density convention.

Worked example. DEC-DP02-004 — Laggala Pallegama — soil carbon, 2025. Soil organic carbon = 1.8 %; Fine-earth bulk-density basis = 1.25 t/m³; Sample depth = 0.3 m; Coarse-fragment volume fraction = 12 %; Sampling depth, design and density convention = Sample matched depth and fine-earth convention. Soil-carbon stock = 59.4 t C/ha. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Soil organic carbon = 1.818. Soil-carbon stock = 59.994 t C/ha. Without Soil organic carbon, the required result is withheld.

Procedure. (Organic carbon% /100) × bulk density × depth ×10000 × (1−coarse% /100). Confirm that the density and coarse-fragment conventions are mutually consistent.

Limits. A carbon concentration is not a stock. Change comparisons require consistent depth/mass, sampling, density convention and uncertainty review.

Method sources. Verified published formula. Soil-carbon stock with volume correction. Institution publication — Intergovernmental Panel on Climate Change. Section 4.3.3.5.4, equation 4.3.3, printed page 4.106, PDF page 18. https://www.ipcc-nggip.iges.or.jp/public/gpglulucf/gpglulucf_files/Chp4/Chp4_3_Projects.pdf. The screen converts carbon percent to a fraction and uses the published coarse-fragment volume convention. Sampling and bulk-density conventions still need confirmation.

Domain variants. soilcarbon.

BIODIVERSITY Comparable biodiversity assessment

Decision example. Select comparable forest biodiversity surveys.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

display observed species richness alongside survey effort

Inputs and units. Observed distinct species (species); Survey effort (hours); Survey protocol and version; Survey season and taxonomic scope; All planned survey visits completed.

Worked example. DEC-DP07-018 — Laggala Pallegama — biodiversity monitoring, 2025. Observed distinct species = 28 species; Survey effort = 18 hours; Survey protocol and version = Sample protocol1; Survey season and taxonomic scope = Sample matched season / taxon group; All planned survey visits completed = Yes. Observed richness = 28 species; Recorded effort = 18 hours. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Observed distinct species = 29. Observed richness = 29 species. Without Observed distinct species, the required result is withheld.

Procedure. Show distinct observed species with survey effort, protocol, season and completed visits. No correction for detection is silently inferred.

Limits. Observed richness is not population size or occupancy. Comparable effort alone does not remove detection bias or establish a biodiversity trend.

Method sources. Validation required. DD-GBIF — Version1.0.2, sections5.4 to5.7 and7.3; DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. biodiversity.

IMPACT Outcome and attribution evaluation

Decision example. Evaluate conservation practice outcomes.

Calculation or steps difference in differences = (treatment after − treatment before) − (comparison after − comparison before).

Inputs and units. Treatment Measured runoff before (mm/season); Treatment Measured runoff after (mm/season); Comparison Measured runoff before (mm/season); Comparison Measured runoff after (mm/season); Study design and comparability evidence; Outcome definition, method and reference basis.

Worked example. DEC-DP02-016 — Laggala Pallegama — demonstration trials, 2025. Treatment Measured runoff before = 42 mm/season; Treatment Measured runoff after = 59 mm/season; Comparison Measured runoff before = 39 mm/season; Comparison Measured runoff after = 46 mm/season; Study design and comparability evidence = Missing; Outcome definition, method and reference basis = Measured runoff /example matching definition1. Difference in changes = 10 mm/season. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Treatment Measured runoff before = 42.42. Difference in changes = 9.58 mm/season. Without Treatment Measured runoff before, the required result is withheld.

Procedure. (Treatment after−before) − (comparison after−before), using the same outcome definition and periods.

Limits. The arithmetic alone does not establish causation. Design, parallel trends, confounding, attrition, uncertainty and adverse effects need appropriate evidence.

Method sources. Verified published formula. Difference-in-differences arithmetic. Institution publication — World Bank. Chapter 7, table 7.2, printed page 140, PDF page 170. https://documents1.worldbank.org/curated/en/698441474029568469/pdf/Impact-evaluation-in-practice.pdf. The formula is verified. Causal interpretation still requires a defensible study design, comparison and assumptions.

Domain variants. impact, study design.

PRICE Comparable market price analysis

Decision example. Investigate large comparable farmgate wholesale and retail spreads.

$$net\ quote\ return\ =\ sell\ \times\ (1\ -\ loss\ fraction)\ -\ buy\ -\ transfer\ cost$$

Inputs and units. Comparable purchase quotation (LKR/kg); Comparable selling quotation (LKR/kg); Non-overlapping transfer costs (LKR/kg); Expected saleable mass loss (%); Product, grade and price basis.

Worked example. DEC-DP25-001 — Laggala Pallegama — price spreads, 2025. Comparable purchase quotation = 180 LKR/kg; Comparable selling quotation = 222 LKR/kg; Non-overlapping transfer costs = 20 LKR/kg; Expected saleable mass loss = 5 %; Product, grade and price basis = Tomato / same stated grade / per purchased kilogram. Quoted net return per purchased kg = 10.9 LKR/kg; Unadjusted quoted spread = 42 LKR/kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Comparable purchase quotation = 181. Quoted net return per purchased kg = 9.9 LKR/kg. Without Comparable purchase quotation, the required result is withheld.

Procedure. Quoted spread = sell−buy. Net scenario return per purchased kg = sell×(1−loss%/100)−buy−matching transfer costs.

Limits. Use matching grade, price date, currency, mass basis and payment terms. This quotation scenario excludes unlisted costs and is not realized profit or a forecast.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. price, buyer offer, procurement offer.

VOLATILITY Price variability and seasonality

Decision example. Prioritize commodities with unusual price variability.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$sample\ CV\ =\ 100\ \times\ sample\ SD\ \div\ positive\ mean$$

Inputs and units. Comparable observation (LKR/kg).

Worked example. DEC-DP25-002 — Laggala Pallegama — price volatility, 2025. Comparable observation = 104 LKR/kg. Observed value = 104 LKR/kg. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Comparable observation = 105. Observed value = 105 LKR/kg. Without Comparable observation, the required result is withheld.

Procedure. Display observations in dated order. Sample SD uses n−1; coefficient of variation = 100 × SD / positive mean.

Limits. Match definitions, methods, grade, location and reference basis. Gaps are not joined. Descriptive variation is not a forecast, causal effect or significant trend.

Method sources. Verified published formula. Sample coefficient of variation. Government publication — National Institute of Standards and Technology United States. Description, sample coefficient of variation and ratio-scale restrictions. https://www.itl.nist.gov/div898/software/dataplot/refman2/auxillar/coefvari.htm. Use a meaningful zero and positive mean. Local series selection and decision limits still need confirmation.

Domain variants. volatility.

INVENTORY Stock expiry and reorder planning

Decision example. Plan seed procurement against seasonal demand.

available stock = usable stock − confirmed commitments

Inputs and units. Physical stock (kg seed); Quarantined stock (kg seed); Expired stock (kg seed); Committed usable stock (kg seed); Additional demand (kg seed); Supplier lead time (days); Remaining shelf life of usable stock (days).

Worked example. DEC-DP03-010 — Laggala Pallegama — seed supply, 2025. Physical stock = 1,200 kg seed; Quarantined stock = 100 kg seed; Expired stock = 50 kg seed; Committed usable stock = 740 kg seed; Additional demand = 500 kg seed; Supplier lead time = 14 days; Remaining shelf life of usable stock = 30 days. Uncommitted usable stock = 310 kg seed; Additional demand gap = 190 kg seed. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Physical stock = 1,201. Uncommitted usable stock = 311 kg seed. Without Physical stock, the required result is withheld.

Procedure. Usable = physical−quarantined−expired (non-overlapping groups). Available = usable−commitments. Additional gap = max(0, new demand−available).

Limits. Stock must be compatible by item, lot, condition, expiry and delivery window. Do not allocate quarantined/expired stock or silently erase overcommitment.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. inventory.

MAINTENANCE Asset maintenance prioritization

Decision example. Prioritize repair packages within engineering and budget limits.

$$past\ due\ =\ max(0, assessment\ date\ -\ due\ date), when\ open$$

Inputs and units. Received or defect observed; Recorded due date; Assessment date; Case/work closed; Documented critical unresolved condition; Responsible office or maintainer; Actual closure date when closed.

Worked example. DEC-DP05-009 — Laggala Pallegama — canal rehabilitation, 2025. Received or defect observed = 2025-04-01; Recorded due date = 2025-06-01; Assessment date = 2025-06-30; Case/work closed = No; Documented critical unresolved condition = Unknown; Responsible office or maintainer = Proposed responsible office; Actual closure date when closed = . Open days past due = 29 days; Calendar age = 90 days. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Received or defect observed = 2025-03-31. Calendar age = 91 days. Without Received or defect observed, the required result is withheld.

Procedure. Open age = assessment date − received date. Days past due = max(0, assessment date − recorded due date) for open cases. Show documented critical conditions separately.

Limits. Example due dates are not legal service standards. Do not alter statutory deadlines by silently subtracting pauses, or infer severity from age alone.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. maintenance.

FLOW Process progression and conversion

Decision example. Follow up farmers who received technical guidance.

completion share = 100 × completed cases ÷ entered cases

Inputs and units. Distinct farmers receiving the stated guidance (cases); Those farmers reached at follow-up (cases); Those farmers with the stated verified follow-up outcome (cases); Farmers with unknown follow-up (cases).

Worked example. DEC-DP03-019 — Laggala Pallegama — advisory effectiveness, 2025. Distinct farmers receiving the stated guidance = 180 cases; Those farmers reached at follow-up = 132 cases; Those farmers with the stated verified follow-up outcome = 96 cases; Farmers with unknown follow-up = 12 cases. Verified completion share = 53.333 %; Not verified complete = 84 cases; Original cases awaiting review = 48 cases; Reviewed cases not confirmed complete = 36 cases. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Distinct farmers receiving the stated guidance = 181. Verified completion share = 53.039 %. Without Distinct farmers receiving the stated guidance, the required result is withheld.

Procedure. 100 × verified completed members / original unique cohort. Keep unknown follow-up separate; stages are nested, not independent populations.

Limits. Attendance, receipt, adoption, delivered service and outcomes are distinct stages. Repeated visits must not become new people. The follow-up outcome and observation window must be recorded; receipt of advice is not adoption. The original cohort and nested review/completion stages must match; an uncompleted record is not automatically overdue. Unknown follow-up is a subset, not an extra stage.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. flow.

ROUTE Access and logistics comparison

Decision example. Compare access improvements for isolated planning areas.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

display supplied route distance, travel time and vehicle capacity; no route is calculated here

Inputs and units. Supplied journey distance from a documented route survey (km); Supplied journey duration; not calculated here (minutes); Usable vehicle/team capacity (units); Required capacity (units); Access, closures and operating conditions; Operating and service window.

Worked example. DEC-DP01-014 — Laggala Pallegama — service access, 2025. Supplied journey distance from a documented route survey = 24 km; Supplied journey duration; not calculated here = 65 minutes; Usable vehicle/team capacity = 18 units; Required capacity = 15 units; Access, closures and operating conditions = Unresolved; Operating and service window = Sample operating window. Estimated travel time = 65 minutes; Capacity minus demand = 3 units. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Supplied journey duration; not calculated here = 75. Estimated travel time = 75 minutes. Without Supplied journey distance from a documented route survey, the required result is withheld.

Procedure. Compare supplied route times/distances, usable capacity and documented access/window constraints. Display feasible candidates; no route optimization is implied.

Limits. Straight-line distance is not a road route. Example routes establish no current road status, emergency clearance or safe evacuation instruction. This decision view compares supplied journeys. It does not calculate a route or run a coordinate-based analysis.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. route.

PES Environmental service verification and payment proposal

Decision example. Prepare payment proposals only from approved verified conditions.

$$annual\ proposal\ =\ min(accepted\ hectares\ \times\ annual\ rate, annual\ cap)$$

Inputs and units. Agreement and version; Who carries out the work; Who funds the agreement; Area meeting the annual agreement conditions (ha); Illustrative annual rate per accepted hectare (LKR/ha/year); Annual cap for this agreement (LKR/year); Amount already paid for these same annual conditions (LKR); Independent field-check record documented; Rights and voluntary

agreement documented; Funding confirmation documented; Field-check and rate references; Confirmed funds available for this annual proposal (LKR).

Worked example. DEC-DP39-011 — Laggala Pallegama farmer group, 2025. Agreement and version = Laggala Pallegama riverbank care / draft 1; Who carries out the work = Laggala Pallegama farmer group — example; Who funds the agreement = Downstream water-user fund — example; Area meeting the annual agreement conditions = 20 ha; Illustrative annual rate per accepted hectare = 12,500 LKR/ha/year; Annual cap for this agreement = 300,000 LKR/year; Amount already paid for these same annual conditions = 0 LKR; Independent field-check record documented = Documented; Rights and voluntary agreement documented = Documented; Funding confirmation documented = Missing; Field-check and rate references = Example field record / draft annual rate schedule 1; Confirmed funds available for this annual proposal = 200,000 LKR. Calculated annual proposal before payments = 250,000 LKR; Proposal less amount already paid = 250,000 LKR; Amount ready to refer for authorisation = Unavailable LKR. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Area meeting the annual agreement conditions = 21. Calculated annual proposal before payments = 262,500 LKR. Without Agreement and version, the required result is withheld.

Procedure. Annual proposal = min(accepted hectares × annual rate, annual cap). Subtract payments for the same agreement and year. Refer an amount only when required evidence is documented. This screen makes no payment.

Limits. Illustrative watershed-care agreement. Contract rules, rate, payer, monitoring and safeguards need confirmation in Institution review. Maintained hectares do not establish a measured water-quality improvement.

Method sources. Validation required. S60 — Full method locator not established; S61 — Full method locator not established; DD-LOCAL — Domain decision rules and matching fictional examples; PES-FAO — ESA Working Paper 11-20; section 2 printed pages 3–5; sections 3 and 4 on evidence, costs and equity.

PES decisions. DEC-DP39-002 checks physical work only. DEC-DP39-011 calculates the proposal. The 20 separate questions and required evidence are listed in section 6 4 and the decision register.

ACCOUNT Physical and monetary ecosystem accounting

Decision example. Prepare separate physical service accounts.

$$closing\ extent\ =\ opening\ extent\ +\ additions\ -\ reductions$$

Inputs and units. Opening ecosystem extent (ha); Extent additions (ha); Extent reductions (ha); Measured service flow in the period (m³/year); Service definition and flow unit; Separate monetary valuation method/price year.

Worked example. DEC-DP12-012 — Laggala Pallegama — ecosystem services, 2025. Opening ecosystem extent = 750 ha; Extent additions = 92 ha; Extent reductions = 48 ha; Measured service flow in the period = 120,000 m³/year; Service definition and flow unit = Fictional annual water-provisioning flow to the stated users / m³/year / same accounting boundary; Separate monetary valuation method/price year = Not provided. Closing ecosystem extent = 794 ha; Physical service flow = 120,000 m³/year. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Opening ecosystem extent = 751. Closing ecosystem extent = 795 ha. Without Opening ecosystem extent, the required result is withheld.

Procedure. Closing extent = opening + additions − reductions. Record the period service flow separately; do not add a flow to an asset stock or multiply by an arbitrary PES rate.

Limits. Keep extent, condition, physical service flows and monetary accounts distinct. A defensible valuation method, price year and accounting boundary are needed for monetary results. Ecosystem extent in hectares and annual water-provisioning flow in cubic metres are separate accounts. A measured flow does not identify its ecosystem contribution or assign a monetary value.

Method sources. Validation required. S58 — Full method locator not established; DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. account.

CONSENT Consultation and unresolved condition review

Decision example. Follow up unresolved tenure objections.

response share = 100 × participants responding ÷ invited participants

Inputs and units. Distinct relevant people invited (people); People who responded (people); Unresolved issues (issues); Proposal/version being discussed; Required participation channels

accessible; Reference for unresolved issues and their progress; Evidence about participation barriers.

Worked example. DEC-DP01-011 - Laggala Pallegama — tenure conflicts, 2025. Distinct relevant people invited = 95 people; People who responded = 68 people; Unresolved issues = 16 issues; Proposal/version being discussed = Sample proposal1; Required participation channels accessible = Unknown; Reference for unresolved issues and their progress = Not provided; Evidence about participation barriers = Not provided. Unresolved issues = 16 issues; Response share = 71.579 %. 16 unresolved issue(s). 71.579% responded; response is not consent. Review the issue references and participation barriers. Next check: Obtain the missing evidence listed below. Realistic sample data.

Changed example. Distinct relevant people invited = 96; Reference for unresolved issues and their progress = DEMO-ISSUE-REGISTER; Evidence about participation barriers = DEMO-PARTICIPATION-REVIEW. Unresolved issues = 16 issues; Response share = 70.833 %. Next check: Review the unresolved issues and participation barriers. Without Distinct relevant people invited, No usable result. Distinct relevant people invited

Procedure. 100 × distinct respondents / invited people. Record unresolved issues individually; one respondent may raise several issues.

Limits. Response, attendance and silence are not consent. Participation does not transfer decision authority or settle rights.

Method sources. Validation required. DD-LOCAL - SHARED domain decision contracts. Domain decision rules and matching fictional examples.

Domain variants. consent.

ACCESS Permission and publication review

Decision example. Check source rights and approval before publishing products.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Product version; Product version evidence reference; forecast validity; forecast validity evidence reference; review; review evidence reference; publication authority; publication authority evidence reference; license; license evidence reference; audience; audience evidence reference.

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Product version = Documented; Product version evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Product version, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. access.

METADATA Dataset fitness and interoperability

Decision example. Correct incomplete land-use layer metadata.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Layer ID; Layer ID evidence reference; scale; scale evidence reference; coordinate system; coordinate system evidence reference; classification edition; classification edition evidence reference; owner; owner evidence reference; survey date; survey date evidence reference.

Worked example. DEC-DP01-019 — Laggala Pallegama — map documentation, 2025. Layer ID = Missing; Layer ID evidence reference = ; scale = Documented; scale evidence reference = Sample Laggala Pallegama field register / 2025; coordinate system = Documented; coordinate system evidence reference = Sample Laggala Pallegama field register / 2025; classification edition = Documented; classification edition evidence reference = Sample Laggala Pallegama field register / 2025; owner = Documented; owner evidence reference = Sample Laggala Pallegama field register / 2025; survey date = Documented; survey date evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Layer ID = Documented; Layer ID evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Layer ID, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. metadata.

REPRODUCE Reproducibility and result verification

Decision example. Review reproducibility of soil and land assessments.

reproduction difference = reproduced result − expected result

Inputs and units. Earlier/source value (t/ha/year); Independently reproduced value (t/ha/year); Original measurement unit; Comparison measurement unit; Compared measure and definition; Documented absolute comparison tolerance (t/ha/year); Expected input/method version; Reproduced input/method version; Original result creator; Independent reproducer.

Worked example. DEC-DP02-020 — Laggala Pallegama — model assurance, 2025. Earlier/source value = 100 t/ha/year; Independently reproduced value = 90 t/ha/year; Original measurement unit = Sample matching unit; Comparison measurement unit = Sample matching unit; Compared measure and definition = Sample comparable t/ha/year measure; same input scope; Documented absolute comparison tolerance = 0.01 t/ha/year; Expected input/method version = Sample input1 /method1; Reproduced input/method version = Sample input1 /method1; Original result creator = Preparation officer; Independent reproducer = Independent checking officer. Difference = -10 t/ha/year; Relative change = -10 %. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Earlier/source value = 101. Difference = -11 t/ha/year. Without Earlier/source value, the required result is withheld.

Procedure. Reproduced minus expected result, within an explicitly supplied absolute tolerance, using the same exact input/method versions and a separate checker. Retain originals, code, parameters and environment evidence.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. reproduce.

CLASSIFY Controlled classification and taxonomy review

Decision example. Reconcile inconsistent land and water system codes.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Source system labels; Source system labels evidence reference; official system registry; official system registry evidence reference; geometry edition; geometry edition evidence reference; steward decisions; steward decisions evidence reference.

Worked example. DEC-DP06-020 — Laggala Pallegama — system reporting, 2025. Source system labels = Missing; Source system labels evidence reference = ; official system registry = Documented; official system registry evidence reference = Sample Laggala Pallegama field register / 2025; geometry edition = Documented; geometry edition evidence reference = Sample Laggala Pallegama field register / 2025; steward decisions = Documented; steward decisions evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Source system labels = Documented; Source system labels evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Source system labels, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. classify.

RELIABILITY Service reliability

Decision example. Prioritize aviation meteorological service interruptions.

availability = 100 × (scheduled service time − verified downtime) ÷ scheduled service time

Inputs and units. Scheduled observation window (hours); Union of qualifying outage intervals (hours); Eligible service requests (requests); Failed eligible requests (requests); Measured data-feed transport response time; separate from observation availability (ms).

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Scheduled observation window = 169. Time availability = 92.308 %. Without Scheduled observation window, the required result is withheld.

Procedure. Time availability =100 ×(scheduled−non-overlapping outage)/scheduled. Request success =100 ×(requests−failed)/requests. Response time is a separate measure.

Limits. State maintenance exclusions, operating window, probe, workload and service objective. Observed response time is not a p95 claim unless the percentile is actually measured. These are fictional service-monitoring returns for named airport contexts. No aviation service, warning feed or endpoint is contacted.

Method sources. Validation required. DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. reliability, supply outages.

NRW Non revenue water diagnosis

Decision example. Prioritize systems with large unexplained water balances.

Calculation or steps non revenue water = system input − billed authorized consumption; estimated real loss = input − billed − unbilled authorized use − apparent losses.

Inputs and units. Corrected system input (m³); Billed authorized consumption (m³); Unbilled authorized consumption (m³); Estimated apparent losses (m³).

Worked example. DEC-DP22-001 — Laggala Pallegama — non-revenue water, 2025. Corrected system input = 80,000 m³; Billed authorized consumption = 57,000 m³; Unbilled authorized consumption = 3,200 m³; Estimated apparent losses = 4,500 m³. Non-revenue water = 23,000 m³; NRW share = 28.75 %; Water losses = 19,800 m³; Residual real-loss estimate = 15,300 m³. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Corrected system input = 80,001. Non-revenue water = 23,001 m³. Without Corrected system input, the required result is withheld.

Procedure. NRW=input−billed authorized use. Water losses=NRW−unbilled authorized use. Residual real loss=water losses−estimated apparent losses, only when all components are available.

Limits. NRW is not all leakage. An unknown apparent-loss estimate keeps residual real loss unavailable. Meter uncertainty and matching time/zone boundaries matter.

Method sources. Verified published component. IWA water-balance components. Institution publication — Asian Development Bank. Figure 4, printed page 15; Annex 1 Water Balance Definitions, printed pages 39–41, PDF pages 47–49. https://www.adb.org/sites/default/files/publication/27473/reducing-nonrevenue-water.pdf. Apparent-loss estimates and the residual real-loss estimate remain local inputs with measurement uncertainty.

Domain variants. billed water, leakage evidence.

STAR Specialist species threat and restoration appraisal

Decision example. Refer candidate conservation actions for specialist threat assessment.

Current rule. Use the exact DOMAIN-1 decision variant; the representative example does not establish all local applications.

$$evidence\ gaps\ =\ count(missing\ or\ conflicting\ required\ items)$$

Inputs and units. Species range; Species range evidence reference; threats; threats evidence reference; action feasibility; action feasibility evidence reference; threat reduction evidence; threat reduction evidence evidence reference; uncertainty; uncertainty evidence reference.

Worked example. DEC-DP19-004 — Laggala Pallegama — threat reduction, 2025. Species range = Missing; Species range evidence reference = ; threats = Documented; threats evidence reference = Sample Laggala Pallegama field register / 2025; action feasibility = Documented; action feasibility evidence reference = Sample Laggala Pallegama field register / 2025; threat reduction evidence = Documented; threat reduction evidence evidence reference = Sample Laggala Pallegama field register / 2025; uncertainty = Documented; uncertainty evidence reference = Sample Laggala Pallegama field register / 2025. Evidence gaps = 1 items. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Species range = Documented; Species range evidence reference = Fictional changed-evidence reference / version 2. Evidence gaps = 0 items. Without Species range, the required result is withheld.

Procedure. Check each required item and retain its reference. A documented item is not a scientific, legal or institutional approval.

Limits. Evidence completeness alone cannot establish suitability, eligibility, safety, permission or method validity.

Method sources. Validation required. S71 — Scientific underpinning and approach; full STAR calculation is not implemented; DD-LOCAL — Domain decision rules and matching fictional examples.

Domain variants. star.

SURVEY Design based statistical estimation

Decision example. Select defensible geographic poverty and income comparisons.

Calculation or steps weighted mean = sum of weight × observation ÷ sum of weights.

Inputs and units. Final design weight (weight); Observed variable (LKR/household); Stratum and primary sampling unit.

Worked example. DEC-DP20-002 — Laggala Pallegama — poverty reporting, 2025. Final design weight = 2 weight; Observed variable = 68,000 LKR/household; Stratum and primary sampling unit = Fictional sampling stratum / Laggala Pallegama cluster. Observed variable = 68,000 LKR/household. Realistic sample data; the exact evidence fields remain in the decision register.

Changed example. Final design weight = 2.02. Weighted mean = 78,678.643. Without Final design weight, the required result is withheld.

Procedure. Weighted mean = sum(weight×observation)/sum(weight). Estimated total = sum(weight×observation), only for weights and population coverage suitable for that estimand.

Limits. Retain sampling frame, strata, clusters, nonresponse and calibration. The prototype does not invent complex-design variance, confidence intervals or small-area precision.

Method sources. Verified published component. Weighted estimation component. Institution publication — United Nations Statistics Division. Chapter 9, paragraphs 38 and 39, printed page 9-9, PDF page 417; Chapter 8 weighting. https://unstats.un.org/UNSDWebsite/statcom/session_57/documents/BG-3k-Handbook_on_Surveys_of_Household_and_Individuals-E.pdf. Local weights, population coverage, design variance and ratio-yield interpretation still need confirmation. Positive illustrative weights do not demonstrate every calibration design.

Domain variants. weighted proportion, survey, survey precision, weighted area production.

FORECAST Forecast verification

Decision example. Review forecast errors before operational changes.

Calculation or steps error = forecast − observed; RMSE = square root of mean squared errors.

Inputs and units. Archived forecast rainfall (mm); Verifying observed rainfall (mm); Forecast lead time (hours); Forecast issue date; Forecast valid date.

Meteorology examples use the revised dated records and task-specific definitions in Weather data and Meteorology decisions below.

Changed example. Archived forecast rainfall = 48.48. Forecast minus observed = 6.72 mm. Without Archived forecast rainfall, the required result is withheld.

Procedure. Error=forecast−observed. Matched-pair RMSE=sqrt(mean(error²)); MAE=mean(abs(error)); bias=mean(error).

Limits. Match lead, valid interval, location, variable, units and observation quality. Do not verify a forecast against data available when it was issued. This date-level example supports whole-day lead times only. Issuance, verification date and lead must agree; sub-day verification needs timestamps.

Method sources. Verified published formula. Matched-pair RMSE. Government publication — Environment and Climate Change Canada. Displayed RMSE equation and definitions of forecast, observation and verification count. https://weather.gc.ca/verification/scores/rmse_e.html. Local verification periods, observation quality and forecast applicability still need confirmation.

Domain variants. forecast, probability forecast.

Weather data and Meteorology decisions

Save source weather data once and reuse matching records across decisions. The Meteorology decision definitions below supersede earlier generic examples for DEC-DP08-001 to DEC-DP08-020. Other decision definitions are unchanged.

Record	Information to retain
Stations	Official station ID, name, owner, location, elevation and dated station or instrument changes.
Observations	Station, variable, start and end of the observation period, time zone, raw value, numeric value where supplied, unit, quality flag and source version.
Climate baselines	Station or area, variable, month or season, reference years, normal value, method and publication version.
Forecasts	Original issue time, valid period, area, variable, lead time, forecast value or category probability, event definition and product version.
Original sources	Original file or delivery, publisher, source address, retrieval time, permitted use, version and integrity check.
Checks and corrections	Quality finding, reason, responsible role and source revision. Retain the original record and every correction.
Calculated results	Exact input records and versions, selected station or area, period, baseline, formula and published source, units, missing data and limitations.

The system shall retain original weather deliveries and reusable observations once. Store station and variable identifiers, observation start and end, time zone, raw text, numeric value when supplied, unit, QC state and source version. Separate forecasts, observations and climate normals. Each result shall reference exact source records and formula versions. Reuse a matching saved record across decisions instead of entering another copy.

A source delivery shall retain publisher, original URL or file, retrieval time, integrity check, permitted audience, source version and superseded version. A repeated delivery with the same

station, variable, period and source version shall be detected as a duplicate. A correction creates a new revision with its reason and responsible role; the original remains available. Reject incompatible units and intervals before aggregation. Unknown time zones and source QC flags remain unknown.

Zero is an observed number. TRACE is a separate state without an invented amount. NA and missing periods remain missing. Three-hour rain and rainfall accumulated since 08:30 are distinct variables and shall not be added. Preserve each product's exact climate baseline; 1981–2010 and 1991–2020 are different reference periods. Do not replace a forecast with a later issue when checking its performance.

Saved source coverage

The preserved Department of Meteorology capture contains 24 stations at the published time 10 November 2026 at 17:30, with 240 variable records. The publisher's time zone and QC flags were not supplied. Table 01 of the bulletin issued 5 November 2026 provides 23 district cumulative rainfall departures for 1 January to 4 November 2026 against 1981–2010; Kegalle is NA. Matale is −0.4% and Kandy is +16.5%. These are district summaries, not measurements of Knuckles plots.

The weekly map and Table 02 marked NOT AVAILABLE are excluded even though hidden text can be extracted. Saved forecast files retain issue date and validity separately. The temperature outlook has conflicting printed period labels and unavailable districts; no period or value is inferred. Historical daily and monthly series, source QC histories, matched forecast archives, instrument logs and data-reuse permissions are still required for the respective analyses.

The prototype source form checks a preview. Permanent multi-user storage and automated data feeds are system requirements, not an implemented archive in the prototype. The saved public source package remains a reference archive. Revised prototype scenarios do not overwrite it. All existing client and expert decisions remain in Institution review.

Meteorology method and source categories

Published official data identifies a value transcribed from the stated government table. Verified published component identifies the cited RMSE or Brier equation only. Project checklists, local thresholds, matching rules, permissions and intended use remain Validation required. Published source context does not establish approval of a local decision.

DEC-DP08-001 Check published rainfall departures

Compare published rainfall departures for the same period and climate baseline.

Record: Record basis; District or fixed analysis area.

Period: Observation period starts; Observation period ends.

Baseline: Baseline first year [year]; Baseline last year [year].

Measurements: Published rainfall departure [%] optional.

Optional rainfall totals: Observed rainfall total [mm] optional; Matching normal rainfall [mm] optional.

Source details: Original publication and table reference; Baseline definition and period reference.

Method: For a directly published departure, retain the published percentage. For matched totals only: departure = 100 × (observed − normal) / normal, where normal > 0. Percent of normal = 100 × observed / normal; it is a different measure.

Published example: Kandy +16.5%, 1 January to 4 November 2026, against 1981–2010. Expert Hub retains the year, source and baseline. Edited values are labelled what-if.

What-if example: Change the published Colombo value from 14.4% to 14.5% for the same dates and baseline.

Missing input check: omit District or fixed analysis area. Obtain the records listed below. Missing data stays explicit.

Limits: District cumulative figures do not measure rainfall at a Knuckles site or establish a drought. The weekly table marked NOT AVAILABLE is excluded. Saved Table 01 has 23 district summaries. Kegalle is NA. Table 02 and its weekly map are marked NOT AVAILABLE.

Source: Department of Meteorology agrometeorological bulletin. Government publication. 5 November 2026, page 4 Table 01. https://meteo.gov.lk/pdfs/agromet_pdf.pdf

DEC-DP08-002 Check consecutive low-rainfall days

Identify the dated low-rainfall runs supported by the supplied daily series.

Record: Station or demonstration gauge ID.

Period: Observation day.

Measurements: Rainfall value state; Daily rainfall [mm] optional; Example dry-day cutoff [mm]; A day is dry when rainfall.

Source details: Daily accumulation and reporting convention; Daily series reference; Quality or missing-day note.

Method: Count a run only across distinct consecutive observed days at one gauge using one daily convention and cutoff. Trace and missing days break the known run unless a documented measurement rule supplies a usable value.

Example: Illustrative data. 2025-06-01 records 4 mm; this does not meet the stated example dry-day rule.

Selected matching sample: longestDrySpell = 3.

Changed example: 2025-06-01 records 4.1 mm; this does not meet the stated example dry-day rule.

Missing input check: omit Station or demonstration gauge ID. Obtain the records listed below. Missing data stays explicit.

Limits: This is a known observed run, not a drought diagnosis or warning threshold. A three-hour snapshot cannot replace a daily history. The saved official table is one three-hour snapshot. A continuous daily rainfall series is still required for a real dry-spell analysis.

DEC-DP08-003 Check missing and late station observations

Check received records against an explicit observation schedule and quality review.

Source details: Official station ID; Station and instrument metadata reference; Observation schedule reference; Validity and duplicate-check reference.

Period: Latest published or valid observation time; Monitoring window starts; Monitoring window ends; Assessment time; Time zone.

Completeness: Expected observations [observations]; Distinct valid observations [observations]; Required observation interval [hours].

Method: Completeness = 100 × distinct valid / scheduled observations in the stated window. Age = assessment time − latest valid time in a confirmed common time zone. Compare age with the supplied reporting interval.

Example: Official observations; comparison records missing. The source reports 43444 at 2026-11-10T17:30. A schedule and QC delivery log are needed to calculate completeness.

Changed example: The source reports DEMO revised evidence reference at 2026-11-10T17:30. A schedule and QC delivery log are needed to calculate completeness.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: One public snapshot does not establish how many readings were scheduled, received or quality-checked. The saved table identifies 24 stations and their published report times. It does not provide a complete delivery log or source QC flags.

DEC-DP08-004 Prepare rainfall records for SPI

Check the monthly rainfall series and method evidence needed before a separate SPI calculation.

Source details: Official station ID; Station and instrument metadata reference; Monthly values and missing-month register; Station history and homogeneity assessment; Distribution fit and zero-rainfall treatment; Treatment of missing months.

Period: Baseline starts; Baseline ends.

Monthly series: Expected monthly observations [months]; Usable monthly observations [months]; Accumulation period [months].

Method: Reported coverage = 100 × usable / expected months. Verify the expected monthly sequence, accumulation period, station changes, missing-month treatment and fitted distribution separately. This screen does not calculate SPI.

Example: Illustrative data. 350 of 360 stated monthly observations are usable (97.222%). No SPI value is calculated.

Changed example: 350 of 360 stated monthly observations are usable (97.222%). No SPI value is calculated.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: WMO No. 1090 describes long monthly records and the effect of missing data. A coverage percentage alone does not validate SPI or establish drought. No long monthly station

series is present in the saved capture. The published drought and anomaly products do not supply that missing series.

Source: WMO Standardized Precipitation Index User Guide. Institution publication. WMO No 1090; SPI calculation and interpretation guidance. https://www.droughtmanagement.info/literature/WMO_standardized_precipitation_index_user_guide_en_2012.pdf

DEC-DP08-005 Compare matching temperature observations

Compare the same temperature statistic and observation interval before investigating a difference.

Source details: Official station ID; Station and instrument metadata reference; Observation interval definition; Original file or delivery reference; Quality-control or review reference.

Measurements: Temperature statistic; Reported temperature [°C].

Comparison: Matching reference temperature [°C] optional; Reference statistic; Reference observation or baseline period; Matching reference and method.

Period: Observation time; Time zone.

Method: Temperature difference = observed − matching reference in °C. Match station, statistic, observation interval, units and source definitions. Do not calculate a relative percentage from Celsius values.

Example: Official observations; comparison records missing. Published instantaneous temperature is 24 °C. A matching reference has not been established.

Changed example: Published instantaneous temperature is 24.1 °C. A matching reference has not been established.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: An instantaneous reading is not a daily maximum or minimum. A difference does not identify a sensor fault or establish a climate trend. The saved station table supplies instantaneous air temperature, not a daily maximum/minimum history.

DEC-DP08-006 Prepare a weather-warning review case

Check the original warning product and accepted observations before a duty-officer review.

Record: Official bulletin ID; Hazard and affected area.

Period: Official issue time; Valid from; Valid until; Time zone.

Source details: Original bulletin and revision; Accepted observations and their period; Applicable warning procedure and criteria; Responsible duty role; Earlier bulletin replaced or cancelled optional.

Method: Check bulletin identity, issue and validity, replacement history, accepted observation references, affected area, applicable procedure and duty responsibility. No hazard threshold is inferred.

Example: Illustrative data. This case identifies the bulletin and evidence needed for a duty-officer warning review. It does not issue a warning.

Changed example: This case identifies the bulletin and evidence needed for a duty-officer warning review. It does not issue a warning.

Missing input check: omit Official bulletin ID. Obtain the records listed below. Missing data stays explicit.

Limits: This prepares a review note. It never issues or approves a warning. The official site publishes advisories and states that warning API access is available on request. No API key or operational warning feed is used here.

DEC-DP08-007 Compare archived rainfall forecasts with observations

Measure errors for matching forecasts and observations at one stated lead.

Record: Station ID.

Period: Archived forecast issued; Rainfall interval starts; Rainfall interval ends; Time zone.

Forecast: Lead to interval end [hours]; Forecast rainfall [mm].

Verification: Observed rainfall [mm].

Source details: Rainfall interval and measure; Archived forecast and version; Verifying observation and QC reference.

Method: Error = forecast − observed. For complete matching pairs: RMSE = sqrt(mean(error²)), MAE = mean(abs(error)), bias = mean(error). Match station, variable, accumulation, lead, time zone and observation QC before pooling.

Example: Illustrative data. Forecast 48 mm; matching observation 42 mm. Forecast minus observed is 6 mm.

Selected matching sample: n = 3; rmse = 4.65475; mae = 4.33333; bias = 1.

Changed example: Forecast 48.1 mm; matching observation 42 mm. Forecast minus observed is 6.1 mm.

Missing input check: omit Station ID. Obtain the records listed below. Missing data stays explicit.

Limits: Scores describe the selected sample. They do not establish future forecast reliability or authorise an operational change. The saved observations do not contain matching archived daily point forecasts. Issued seasonal category probabilities cannot be substituted for rainfall amounts.

Verified published component: Matched-pair RMSE. Environment and Climate Change Canada. Displayed RMSE equation and definitions of forecast, observation and verification count. https://weather.gc.ca/verification/scores/rmse_e.html

DEC-DP08-008 Check seasonal probability forecast performance

Compare a defined seasonal event with archived probabilities and verifying rainfall.

Record: Forecast area.

Period: Forecast issue time; Season starts; Season ends; Time zone.

Forecast: Forecast event probability [fraction]; Independent reference probability [fraction].

Verification: Observed season rainfall [mm]; Illustrative event cutoff [mm].

Source details: Event and category edition; Archived probability and version; Seasonal rainfall and QC reference; Independent benchmark and reference period.

Method: For the predefined event, y = 1 when rainfall exceeds the stated cutoff, otherwise 0. Brier score = mean((p − y)²). Brier skill = 1 − score/reference score for matching cases and a positive reference score. Category and benchmark choices are local assumptions.

Example: Illustrative data. The supplied 1,040 mm exceeds the example 900 mm cutoff. The squared probability error is 0.09.

Selected matching sample: n = 3; brier = 0.136667; reference = 0.335567; skill = 0.592729.

Changed example: The supplied 1,040.1 mm exceeds the example 900 mm cutoff. The squared probability error is 0.09.

Missing input check: omit Forecast area. Obtain the records listed below. Missing data stays explicit.

Limits: A published Brier formula does not verify a local category threshold, benchmark or forecast. No complete seasonal calibration assessment is claimed. Saved seasonal outlooks are source products. They do not include an archive of matched hindcasts and seasonal observations.

Source: JMA numerical weather prediction outline. Government publication. AppendixA.3, equationsA.3.1 and A.3.3. https://www.jma.go.jp/jma/jma-eng/jma-center/nwp/outline2022-nwp/pdf/outline2022_all.pdf

Source: Department of Meteorology seasonal rainfall outlook. Government publication. SF-2026-11, issue information and seasonal/monthly outlook. https://meteo.gov.lk/pdfs/rainfall_pdf.pdf

Source: Department of Meteorology consensus seasonal outlook. Government publication. NDJ 2026/27 outlook, issued 30 October 2026. https://meteo.gov.lk/pdfs/consensus_pdf.pdf

Verified published component: Binary Brier score and skill component. Japan Meteorological Agency. Sections A.3.1 and A.3.2, equations A.3.1 and A.3.3, printed page 239, PDF page 7. https://www.jma.go.jp/jma/jma-eng/jma-center/nwp/outline2024-nwp/pdf/outline2024_Appendix_A.pdf

DEC-DP08-009 Check a proposed weather-station site

Prepare a site-survey worklist from coverage, exposure and operating evidence.

Record: Proposed site reference.

Source details: Network coverage gap and intended variable; Surveyed terrain, location and elevation; Instrument exposure and obstacle survey; Siting standard and edition; Access and land-use permission; Power arrangement and reliability; Communications coverage and delivery test; Responsible site-survey role.

Method: Review variable-specific siting and exposure against the cited standard using a surveyed site and operating records. No generic distance score or automatic preferred site is generated.

Example: Illustrative data. The site-survey checklist identifies coverage, exposure, access and operating evidence for Rambukoluwa demonstration candidate. It does not rank or select a site.

Changed example: The site-survey checklist identifies coverage, exposure, access and operating evidence for DEMO revised evidence reference. It does not rank or select a site.

Missing input check: omit Proposed site reference. Obtain the records listed below. Missing data stays explicit.

Limits: Complete records support a site review. They do not select or authorise a station. The public station table supplies station identities. It does not establish a coverage-gap study or candidate-site survey.

Source: WMO Guide to Instruments and Methods of Observation. Institution publication. WMO No. 8; applicable instrument, siting and maintenance chapter and edition to be recorded. https://community.wmo.int/site/knowledge-hub/programmes-and-initiatives/instruments-and-methods-of-observation-programme-imop/guide-instruments-and-methods-of-observation-wmo-no-8-0

DEC-DP08-010 Plan instrument calibration and repair work

Review due dates, service impact, spares and technician capacity before proposing work.

Record: Instrument ID; Calibration or repair task; Work completed.

Period: Recorded due date; Assessment date; Proposed work starts; Proposed work ends.

Source details: Latest calibration or defect record; Service impact and temporary cover; Technician team or booking reference; Required spares and availability; Completion evidence optional.

Resources: Required technician effort [hours]; Available effort in this window [hours].

Method: For open work, days overdue = max(0, assessment − due date). Compare required effort with available effort in the stated window and detect overlapping bookings for the same resource. Retain completion evidence for closed work.

Example: Illustrative data. The task is 29 days overdue. Review service impact, spares and technician availability before proposing work.

Changed example: The task is 29 days overdue. Review service impact, spares and technician availability before proposing work.

Missing input check: omit Instrument ID. Obtain the records listed below. Missing data stays explicit.

Limits: Overdue age is not a calibration result or a safety priority. A proposed booking does not assign a technician. Instrument serial numbers, calibration certificates, defects, spares and technician bookings are not in the saved public capture.

Source: WMO Guide to Instruments and Methods of Observation. Institution publication. WMO No. 8; applicable instrument, siting and maintenance chapter and edition to be recorded. https://community.wmo.int/site/knowledge-hub/programmes-and-initiatives/instruments-and-methods-of-observation-programme-imop/guide-instruments-and-methods-of-observation-wmo-no-8-0

DEC-DP08-011 Check station changes before comparing climate records

Identify the station-history evidence needed before assessing a series break.

Source details: Official station ID; Station and instrument metadata reference; Original location, instrument and observation definition; Revised metadata and effective date; Parallel or reference-station observations; Original dated climate series; Break-test method, result and uncertainty; Proposed adjustment and retained original version optional.

Period: Station or instrument change date.

Record: Change type.

Method: Use dated station metadata and the original and comparison series to investigate an apparent break. Preserve originals and any documented adjustment separately. This screen does not homogenize observations.

Example: Illustrative data. Retain the dated station change and both metadata versions. A series-break assessment needs the original and comparison observations; no adjustment is calculated here.

Changed example: Retain the dated station change and both metadata versions. A series-break assessment needs the original and comparison observations; no adjustment is calculated here.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: A metadata change is a reason to investigate, not proof of a climatic or non-climatic shift. The saved station snapshot has no relocation history, parallel series or statistical break assessment.

Source: WMO climate-data quality and homogenization guidance. Institution publication. Climate data quality, metadata, homogenization and dataset-management guidance. https://community.wmo.int/site/knowledge-hub/programmes-and-initiatives/climate-services/climate-data

DEC-DP08-012 Prepare crop-weather advice for review

Match crop exposure with weather for the same place and crop period.

Record: Farm or crop-area reference; Crop; Crop stage and planting date.

Measurements: Exposed crop area [ha].

Period: Crop period starts; Crop period ends.

Source details: Matching daily weather and forecast records; Why the weather represents this crop area; Crop-stage advice protocol; Responsible agricultural adviser.

Method: Join crop, stage and planted-area records to suitable weather and forecasts for the same place and period. Use the cited crop protocol to prepare a specialist review; no advice is inferred from a cumulative rainfall percentage alone.

Example: Official context with crop records missing. Published cumulative departure 16.5% for Jan–4 Nov 2026. This is background rainfall context. Crop stage, planting area and matching local weather are needed before preparing advice.

Changed example: Published cumulative departure 16.5% for Jan–4 Nov 2026. This is background rainfall context. Crop stage, planting area and matching local weather are needed before preparing advice.

Missing input check: omit Farm or crop-area reference. Obtain the records listed below. Missing data stays explicit.

Limits: District cumulative rainfall is background context, not a measurement of crop stress or a field-specific forecast. Saved district cumulative rainfall and the agromet bulletin can provide context. Crop locations, planting dates, stages and matching local weather are still required.

Source: Department of Meteorology agrometeorological bulletin. Government publication. 5 November 2026, page 4 Table 01. https://meteo.gov.lk/pdfs/agromet_pdf.pdf

DEC-DP08-013 Check weather inputs for a water-needs calculation

Check daily weather variables, units and station conditions before an evapotranspiration calculation.

Source details: Official station ID; Station and instrument metadata reference; Humidity statistic and method; Reference-site location, elevation and surface; Daily dataset and QC reference.

Measurements: Input time basis; Published instantaneous temperature [°C] optional.

Period: Weather observation day.

Daily weather: Daily maximum temperature [°C]; Daily minimum temperature [°C]; Relative humidity [%]; Daily solar radiation [MJ/m²/day]; Wind speed [km/h]; Wind measurement height [m].

Method: Check the daily temperature, humidity, radiation and wind definitions required by the selected reference-evapotranspiration method. Wind unit conversion alone does not provide a 2 m wind observation. This screen checks inputs; it does not calculate ETo.

Example: Official observations; comparison records missing. Published snapshot: 24 °C, humidity 92%, wind 0 km/h. Daily extrema, radiation, humidity convention and reference-site wind metadata remain separate inputs. No ETo is calculated.

Changed example: Published snapshot: 24.1 °C, humidity 92%, wind 0 km/h. Daily extrema, radiation, humidity convention and reference-site wind metadata remain separate inputs. No ETo is calculated.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: A three-hour observation is not a daily weather dataset. Missing radiation, wind height or daily extrema must remain missing. The saved snapshot supplies temperature, humidity and wind. It does not supply daily temperature extrema, solar radiation, wind height or reference-site metadata.

Source: FAO Irrigation and Drainage Paper 56 meteorological data. Institution publication. Chapter 3 meteorological data; wind speed, climatic data acquisition and minimum requirements. https://www.fao.org/4/x0490e/x0490e07.htm

DEC-DP08-014 Review an archived marine forecast

Check the marine area, forecast validity and vessel context before a specialist review.

Record: Marine product identifier; Forecast sea area.

Period: Issue time; Stated forecast duration [hours]; Time zone.

Forecast: Forecast wind lower bound [km/h]; Forecast wind upper bound [km/h]; Sea state as published; Separate gust condition.

Source details: Archived original marine product; Vessel, activity and intended area; Applicable marine review protocol; Responsible marine specialist.

Method: Retain the original marine product, area, issue time and validity. Keep normal wind, temporary thunderstorm gusts and sea-state terms separate. Compare the intended activity against the appropriate marine protocol.

Example: Official archived product with review details missing. The archived product states 20–30 km/h normal wind and slight or moderate seas. 60–70 km/h temporarily during thundershowers. Check issue, validity and vessel context before a marine specialist review.

Changed example: The archived product states 20–30 km/h normal wind and slight or moderate seas. 60–70 km/h temporarily during thundershowers. Check issue, validity and vessel context before a marine specialist review.

Missing input check: omit Marine product identifier. Obtain the records listed below. Missing data stays explicit.

Limits: This is an archived source-review example, not live vessel advice or a new warning. Inland field records do not establish marine conditions. The preserved official Marine-page capture supplies the published wind range, sea-state wording and issue time. It does not supply numerical wave heights or vessel-specific clearance.

Source: Department of Meteorology marine forecast archive. Government publication. Marine sea-weather page captured 10 November 2026; issued 14:00. https://meteo.gov.lk/

DEC-DP08-015 Review aviation weather-service interruptions

Reconcile required report delivery and recorded outage intervals for an aerodrome service.

Record: Aerodrome and service.

Source details: Required reporting schedule and service standard; Report issue, receipt and failure log; Service impact and temporary arrangements.

Period: Service window starts; Service window ends; Time zone.

Outages: Outage intervals as start/end on separate lines.

Delivery: Expected reports [reports]; Distinct reports delivered within the required deadline [reports].

Method: Time availability = 100 × (service-window hours − union of outage hours) / service-window hours. Merge overlapping outage intervals. On-time delivery = 100 × distinct qualifying reports / scheduled reports. Match the agreed report schedule and deadline.

Example: Illustrative data. Recorded outage union is 3 hours; time availability is 98.214%. On-time report delivery is not available. The two measures answer different questions.

Changed example: Recorded outage union is 3 hours; time availability is 98.214%. On-time report delivery is not available. The two measures answer different questions.

Missing input check: omit Aerodrome and service. Obtain the records listed below. Missing data stays explicit.

Limits: Availability and delivery metrics do not establish aviation meteorological compliance or flight safety. The public weather capture is not an aerodrome service log. Report schedules, deadlines, outages and operational impact records must be obtained.

DEC-DP08-016 Prepare a lightning-awareness evidence review

Match an authorised lightning source with the exposure frame used for awareness planning.

Record: Lightning evidence type.

Source details: Original event dataset or advisory; Detection coverage, uncertainty or advisory area; Dated household or facility exposure frame; Boundary edition and matching predicate; Responsible awareness-planning role.

Period: Evidence period starts; Evidence period ends.

Measurements: Distinct receptors in the assessed frame [receptors]; Distinct receptors spatially matched [receptors].

Method: For a documented matching exposure frame, share = 100 × distinct matched receptors / receptors in that same frame. Count each receptor once. An issued advisory and a historical strike dataset are different source types.

Example: Illustrative data. Obtain the dated lightning source and a matching exposure frame before reporting a share.

Changed example: Obtain the dated lightning source and a matching exposure frame before reporting a share.

Missing input check: omit Original event dataset or advisory. Obtain the records listed below. Missing data stays explicit.

Limits: A matched share is not a strike probability or an individual risk rating. This view performs no live spatial intersection. The official site publishes lightning advisories. The saved package has no historical strike dataset or matched household exposure frame.

DEC-DP08-017 Compare annual station observations

Compare the same annual statistic at one station with its quality and station-history evidence.

Source details: Official station ID; Station and instrument metadata reference; Annual aggregation and missing-data method; Annual dataset and quality reference; Station history and comparability assessment.

Period: Observation year [year].

Measurements: Annual temperature statistic; Annual statistic [°C].

Quality: Expected daily observations [days]; Valid daily observations [days].

Method: Display comparable annual statistics for one station and definition. Report their mean and sample standard deviation only for complete compatible selected records. No trend significance or climate attribution is calculated.

Example: Illustrative data. The supplied 2023 mean temperature is 25.6 °C, with 100% reported daily coverage. No trend or attribution is calculated.

Selected matching sample: n = 3; mean = 25.7; sd = 0.1.

Changed example: The supplied 2023 mean temperature is 25.7 °C, with 100% reported daily coverage. No trend or attribution is calculated.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: Three illustrative annual values do not establish a long-term climate trend. The saved three-hour snapshot cannot supply an annual mean. A real annual station series and aggregation/QC history are still required. Annual figures below are labelled demonstration values.

Source: WMO climate-data quality and homogenization guidance. Institution publication. Climate data quality, metadata, homogenization and dataset-management guidance. https://community.wmo.int/site/knowledge-hub/programmes-and-initiatives/climate-services/climate-data

DEC-DP08-018 Compare concurrent sensor observations

Compare the same variable, unit and interval from a sensor and an independent reference.

Record: Official station ID.

Source details: Primary instrument reference; Independent reference instrument; Matching observation interval; Calibration and uncertainty evidence; Both original observation references.

Measurements: Variable; Primary unit; Primary observation [stated unit].

Comparison: Reference unit; Independent observation [stated unit] optional.

Period: Primary observation time; Reference observation time; Time zone.

Method: Difference = primary − independent reference only for a matching variable, unit, interval and time convention with instrument and calibration evidence. Temperature differences in °C have no relative percentage.

Example: Official observations; comparison records missing. Primary reading: 24 °C. The concurrent independent comparison is incomplete.

Changed example: Primary reading: 24.1 °C. The concurrent independent comparison is incomplete.

Missing input check: omit Official station ID. Obtain the records listed below. Missing data stays explicit.

Limits: A difference does not identify a faulty instrument. Preserve both originals and their calibration evidence. Saved station temperatures can populate the primary reading. Independent concurrent readings and instrument/calibration metadata are not in the saved package.

DEC-DP08-019 Review delayed climate-data requests

Separate request delay from the permission to release a dataset.

Record: Request ID; Dataset, station and period requested; Intended use; Request closed; Release permission.

Period: Request received; Recorded response due; Assessment date.

Source details: Data-owner permission and permitted audience; Responsible data custodian; Response or closure evidence optional.

Method: For open requests, days overdue = max(0, assessment − recorded due date). Check permission and scope independently. A late response does not grant release rights.

Example: Illustrative data. The request is 15 days overdue while open. Recorded release permission: Not recorded. Delay does not grant release rights.

Changed example: The request is 15 days overdue while open. Recorded release permission: Not recorded. Delay does not grant release rights.

Missing input check: omit Request ID. Obtain the records listed below. Missing data stays explicit.

Limits: This prepares a follow-up. It does not transmit a dataset or approve reuse. The Department provides a data-contact route. Its internal request, due-date and permission registers are not public source data.

DEC-DP08-020 Check a weather product before SHARED publication

Check source rights, product version, validity and audience before a publication review.

Record: Publisher product ID; Product type.

Period: Original issue date; Valid period exactly as published; Period definition.

Source details: Original product and captured version; Earlier version or replacement reference optional; SHARED reuse and redistribution permission; Proposed SHARED audience; Responsible publication reviewer; Editorial and technical review record.

Method: Retain the original product, issue and validity, source version, replacement history, intended audience, review evidence and permitted SHARED use. Public availability alone is not redistribution permission.

Example: Official product metadata; SHARED review records missing. Original Issued seasonal outlook issued 2026-10-30. Validity as printed: November, December and January (NDJ) 2026/27. SHARED reuse permission, audience and publication review are separate records.

Changed example: Original Issued seasonal outlook issued 2026-10-30. Validity as printed: November, December and January (NDJ) 2026/27. SHARED reuse permission, audience and publication review are separate records.

Missing input check: omit Publisher product ID. Obtain the records listed below. Missing data stays explicit.

Limits: The original Department publication is separate from a SHARED publication decision. No publication is authorised or sent by this screen. Three saved issued outlooks populate the

source records. Conflicting temperature-outlook period labels remain flagged for publisher clarification.

Source: Department of Meteorology seasonal rainfall outlook. Government publication. SF-2026-11, issue information and seasonal/monthly outlook. https://meteo.gov.lk/pdfs/rainfall_pdf.pdf

Source: Department of Meteorology consensus seasonal outlook. Government publication. NDJ 2026/27 outlook, issued 30 October 2026. https://meteo.gov.lk/pdfs/consensus_pdf.pdf

Source: Department of Meteorology temperature outlook. Government publication. Issued 4 November 2026; headings, captions and availability note. https://meteo.gov.lk/pdfs/temperature_pdf.pdf

Weather map images

Use the saved Department of Meteorology figures: August 2026 observed rainfall total (mm), percent of normal (%) and anomaly (mm), with the stated 1991–2020 reference; November 2026 and November 2026–January 2027 rainfall outlooks; and the November 2026 maximum/minimum temperature outlook. Retain the original colours, legends, units, source pages and dates. Do not use the unavailable weekly map or the temperature panels with conflicting seasonal labels. Matale temperature data remains unavailable.

No new weather calculation is made from these images. Rendering and cropping preserve the source map and legend. For August, 100% of normal means the monthly normal rainfall; an anomaly in millimetres is a different measure. Forecast colours describe category probabilities, not observed amounts or temperature in degrees. The image period remains independent of the selected decision records.

Government publication sources: https://meteo.gov.lk/pdfs/aug26.pdf page 1, Figure 1 A–C; https://meteo.gov.lk/pdfs/rainfall_pdf.pdf page 1 Figure 1 and page 2 Figure 2 November panel; https://meteo.gov.lk/pdfs/temperature_pdf.pdf page 1 Figures 1–2. Saved original files and Map_sources.json retain source and image integrity checks. Local use and permissions remain in Institution review.

4 Retained method references

Method References is the controlled catalogue of all 139 retained definitions. Each row preserves the original formula or procedure, inputs, units, limits and context link. Its category identifies direct publication support or Validation required, with the publisher and method-source locator where checked. Family mappings are candidates only. A published retained method is not implemented merely because a related prototype screen exists.

The source register separates link access from formula support. Official alternatives are now linked for the three previously unavailable entries, so all 33 follow-up entries have readable preferred references. The LUPPD report and FAO guide support planning context; they are not approved replacements for the local divisional manual. Experts must still confirm each selected method, source edition, units and local suitability.

NF012 is an absolute forecast error; VARIANCE is a signed plan difference. NF147 specifies discounted payback, but its linked appraisal and the current cash flow helper use simple or undiscounted payback. NF049 to NF053 and NF055 to NF058 use a water-stress context link that does not establish their methods. NF107 parameter compliance is not the full SDG 6.3.2 water-body indicator. These methods remain separate review questions.

Open all 139 retained method references

5 Sources

Calculation Sources contains 172 entries, including the official data mappings and draft domain references. It keeps original links, locators and access limits. S01 links the LUPPD report hosted by Parliament; NF-SOURCE-04 links FAO planning guidance; NF-SOURCE-12 links a HARTI price bulletin. The original LUPPD manual was not recovered. Local use and source rights remain in Institution review.

S69 FAO 56: crop evapotranspiration

Published method. FAO 56 Chapter 5 equation 56; ETc = Kc × ETo. Retrieved text for review.

Open source

S71 IUCN Species Threat Abatement and Restoration metric

Published specialist method overview. Scientific underpinning and approach; full STAR calculation is not implemented. Retrieved text for review.

Open source

S72 IWA non-revenue water management

Published definition. Opening NRW definition; detailed water audit protocol not supplied. Retrieved text for review.

Open source

S75 Environment Canada: root mean squared error

Published method. What is Root Mean Square Error; displayed formula. Retrieved text for review.

Open source

S76 FAO enterprise and activity budgeting

Published method. Section 4.3.8 Gross margin; section 4.7 Parametric budgeting. Retrieved text for review.

Open source

PROTO SHARED prototype calculation and workflow implementation

Project implementation. DecisionSupportModel.spec/project and named model functions in each entry. Read only prototype inspection.

Open source

SRS SHARED Software Requirements Specification

Project requirement. Sections 5.4, 10, 12 and named requirement IDs in each rule. Version 1.6.

Open source

S78 FAO Irrigation Water Management Training Manual 3

Published method. Chapter 4.4 Irrigation water need of rice; steps 1 to 8. Method text checked.

Open source

S79 IPCC 2006 Guidelines Volume 4 Chapter 2

Published method. Sections 2.2.3, 2.3.1 and 2.3.3; soil stock guidance printed page 2.37. Method text checked.

Open source

S80 USDA Forest Service A guide for predicting sheet and rill erosion on forest land

Historical published method. Universal Soil Loss Equation and Applying the USLE; printed page 2. Historical method text checked; current local calibration not established.

Open source

S81 FAO Guidelines for financial economic environmental and social information

Published method. Net Present Value and Internal Rate of Return subsections. Method text checked.

Open source

S82 WMO Standardized Precipitation Index User Guide

Published method. WMO No 1090; SPI calculation and interpretation guidance. Full guide checked; local fit and baseline pending.

Open source

S83 US Department of Justice Herfindahl Hirschman Index

Published definition. Definition of the sum of squared market shares. Definition checked; US legal thresholds do not apply to this project.

Open source

S84 NIST Coefficient of Variation

Published definition. Description of sample CV and ratio scale restriction. Definition checked.

Open source

S85 Turf area API

Software method. Version 7.2.0 area; square metres. Documentation checked.

Open source

S86 Turf distance API

Software method. Version 7.2.0 distance; Haversine method. Documentation checked.

Open source

S87 Turf length API

Software method. Version 7.2.0 length; selected units. Documentation checked.

Open source

S88 Turf buffer API

Software method. Version 7.2.0 buffer; radius and steps. Documentation checked.

Open source

S89 Turf intersect API

Software method. Version 7.2.0 intersect; polygon intersection. Documentation checked.

Open source

S90 Turf point in polygon API

Software method. Version 7.2.0 booleanPointInPolygon; boundary option. Documentation checked.

Open source

S91 UN Handbook of Surveys on Households and Individuals

Published guidance. Chapter 9 section 9.4.2, equation 9-16, printed page 9-19 (PDF page 427); Chapter 8 weighting; Final Draft. Weighting guidance checked; draft status retained.

Open source

S92 World Bank Impact Evaluation in Practice Second Edition

Published method. Chapter 7 Difference in Differences. Method text checked.

Open source

Specific source limits remain open: S16 needs custodian confirmation of jurisdiction; S51 does not establish the intended budgeting guide; S72 gives the NRW definition but not the full utility audit protocol. S80 is a historical USLE source, not a current local calibration. The WMO SPI guide and IUCN STAR overview do not make those full methods implemented in the prototype.

6 Approval and acceptance

Use published methods as their documented basis. Check the exact source and the copied calculation once. Ask the client or expert to confirm only local use, project choices and new or changed rules. Review each shared method once and list where it is used.

Published methods and sources
The core methods below already have a published basis. They do not need to be proved again for every screen. Their local inputs, settings, suitability and intended use remain subject to the confirmation list below. A published reference does not mean that the prototype implements the full method.

Published method	Publication and locator	Local use
Sheet and rill erosion EROSION, NF023	S80 USDA Forest Service A guide for predicting sheet and rill erosion on forest land. Universal Soil Loss Equation and Applying the USLE; printed page 2 NF-SOURCE-03 FAO Revised Universal Soil Loss Equation toolbox. FAO RUSLE toolbox: equation A = R K L S C P and factor definitions	The USDA source is historical. Confirm current local factors and suitability.
Enterprise gross margin MARGIN	S76 FAO enterprise and activity budgeting. Section 4.3.8 Gross margin; section 4.7 Parametric budgeting	Confirm which revenue and variable costs are included.
Net present value FINANCE	S81 FAO Guidelines for financial economic environmental and social information. Net Present Value and Internal Rate of Return subsections	Confirm cash flows, price basis and discount rate.
Soil carbon stock SOILCARBON, NF034	S79 IPCC 2006 Guidelines Volume 4 Chapter 2. Sections 2.2.3, 2.3.1 and 2.3.3; soil stock guidance printed page 2.37	Confirm sampling, depth, bulk density, units and coarse-fragment basis.
Impact comparison using difference in differences IMPACT	S92 World Bank Impact Evaluation in Practice Second Edition. Chapter 7 Difference in Differences	Confirm the comparison group and study assumptions.

Published method	Publication and locator	Local use
Weighted mean SURVEY	S91 UN Handbook of Surveys on Households and Individuals. Chapter 9 section 9.4.2, equation 9-16, printed page 9-19 (PDF page 427); Chapter 8 weighting; Final Draft	The cited UN handbook is a Final Draft. Confirm the survey design and weights. This citation does not cover every pooled-rate rule.
Forecast error using RMSE FORECAST	S75 Environment Canada: root mean squared error. What is Root Mean Square Error; displayed formula	Confirm matching observations, locations, periods and forecast lead times.
Paddy irrigation depth requirement NF037	S78 FAO Irrigation Water Management Training Manual 3. Chapter 4.4 Irrigation water need of rice; steps 1 to 8	Confirm crop stage, soil, rainfall and water-management inputs.
Coefficient of variation NF086, NF115	S84 NIST Coefficient of Variation. Description of sample CV and ratio scale restriction	Confirm compatible observations and a meaningful positive mean. It is not a return-volatility method.
Standardized Precipitation Index NF095	S82 WMO Standardized Precipitation Index User Guide. WMO No 1090; SPI calculation and interpretation guidance	Confirm the rainfall record, fitting procedure and local interpretation. The separate SPI demonstration remains Validation required.

How to check each item

Category	Check needed
Government publication	Record the government publisher, publication, edition and exact page or section. Confirm local inputs and settings where needed.
Institution publication	Record the institution, publication, edition and exact page or section. Keep draft and historical status visible. Confirm local inputs and settings where needed.

Category	Check needed
Validation required	Review new or changed domain rules, incomplete source matches and local assumptions. A data table or background page alone does not support a formula.
Software check	The developer tests the copied formula, arithmetic, units and invalid or missing inputs. Ordinary arithmetic does not need separate scientific approval.

Client and expert decisions

These decisions remain pending in Institution review. Each decision should state what was checked, who checked it, the outcome and any conditions. One review can cover the same method used by several screens.

Topic	What to confirm	Who
Scope and institutions C01, C02, C12	Confirm the final features, proposed decisions, participating institutions and what stays in existing tools.	Client
Responsibilities C02	Name who owns data, submits records, reviews them and approves sharing.	Client and institutions
Maps and boundaries C03	Source studies report 1,533 and 1,584 GN divisions. Which dated programme roster, official codes and boundary edition apply? Who maintains them?	Data custodian and GIS expert
Data sources C04	Confirm datasets, fields, units, update frequency and access or sharing conditions.	Source institutions
Privacy C05	Confirm access to personal records, sensitive locations and retention periods.	Client and privacy specialist
New or changed calculations E01	Review proposed scores, weights, thresholds, missing-value rules and method changes. For published methods, confirm local inputs, units, settings and intended use.	Relevant expert or statistician
Land soil and water methods E02	Confirm local suitability, sampling, laboratory methods and model factors.	Relevant domain experts

Topic	What to confirm	Who
Ecosystem services and PES E03	Confirm eligibility, rights, rates, safeguards, verification and payment authority.	Client and relevant experts
Indicators and payments C10	Confirm indicator definitions, acceptance measures, milestones and payment weights.	Client and monitoring or finance specialists
Languages and access needs C06	Confirm wording, supported devices and accessibility requirements.	Client and representative users
Technical choices and service targets C07, C08	Agree architecture, hosting, operator, costs, performance, security and recovery targets.	Client and technical adviser
Complaints and appeals C09	Confirm receiving officers, response times and the appeal process.	Client
Final SRS acceptance C11	Confirm consultation comments, agreed revisions, validation, final presentation and final acceptance.	Authorized client representative

Source details to confirm

LUPPD: the alternative publications provide planning context. The applicable local planning procedure still needs confirmation under C04 and E02.

HARTI: the published prices support the quoted observations. They do not automatically support proposed volatility, spread or other analysis; review these under C04 and E01.

Live-system security, load and recovery tests belong to implementation. The SRS needs agreed requirements and a test plan. No separate expert approval is needed for each mock screen or repeated calculation.

Record decisions in Institution review only. Keep the source reference, method and affected uses with the decision. A changed method or changed local settings needs a new review of the change; an unchanged shared method can reuse the recorded decision.

The rice-plot examples NF001 and NF002 use fictional grouped counts; plot identity and local category definitions still need confirmation. The disputed PMU finance and procurement examples remain proposed until the client confirms scope.

6 1 Architecture Rules and Worked Examples

These examples support SRS section 10.9. Published sources support the methods or equipment they describe. Local methods and settings require validation. See section 9 and Build a report for the calculation and reporting steps. Decisions remain pending in Institution review.

Packet counts and storage arithmetic

Scalar observations per day = devices × observed properties × samples per day. Packets per day = devices × transmissions per day when one transmission contains all the properties. For 100 stations and one-minute reporting: 100 × 10 × 1,440 = 1,440,000 scalar observations/day, while 100 × 1,440 = 144,000 packets/day. Database rows depend on the chosen packet and observation representation. Bytes/day must use declared measured or assumed bytes per packet and scalar record, plus separate index, projection, file and backup allowances. These are sizing illustrations, not benchmarks or prices.

Cultivation fact grain and annual aggregation

Keep one value per source release, area/boundary version, crop category, season and year. Reject duplicate category-season keys and overlapping definitions before aggregation. Sum compatible seasonal hectares into gross annual cultivated area. Do not call this unique physical land area without plot geometry and an approved union method. Preserve source coverage, missing values and the category definition used in the saved report. A later category crosswalk creates a new projection version; earlier reports retain their original categories.

Weather facts and safe joins

Summarise weather separately from cultivation. Check duplicate intervals, counter resets and corrections before adding rainfall. Use time or approved area weights for temperature. Withhold a complete annual result when required coverage is missing. Join one weather summary to the crop figures for the same area and period. In the diagram example, 100 ha of paddy plus 60 ha of maize gives 160 ha. Show the district's 1,300 mm rainfall once. District results from stations require a reviewed mapping and weighting method.

Raster example

Keep the provider, product version, grid, coordinate system, resolution, period, unit, quality flags and licence. Align grids with a documented method suited to the variable. Use valid cells inside the chosen boundary. Sum rainfall only over compatible intervals with valid coverage and use area weights for compatible cell averages. If clouds hide 25% of a catchment, show 75% usable coverage and leave the obscured cells missing. Keep source files, boundary and method versions, and processing settings so the result can be rebuilt. See the map example.

Four definition-change examples

Soil electrical conductivity: add a versioned optional attribute with an explicit unit, method, sampling context and effective date. Older records remain not collected rather than zero. Crop reclassification: retain the original category edition and apply a reviewed many-to-many crosswalk only in a new report version. Station relocation: create a new deployment/location interval and link readings to the deployment effective at measurement time. Reservoir capacity: retain separate institution-owned gross and effective capacity claims with units, level/datum

context, source editions and periods. Neither a similar label nor a newer receipt silently chooses the authoritative claim.

AI candidate checks

An extraction result must identify the exact source version and evidence spans. An unknown unit, ambiguous place, missing total or unresolved field remains unresolved. Parse and reconcile reliable structured tables deterministically, using AI only where the selected method adds value. Validate candidate types, units, periods, geography and totals, then display the source and editable candidate side by side. Only an explicit authorised review commits the candidate in the simulation. A schema-conforming response or an invented confidence number does not establish factual accuracy.

Source rights and derived outputs

Derived rows, map tiles, aggregates, report artifacts and retrieval chunks retain source-version dependencies. A read or export applies current actor access and current source rights. A withdrawal invalidates affected caches and prevents new public retrieval and exports, even before a full index rebuild. Retain historical material only under an explicit restricted retention policy. A withdrawn source must not remain available through a stale cached report. Copies already downloaded outside the platform cannot be recalled by this demonstration.

Storage options and upgrade decisions

Option A is the starting point: the existing modular application, operational/geospatial capability, protected files and bounded analytical views. Choose Option B when measured cross-domain query cost or repeatable reporting needs justify a governed mart, semantic measures and selected cubes or retrieval indexes. Choose Option C only when measured telemetry throughput, stream latency, raster volume or research queries justify specialist engines. Set and measure the required workload, lag, query and recovery budgets before adoption. Do not install every logical store or assume that a vector index, relational store and OLAP cube are interchangeable.

Provider and evaluation evidence

The research catalogue separates documentation, successful bounded public reads, credential-blocked integration and simulated adapters. It retains official URLs, supporting sections, source dates, measured variables, protocols, access and reuse limits. The local AI evaluation uses a small synthetic set with exact expected fields, missing values, ambiguous units and corrected evidence. It reports field correctness and unresolved review work rather than a successful network response. Representative Sinhala or Tamil evaluation remains dependent on an appropriate reviewed corpus. No private document is transmitted to an AI provider by this prototype.

Synthetic Polonnaruwa calculation results

Reporting years end in August. Maha is attributed to its ending year and Yala to that same year; the weather interval runs from September of the preceding year through August. This is an explicit demonstration policy based on the documented season boundaries, not an approved institutional reporting rule. The synthetic grid weights are 0.25 and 0.75.

Reporting year 2023 (2022-09-01 to 2023-08-31): fictional variety areas Bg 300: 100; Bg 352: 60 ha; gross seasonal cultivated area 160 ha; area-weighted annual rainfall 1300 mm; temperature 28.5 degrees C. Unique physical land area is unavailable without plot/overlap evidence.

Reporting year 2024 (2023-09-01 to 2024-08-31): fictional variety areas Bg 300: 120; Bg 352: 80 ha; gross seasonal cultivated area 200 ha; area-weighted annual rainfall 1500 mm; temperature 29.5 degrees C. Unique physical land area is unavailable without plot/overlap evidence.

The 2023 rainfall calculation is 0.25 × 1,000 + 0.75 × 1,400 = 1,300 mm. Temperature is 0.25 × 27 + 0.75 × 29 = 28.5 degrees C because the two grid summaries cover the same full reporting interval. The 2024 figures use the corresponding complete 366-day interval. These weather values are calculated once before joining the category summaries.

A rerun after correction creates a new source/method snapshot and preserves the original manifest. The ordinary report wizard exposes missing weather coverage, incompatible periods, repeated categories, restricted sources and ambiguous meanings as failures rather than plausible numbers. Exact manifest fields and rows are supplied in the downloadable worked example.

Research and integration catalogue

The following are documented, replaceable examples. Source permissions, regional variants, calibration, siting, local network compatibility and operational acceptance must be confirmed before use. The controlled JSON catalogue supplies the full variable, accuracy, protocol, equipment, access and evidence records.

ClimaVue 50 G2, item 43314

Exact model and configuration: ClimaVue 50 G2, item 43314

Manufacturer: Campbell Scientific

Classification: Compact weather sensor; not a complete Internet station

Measured variables

Air temperature (°C): ±0.6 °C. Published measuring range −50 to +60 °C; siting and radiation correction apply. Sources: ARC-S01; ARC-S43; ARC-S44.

Rain accumulation/rate (mm / mm/h): ±5% of measurement. 0–1, 000 mm/h accuracy band; measurement range to 1, 500 mm/h. Liquid precipitation only. Sources: ARC-S01; ARC-S43; ARC-S44.

Relative humidity (%RH): ±2.5% RH typical on current product page. Temperature/humidity dependent; older indexed manual states ±3% RH typical. Supplier must resolve revision. Sources: ARC-S01; ARC-S43; ARC-S44.

Barometric pressure (hPa): ±0.1 hPa at −10 to +50 °C; ±0.5 hPa at −40 to +60 °C on current page. Older indexed manual states ±5 hPa at 25 °C. Do not combine these as equivalent specifications. Sources: ARC-S01; ARC-S43; ARC-S44.

Wind speed (m/s): 0.3 m/s or 6%, whichever is greater. Published range 0–60 m/s; site exposure applies. Sources: ARC-S01; ARC-S43; ARC-S44.

Wind direction (degrees): ±5°. Published 0–359° range; orientation must be recorded. Sources: ARC-S01; ARC-S43; ARC-S44.

Solar radiation (W/m²): ±5% of measurement, typical. Published 0–1, 750 W/m² range; keep sensor level. Sources: ARC-S01; ARC-S43; ARC-S44.

Vapour pressure (kPa): ±0.2 kPa typical below 40 °C. Calculated from temperature/humidity; accuracy varies with both. Sources: ARC-S01; ARC-S43; ARC-S44.

Tilt (degrees): ±1°. Published 0–180° range; supporting instrument-health variable. Sources: ARC-S01; ARC-S43; ARC-S44.

Lightning strike count (strikes): >25% detection at distances under 10 km, typical. Detection varies with distance; not warning authority. Sources: ARC-S01; ARC-S43; ARC-S44.

Lightning average distance (km): Variable; no fixed accuracy adopted. Published 0–40 km range and 3 km resolution. Sources: ARC-S01; ARC-S43; ARC-S44.

Precipitation electrical conductivity (Not confirmed in reviewed specification extract): Not confirmed. Listed among measurements; obtain exact field/unit/method before enabling mapping. Sources: ARC-S01; ARC-S43; ARC-S44.

Accuracy: Temperature ±0.6 °C; rain ±5% at 0–1, 000 mm/h. Variable-specific conditions and the RH/pressure document discrepancy are listed below. Supplier confirmation is required before procurement or scientific use.

Protocol: SDI-12. Overview identifies an eight-pin M12 connector; the specification also uses AQ terminology. Confirm the delivered cable/connector and compatible logger.

Equipment: Compatible SDI-12 logger. Aspen10 is documented; mounting, power and permitted network are separate components.

Power: 3.6–15 V DC. At 12 V: 1.0 mA average using R7! every 10 s; 0.4 mA every 60 s or slower; peak 33 mA. Size logger, modem and power reserve separately.

Connectivity: Logger/edge uplink. No direct sensor web API established.

Maintenance: Check tilt/level and funnel contamination; retain service/calibration record.

Data access: Authorised logger export/adapter into common intake.

Restrictions: No heated solid-precipitation capability. Product/manual discrepancies need supplier resolution. Lightning detection is not an authorised hazard warning.

Local uncertainties: Local availability, scientific approval, installation design, radio/network suitability and institutional acceptance remain unverified.

Downstream use: Weather observations and coverage-aware Expert Hub comparisons.

Source date: 2026-11-02

Status: Optional extension; researched documentation only

Cost category: Current local quotation and lifetime operating cost not established.

Sources: ARC-S01; ARC-S43; ARC-S44

WXT536 within WXT530 series

Exact model and configuration: WXT536 within WXT530 series

Manufacturer: Vaisala

Classification: Weather transmitter; logger,power and communication unit separate

Measured variables

Temperature (°C): ±0.3 °C at +20 °C for the sensor element. Naturally aspirated shield can affect readings in calm wind. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Relative humidity (%RH): ±3% RH at 0–90% RH; ±5% RH at 90–100% RH. Sensor-element specification; natural aspiration caveat applies. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Pressure (hPa): ±0.5 hPa at 0 to +30 °C; ±1 hPa at −52 to +60 °C. Specified for 600–1, 100 hPa. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Rain accumulation/intensity (mm / mm/h): Better than 5% for daily accumulation, weather dependent. Liquid precipitation; excludes wind-induced error. Totals are cumulative since reset. Intensity range 0–200 mm/h, wider with reduced accuracy. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Wind speed (m/s): ±3% at 10 m/s. Observation range 0–60 m/s. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Wind direction (degrees): ±3° at 10 m/s. Averaging interval and sampling rate are configurable. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Hail detection/intensity (hits/cm² / hits/(cm²·h)): No fixed hail accuracy adopted. Manufacturer reports hail-hit outputs; do not convert these to rainfall volume. Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40.

Accuracy: Element temperature ±0.3°C at20°C; wind±3% at10m/s; daily rain better than5%, weather-dependent, excluding wind-induced error. Calm-weather natural aspiration affects field equivalence.

Protocol: SDI-12, ASCII automatic/polled, NMEA 0183 with query option, or Modbus RTU; configurable RS-232/485/422 or SDI-12 interfaces. Confirm ordered mode and wiring.

Equipment: Compatible logger, mast, power and uplink. AWS810/DMU801 is one documented station context.

Power: 5–32 V DC power-up per M211840EN-G. Current consumption depends on mode, interface and intervals; optional heating requires a separately checked power budget.

Connectivity: Serial/logger boundary is not an Internet API.

Maintenance: Inspect siting, shield and precipitation surface; retain service/calibration.

Data access: Authorised logging adapter; not connected in prototype.

Restrictions: Solar radiation is not included in this standard variable bundle. Rain totals have reset semantics.

Local uncertainties: Local availability, scientific approval, installation design, radio/network suitability and institutional acceptance remain unverified.

Downstream use: Weather datastreams and explicitly weighted area comparisons.

Source date: 2026-11-02

Status: Optional extension; researched documentation only

Cost category: Current local quotation and lifetime operating cost not established.

Sources: ARC-S02; ARC-S03; ARC-S04; ARC-S40

Davis Instruments DEV-03

Exact model and configuration: Wireless Vantage Pro2 6323M metric sensor suite with 24-hour fan-aspirated shield

Manufacturer: Davis Instruments

Classification: Wireless sensor suite plus separate gateway/service

Measured variables

Outside temperature (°C): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S05; ARC-S06; ARC-S07; ARC-S08; ARC-S13; ARC-S15.

Outside humidity (%RH): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S05; ARC-S06; ARC-S07; ARC-S08; ARC-S13; ARC-S15.

Wind speed/direction (m/s / degrees): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S05; ARC-S06; ARC-S07; ARC-S08; ARC-S13; ARC-S15.

Rain accumulation (mm): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S05; ARC-S06; ARC-S07; ARC-S08; ARC-S13; ARC-S15.

Accuracy: Manufacturer-linked family sheet: outside temperature ±0.5 °C typical; rain ±3% or one 0.2 mm tip up to 250 mm/h. Confirm these against the current exact regional SKU. Unlisted per-variable tolerances are not adopted.

Protocol: Compatible Davis wireless receiver, then authorised WeatherLink v2 API.

Equipment: WeatherLink Live 6100 or another compatible receiver, router, separate gateway power and mounting. UV, solar, soil and leaf sensors are optional.

Power: Suite solar/battery; gateway has separate supply; fan backup and servicing add operating requirements.

Connectivity: WeatherLink Live Wi-Fi/Ethernet. Local app cadence differs from cloud/API.

Maintenance: Clean gauge/shield; inspect fan, batteries, alignment using current manual.

Data access: Owned/shared eligible account and protected API key/secret; subscription controls history.

Restrictions: Verify metric/US order, regional radio band and entitlement. Public webpage is not API permission.

Local uncertainties: Local availability, scientific approval, installation design, radio/network suitability and institutional acceptance remain unverified.

Downstream use: Station observations retaining packet, unit, time; not automatic district coverage.

Source date: 2026-11-02

Status: Optional extension; credential-blocked integration

Cost category: Current local quotation and lifetime operating cost not established.

Sources: ARC-S05; ARC-S06; ARC-S07; ARC-S08; ARC-S13; ARC-S15

TEROS 12 with compatible ZL6 logger option

Exact model and configuration: TEROS 12 with compatible ZL6 logger option

Manufacturer: METER Group

Classification: Soil sensor; logger/gateway separate

Measured variables

Volumetric water content (m^3/m^3): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S09.

Temperature (°C): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S09.

Bulk electrical conductivity (µS/cm): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S09.

Accuracy: VWC ±0.03 m³/m³, typical in mineral soils with solution EC below 8, 000 µS/cm; medium-specific calibration ±0.01–0.02. Temperature ±1 °C from −40 to 0 °C and ±0.5 °C from 0 to +60 °C. Bulk EC ±(5% + 10 µS/cm) from 0–10, 000; ±8% from 10, 000–20, 000 µS/cm.

Protocol: DDI serial or SDI-12

Equipment: ZL6, EM60, Em50 or another compatible 4–15 V DC serial/SDI-12 logger. Retain depth and location metadata.

Power: 4–15VDC sensor; logger/uplink power separate.

Connectivity: Sensor cable to logger; connected logger/cloud entitlement separately verified.

Maintenance: Ensure soil contact, depth and calibration; verification clip or medium-specific calibration as justified.

Data access: Authorised logger file/API after provider contract verification.

Restrictions: BulkEC is not pore-waterEC or laboratory extractEC. Depth/deployment affect meaning.

Local uncertainties: Local availability, scientific approval, installation design, radio/network suitability and institutional acceptance remain unverified.

Downstream use: Soil observations, definition-evolution example and land-management evidence.

Source date: 2026-11-02

Status: Optional extension; researched documentation only

Cost category: Current local quotation and lifetime operating cost not established.

Sources: ARC-S09

OTT HydroMet DEV-05

Exact model and configuration: ecoLog 1000 SKU 5545000190-10UC, 0–10 m, 26 Ah, conductivity-equipped LTE-M example

Manufacturer: OTT HydroMet

Classification: Pressure/temperature/conductivity logger with cellular modem

Measured variables

Pressure-derived water level (m relative to declared datum): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S10; ARC-S11; ARC-S12.

Temperature (°C): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S10; ARC-S11; ARC-S12.

Conductivity (µS/cm or mS/cm): See the device accuracy conditions; any unlisted variable-specific tolerance must be confirmed.. Use the exact manufacturer revision and ordered variant; no local deployment validation has been completed. Sources: ARC-S10; ARC-S11; ARC-S12.

Accuracy: Pressure±0.05%FS; temperature±0.1°C. EC±0.5%(minimum1µS/cm) at5–2000µS/cm; ±1.5%(minimum0.01mS/cm) at0.1–100mS/cm; EC calibration5–45°C.

Protocol: Listed HTTPS/TLS1.2, HTTP, FTP/FTPS, MQTT/MQTTS; BLE service.

Equipment: Correct modem/SIM/antenna, probe/cable, mounting, water-level datum and authorised receiving endpoint.

Power: 3.6 V, 26 Ah lithium battery for the researched option. Life depends on sampling, transmission, temperature and conductivity operation.

Connectivity: The 10UC example uses LTE-M. Family EU 4G/2G variants differ; suitability for a local mobile network is unverified.

Maintenance: Inspect pressure datum/vent, fouling, calibration and battery; current regional manual required.

Data access: Authorised IP/file adapter only; real device not configured.

Restrictions: 10U lacks conductivity; 10UC includes it. Do not generalise across family variants.

Local uncertainties: Local availability, scientific approval, installation design, radio/network suitability and institutional acceptance remain unverified.

Downstream use: Water-level/quality observations. Reservoir volume requires reviewed level-volume relationship.

Source date: 2026-11-02

Status: Optional extension; official documentation partly available, no device test

Cost category: Current local quotation and lifetime operating cost not established.

Sources: ARC-S10; ARC-S11; ARC-S12

WeatherLink v2 authorised station data

Type: Station observations through provider cloud

Variables: Configured sensor-type weather fields

Source date: 2026-11-02

Status: Credential-blocked integration

Endpoint example: GET https://api.weatherlink.com/v2/current/{station-id}?api-key={server-side-key}

Coverage: Entitled owned/shared/qualifying stations only

Time coverage: History depends on entitlement. Unix timestamps mark the archive interval end; the historic API selects (start, end]. Preserve the source interval and timezone.

Latency: Basic 15-minute current, Pro 5-minute, Pro+ most recent for WeatherLink Live

Authentication: api-key query and X-Api-Secret header; protected server-side adapter

Licensing: Station relationship, subscription and redistribution permission required

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: station_id, sensors, sensor_type, data_structure_type, lsid, ts and sensor-specific data

Units: Preserve native units and map from exact sensor catalogue/data structure

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: 1000calls/hour, 10/second; history window≤86400seconds

Sources: ARC-S13; ARC-S14; ARC-S15; ARC-S16; ARC-S17; ARC-S39

Sri Lankan Weather Advisory System JSON

Type: Official issued warnings/advisories

Variables: Level, areas, language, validity, publication

Source date: 2026-11-02

Status: Credential-blocked integration

Endpoint example: GET https://was.meteo.gov.lk/api/warnings/changes?since={server-cursor}&lang=en

Coverage: Sri Lanka issued warning areas; not station coverage

Time coverage: Current and cursor changes; complete archive unverified

Latency: About60s changes polling recommended; no SLA

Authentication: X-API-Key; not obtained or used

Licensing: Read-only warning feed; preserve issuer/terms

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: id, day_key, name, level, valid_from, valid_to, summary_en/si/ta, areas_en, published_at; changes since

Units: Offset timestamps; no measured weather unit implied

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: 401invalidkey, 400since/lang, 429ratelimit. Retain returned server cursor; never fabricate a newer cursor.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: 120requests/60s; limit1–200(default50)

Sources: ARC-S18

Sri Lankan Weather Advisory System CAP/RSS

Type: Official warning metadata and CAP1.2 XML

Variables: Alert identity, area, validity, language

Source date: 2026-11-02

Status: Successfully tested public read

Endpoint example: GET https://was.meteo.gov.lk/cap/en/rss.xml

Coverage: Sri Lanka warning areas

Time coverage: Active warnings; full archive not established

Latency: Provider issue/expiry distinct from fetch cadence

Authentication: Documented CAP/RSS requires no key

Licensing: Preserve issuing authority; review terms

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: RSS linking CAP1.2 XML resources

Units: Official event/area/timestamps

Pagination: Follow only authorised CAP links; retain replacements/cancellations.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Rate limited; confirm CAP-specific service policy

Sources: ARC-S18

Open-Meteo forecast

Type: Gridded weather-model forecast

Variables: temperature_2m, precipitation and selected variables

Source date: 2026-11-02

Status: Successfully tested public read

Endpoint example: GET https://api.open-meteo.com/v1/forecast?latitude=52.52&longitude=13.41&hourly=temperature_2m,precipitation&forecast_days=1&timezone=UTC

Coverage: Global model grid; resolution depends on product

Time coverage: Normally7days; up to16days per product

Latency: Model-run dependent; no operational latency commitment

Authentication: Keyless public evaluation; customer endpoint/plan separately authorised

Licensing: Weather data is CC BY 4.0 with attribution and modification notices. The free API service is non-commercial; commercial service use requires a suitable subscription.

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: hourly.time, value arrays, hourly_units, grid coordinates, timezone

Units: Tested temperature_2m°C, precipitationmm

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: Evaluation tier documented; production/commercial plan not selected.

Limits: Free600/min, 5000/hour, 10000/day, 300000/month at check date

Sources: ARC-S19; ARC-S21

Open-Meteo historical weather

Type: Gridded reanalysis/historical model

Variables: temperature_2m, precipitation and selected hourly measures

Source date: 2026-11-02

Status: Researched documentation; adapter simulated

Endpoint example: GET https://archive-api.open-meteo.com/v1/archive?latitude=7.9&longitude=81.0&start_date=2020-01-01&end_date=2020-01-02&hourly=temperature_2m,precipitation&models=era5&timezone=UTC

Coverage: ERA5/ERA5-Land/IFS distinct grids

Time coverage: ERA5from1940; ERA5-Landfrom1950; IFSfrom2017

Latency: Historical release/product-dependent

Authentication: Evaluation or licensed route as applicable

Licensing: Retain CC BY 4.0 attribution and product-specific provenance. Commercial historical API access requires Professional or higher at the checked date; no plan is selected.

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Time/value arrays, units; pin product/model

Units: Use returned units and interval meaning

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Bound ranges/variables and confirm account limits

Sources: ARC-S20; ARC-S21

NASA POWER Hourly

Type: Gridded assimilation/satellite-derived analysis

Variables: T2M and selected solar/meteorology

Source date: 2026-11-02

Status: Successfully tested public read

Endpoint example: GET https://power.larc.nasa.gov/api/temporal/hourly/point?parameters=T2M&community=SB&longitude=0&latitude=0&start=20170101&end=20170102&format=JSON&time-standard=UTC

Coverage: Native source grid point/regional product; not station observations

Time coverage: Hourlyfrom2001-01-01 to near-real-time

Latency: Source/parameter dependent

Authentication: Public unauthenticated read tested

Licensing: Preserve NASA source attribution and exact dataset terms

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: properties.parameter byvariable/hour; header and parameters

Units: Community/parameter-specific; testedT2M C; explicitUTC

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: At most15parameters/request; bounded windows

Sources: ARC-S22; ARC-S23

Irrigation Department authorised exchange

Type: Institutional water records/publications

Variables: Reservoir/rain/river data only after dataset agreement

Source date: 2026-11-02

Status: Researched source catalogue; operational adapter unavailable

Endpoint example: No verified public observation API;catalogue https://www.irrigation.gov.lk/web/index.php?lang=en

Coverage: Named stations/assets/basins; exact roster/version required

Time coverage: Dataset-specific

Latency: Owner update policy unconfirmed

Authentication: Operational feed access unknown; no credentials used

Licensing: Custodian use/redistribution agreement required

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Obtain approved file/API contract; retain asset/table/row/period

Units: Declared water-level datum, m^3 or approved capacity unit, rainmm; gross/effective capacity separate

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Observation API/rate/size contract not established

Sources: ARC-S24

NSDI spatial metadata/services

Type: Institution-owned GIS services via catalogue

Variables: Permitted layer descriptions/places/geometries

Source date: 2026-11-02

Status: Researched documentation; endpoint not tested

Endpoint example: GET https://gisapps.nsdi.gov.lk/server/services/SLNSDI/Locations/MapServer/WMSServer?SERVICE=WMS&VERSION=1.3.0&REQUEST=GetCapabilities

Coverage: Layer extent, CRS, boundary edition, original scale

Time coverage: Layer version/validity

Latency: Owner-defined refresh

Authentication: Per-service access; discovery is not open feature permission

Licensing: Free/commercial datasets; owner approval

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: WMS1.3.0 capabilities documented; feature API only if separately authorised

Units: Layer CRS axes, scale and measurement semantics

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Per-service limits unverified; boundedBBOX/CRS

Sources: ARC-S25; ARC-S26; ARC-S38

DCS Paddy Statistics

Type: Official periodic tables

Variables: Sown/harvested area, yield, production

Source date: 2026-11-02

Status: Researched documentation; table-import adapter simulated

Endpoint example: Catalogue https://www.statistics.gov.lk/Agriculture/%20StaticalInformation/PaddyStatistics

Coverage: Published district/season/irrigation grain; variety breakdown not inferred

Time coverage: Maha cross-year, Yala; exact revised release

Latency: Seasonal publication and revision

Authentication: Public table documents; no API claim

Licensing: Confirm exact release rights

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Season, district, area meaning, unit, extent, yield, production, release

Units: Metric/imperial separate; ha, t/ha, t only when table specifies

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Complete deterministic table parsing

Sources: ARC-S27

DOA SEPC / Agstat

Type: Official agriculture publications

Variables: Agstat, cultivation cost, crop forecasts, budgets

Source date: 2026-11-02

Status: Researched documentation; document-import fallback

Endpoint example: Catalogue https://doa.gov.lk/sepc-downloads_en/

Coverage: Publication-specific geographic grain

Time coverage: Periodic editions

Latency: Publication schedule; not real-time

Authentication: Public catalogue; API discovery unreadable, so no routes inferred

Licensing: Edition/rights need custodian review

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Table/page/schema contract; no undocumented API

Units: Table-specific unit, season, crop meaning

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Parse all rows deterministically

Sources: ARC-S28

DMC official warning documents

Type: Issued bulletins/withdrawals

Variables: Issuer, issue/validity, area, replacement

Source date: 2026-11-02

Status: Researched documentation; manual/reference fallback

Endpoint example: Catalogue https://www.dmc.gov.lk/index.php?Itemid=279&lang=en&option=com_dmcreports&report_type_id=8&view=reports

Coverage: Named basins/areas in bulletin

Time coverage: Dated notices; complete archive not guaranteed

Latency: Issue time; no polling SLA

Authentication: Public document list; no API inferred

Licensing: Preserve issuer; automation/reproduction rights reviewed

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Document with exact page and metadata

Units: Source-issued warning classifications; no sensor-derived authority

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: Bounded catalogue checks

Sources: ARC-S29

LUPPD authorised land-use release

Type: Custodian spatial/statistical release

Variables: Land-use classes, coverage, planning definitions

Source date: 2026-11-02

Status: External institutional dependency; current interface unavailable

Endpoint example: No verified endpoint;retain existing LUPPD source identity and approved file/manual fallback

Coverage: Official coverage/geometry/class release unconfirmed

Time coverage: Release-specific

Latency: Unconfirmed

Authentication: Custodian agreement; no verified public API

Licensing: Rights and exact release unconfirmed

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Reuse authorised GIS/file intake; retain institutional claims

Units: Owner-declaredCRS, area unit, categorical meaning

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: No machine contract verified

Sources: No verified current interface reference; institutional confirmation required.

CEA water-quality institutional source

Type: Official laboratory reports and environmental data catalogue

Variables: Approved sample parameters, laboratory method and results; exact released table required

Source date: 2026-11-02

Status: Researched official source; authorised report/file fallback

Endpoint example: Catalogue https://cea.lk/web/en/2013-05-07-07-51-07/environmental-pollution-contorl-division/water-quality-unit

Coverage: Named water bodies/sites and sample locations; no project-area coverage inferred

Time coverage: Release/sample-specific; complete archive not established

Latency: Owner publication or authorised exchange schedule

Authentication: Public service catalogue; restricted records require custodian agreement

Licensing: Exact dataset and reuse rights unconfirmed; some laboratory/project services commercial

Permissions: Source owner and intended audience must authorise use; no blanket redistribution claim.

Schema: Source report/table, sample identity, location, depth, time, method, result, unit and qualifier

Units: Parameter- and method-specific; retain detection limits and censored values

Pagination: Provider-specific bounded pages/windows; retain cursor, overlap and replay-safe source key.

Error handling: Validate HTTP/schema; retain rejected evidence. Bounded backoff, quarantine/failure queue, resumable watermark and deduplication. Missing delivery is not zero.

Freshness: Keep phenomenon period, provider issue time, receipt and last successful fetch separately; show stale coverage.

Cost category: No price adopted; institutional/service cost and procurement remain unconfirmed.

Limits: No public observation API contract established

Sources: ARC-S41; ARC-S42

Complete source locators and provider options

The references below identify the publisher and supporting passage for devices, data services, mapping, reporting and document extraction. See From a rain gauge to a recorded reading and From a document to a checked value for the related workflows.

ARC-S01 Campbell Scientific ClimaVue 50 G2

https://www.campbellsci.com/products/climavue50-g2 Overview and Specifications: supply, Air Temperature, Wind Speed, Precipitation SDI-12; compatible Aspen10/loggers; 3.6–15VDC; temperature±0.6°C; wind max(0.3m/s, 6%); rain±5% at0–1000mm/h. Liquid precipitation and stated siting/operating conditions. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S02 Vaisala WXT536 station context

https://docs.vaisala.com/r/M212902EN-G/en-US/GUID-E6912022-5F36-44DF-90CA-2721236D948C Vaisala Weather Transmitter WXT536 WXT536 is a transmitter within a complete station. Power, logger and communications are separate responsibilities. Version: M212902EN-G. Checked: 2026-11-02. Status: Researched documentation

ARC-S03 Vaisala WXT536 specifications

https://docs.vaisala.com/r/M212902EN-G/en-US/GUID-AD3DAFAA-7537-453B-969B-B3229E311DD7 Measurement tables and footnotes1, 2, 5, 7 Temperature sensor element±0.3°C at20°C; wind±3% at10m/s; daily rain better than5%, weather-dependent, excluding wind-induced error. Natural aspiration affects calm-weather readings. Version: M212902EN-G. Checked: 2026-11-02. Status: Researched documentation

ARC-S04 Vaisala configurable WXT530

https://store.vaisala.com/en/products/WXT530 Digital outputs and WXT536 variant Official indexed catalogue lists SDI-12, RS-232, RS-485, RS-422. Page body unreadable; confirm exact power, heater, protocol and order bundle. Version: Current configurable family. Checked: 2026-11-02. Status: Official source partly readable

ARC-S05 Davis Vantage Pro2 fan-aspirated suite

https://www.davisinstruments.com/products/wireless-vantage-pro2-iss-with-24-hr-fan-aspirated-radiation-shield Product title and Highlights Listed6323/6323M; outside temperature/RH, wind, rain; solar/battery. WeatherLinkLive6100 is optional. UV, solar-radiation and soil/leaf sensors are additional options. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S06 Davis WeatherLink Live

https://www.davisinstruments.com/pages/weatherlink-live Live Data; Wi-Fi and Ethernet; compatible stations Separate compatible wireless gateway with Wi-Fi/Ethernet uplink. Local same-network app cadence differs from cloud API permissions. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S07 Davis wireless family specification

https://cdn.shopify.com/s/files/1/0515/5992/3873/files/6152_6162_6153_6163_Spec_SheetFF__Web.pdf?v=1661460993 Printed pp1, 5, 6, 8: rain tip, rainfall, outside temperature, wind Metric tip0.2mm; rain total±3% or one tip up to250mm/h; outside temperature±0.5°C typical. Family

sheet is not proof of unchanged current regional SKU. Version: Manufacturer-linked historical family sheet. Checked: 2026-11-02. Status: Researched documentation

ARC-S08 Davis fan-aspirated ISS addendum

https://cdn.shopify.com/s/files/1/0515/5992/3873/files/VP2_Fan_Aspirated_ISS_Rev_C.pdf Printed p7 Fan-Aspirated Shield Specifications; maintenance Solar-powered fan, backup cells and cleaning/service requirements. Reconcile historical manual with current purchased hardware. Version: RevC22March2006. Checked: 2026-11-02. Status: Researched documentation

ARC-S09 METER TEROS12

https://metergroup.com/products/teros-12/ Measurement, Communication, Electrical Specifications VWC, temperature, bulkEC; DDI/SDI-12; 4–15VDC; compatibleZL6/EM60/Em50. Generic mineral-soilVWC±0.03m³/m³ when solutionEC<8000µS/cm; medium calibration±0.01–0.02. BulkEC is not laboratory/pore-waterEC. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S10 OTT ecoLog1000 conductivity SKU

https://www.ott.com/products/5545000190-10uc Product title and Technical Attributes 5545000190-10UC:0–10m, 26Ah, conductivity, LTE-M. Pressure±0.05%FS; temperature±0.1°C; EC conditions vary. Later full-page reads timed out; official indexed specifications retained. Version: Exact10UC variant. Checked: 2026-11-02. Status: Official documentation partly available; no device test

ARC-S11 OTT ecoLog1000 instructions

https://www.ott.com/download/operating-instructions-groundwater-datalogger-ott-ecolog-1000-5/ Section2.2 USA variant table Indexed manufacturer manual distinguishes10U from conductivity10UC, LTE-M. Current download redirects; obtain current regional manual before purchase. Version: Indexed manual; direct download unresolved. Checked: 2026-11-02. Status: Current direct download unavailable

ARC-S12 OTT ecoLog1000 data sheet

https://www.ott.com/products/download/data-sheet-ott-ecolog-1000-en/ Communications, measured values, power Indexed sheet distinguishes EU4G/2G and globalLTE-M. Conductivity optional at family level. Current link redirects to general resources. Version: Indexed sheet; current link redirects. Checked: 2026-11-02. Status: Current direct download unavailable

ARC-S13 WeatherLinkv2 introduction

https://weatherlink.github.io/v2-api/ Station access criteria Ownership, owner-share or qualifying upgrade determines access. Public visibility does not grant unrestricted observation API access. Version: WeatherLinkv2. Checked: 2026-11-02. Status: Researched documentation

ARC-S14 WeatherLink authentication

https://weatherlink.github.io/v2-api/authentication API Key; API Secret api-key query parameter and X-Api-Secret header. Connector keeps credentials server-side and redacts URL logs. Version: WeatherLinkv2 current authentication. Checked: 2026-11-02. Status: Researched documentation

ARC-S15 WeatherLink data permissions

https://weatherlink.github.io/v2-api/data-permissions WeatherLink Console/Live table Basic 15-minute current records, no history; Pro 5-minute current and history; Pro+latest/history, subject to station relationship. Version: WeatherLinkv2. Checked: 2026-11-02. Status: Researched documentation

ARC-S16 WeatherLink rate limits

https://weatherlink.github.io/v2-api/rate-limits Default rate limits 1000calls/hour and10calls/second per API key. Version: WeatherLinkv2. Checked: 2026-11-02. Status: Researched documentation

ARC-S17 WeatherLink size limits

https://weatherlink.github.io/v2-api/size-limits Historic windows Starting/ending Unix timestamps; historic request window at most86400seconds. Version: WeatherLinkv2. Checked: 2026-11-02. Status: Researched documentation

ARC-S18 Sri Lankan Weather Advisory System

https://was.meteo.gov.lk/api-docs Authentication; Warnings; Changes; Timestamps; CAP/RSS; Errors KeyedJSON warnings vs keylessCAP1.2/RSS; en/si/ta; 120requests/60s; limit1–200(default50); changes uses returned since cursor. This is an issued warning feed, not a station API. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S19 Open-Meteo forecast API

https://open-meteo.com/en/docs Weather Forecast API; hourly variables; response Gridded model forecast arrays with timestamps and units; retain product/run, resolution and interval. Not physical station observations. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S20 Open-Meteo historical weather

https://open-meteo.com/en/docs/historical-weather-api Historical Weather introduction/data sources ERA5from1940 at0.25°, ERA5-Landfrom1950 at0.1°, IFSfrom2017 at9km. Use consistent product for comparisons; coordinate is not district coverage. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S21 Open-Meteo access terms

https://open-meteo.com/en/pricing Free/Open Access table; FAQ Free API is non-commercial: 600/minute, 5,000/hour, 10,000/day, 300,000/month. Paid customer access differs; historical

APIs require Professional or higher. Data is CC BY 4.0 with attribution; this differs from API-service terms. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S22 NASA POWER Hourly API

https://power.larc.nasa.gov/docs/services/api/temporal/hourly/ Formats; Time Standards; Limitations; Point examples Hourlyfrom2001; at most15parameters/request; UTC or defaultLocalSolarTime. FormatsJSON/CSV/NetCDF. Nativeparameter/community units. LST is not Sri Lankan civil time. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S23 NASA POWER data sources

https://power.larc.nasa.gov/docs/faqs/data/ Sources; Units; Latency Solar is satellite-informed modeled data; meteorology derives fromMERRA-2/GEOS-ITassimilation. Preserve source grid/resolution. Not station observations. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S24 Sri Lanka Irrigation Department

https://www.irrigation.gov.lk/web/index.php?lang=en Water Management; Hydrology; Publications; Flood Warning Official water/irrigation source discovery. Homepage does not establish public observation API, automated reuse rights or update SLA. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S25 Sri Lanka NSDI Geoportal

https://www.nsdi.gov.lk/geoportal Geoportal description Official spatial metadata/service discovery; per-layer authority, scale, rights and versions remain necessary. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S26 Sri Lanka NSDI FAQ

https://www.nsdi.gov.lk/faq Availability; publishing prerequisites Free and commercial datasets coexist; publishing links requires registration/institutionalMOU. Discovery is not blanket redistribution permission. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S27 DCS Paddy Statistics

https://www.statistics.gov.lk/Agriculture/%20StaticalInformation/PaddyStatistics Paddy Statistics definitions; tables; revision note MahaSep–Marfollowingyear; YalaApr–Aug. Asweddumized, sown, harvested differ. Production uses harvestedarea×crop-cuttingyield. Preserve revised releases; district totals do not imply variety breakdown. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S28 DOA SEPC downloads

https://doa.gov.lk/sepc-downloads_en/ Agstat, cost-of-cultivation, crop-forecast categories Official periodic agriculture/weather/paddy publications. Preserve edition, page/table,

units/periods. Public API and redistribution licence not established. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S29 DMC flood warnings

https://www.dmc.gov.lk/index.php?Itemid=279&lang=en&option=com_dmcreports&report_type_id=8&view=reports Flood Warning and withdrawal notices Official bulletins/withdrawals. Preserve issuer, issue/validity, area and replacements; prototype thresholds cannot issue official warnings. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S30 OGC SensorThings Sensing1.1

https://docs.ogc.org/is/18-088/18-088.html Sections8.2.1–8.2.8; conformance Thing, Location/HistoricalLocation, Sensor, ObservedProperty, Datastream, Observation, FeatureOfInterest. A datastream has one sensor/property and units. Conceptual alignment is not certified conformance. Version: OGC18-088Version1.1; published2021-08-04. Checked: 2026-11-02. Status: Researched documentation

ARC-S31 Kimball declared grain

https://www.kimballgroup.com/data-warehouse-business-intelligence-resources/kimball-techniques/dimensional-modeling-techniques/grain/ Grain Declare what one fact row represents before choosing dimensions and facts. Grain is a binding design choice. Independent source aggregation before joining is the proposed architecture's application of this principle. Version: Author guidance. Checked: 2026-11-02. Status: Researched documentation

ARC-S32 Kimball stars and OLAP

https://www.kimballgroup.com/data-warehouse-business-intelligence-resources/kimball-techniques/dimensional-modeling-techniques/star-schema-olap-cube/ Star schemas and OLAP cubes Dimensional stars and multidimensional OLAP are analytical representations; retain grain and aggregation meaning. Version: Author guidance. Checked: 2026-11-02. Status: Researched documentation

ARC-S33 Open Data Cube

https://opendatacube.readthedocs.io/en/latest/ Overview; metadata; analysis; masking Gridded Earth-observation data/metadata across space, time, variable. CRS, mask, resolution and product definitions matter. Not a business approval ledger. Version: Latestdevelopmentdocsobserved1.9.23.dev65; pin chosen release. Checked: 2026-11-02. Status: Researched documentation

ARC-S34 OpenAI file inputs

https://developers.openai.com/api/docs/guides/file-inputs Input mechanisms; file-specific processing; spreadsheet augmentation; usage FileID, Base64 or URL inputs. PDFs include text/page images. Non-PDF embedded charts/images are not extracted. Spreadsheet processing uses first1000rows/sheet. Each file and combined request under50MB. Parse complete tables

deterministically. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S35 OpenAI Structured Outputs

https://developers.openai.com/api/docs/guides/structured-outputs Supported schemas; edge cases; text.format JSON-Schema subset constrains shape. Responses text.format can usejson_schema/strict. Handle incomplete/refusal responses; schema conformity is not factual correctness. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S36 OpenAI File Search

https://developers.openai.com/api/docs/guides/tools-file-search File Search; results inclusion; metadata filtering Hosted vector-store retrieval with metadata filters/citations/results. Re-authorise current rights and versions before model context or result delivery. Search is not numerical authority. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S37 OpenAI data controls

https://developers.openai.com/api/docs/guides/your-data Endpoint retention; Responses; Files; residency Default abuse logs may retain content up to30days with exceptions. Response state, Files/vectorstores have distinct retention/deletion. Special retention/residency needs eligibility/configuration. No automatic zero-retention or Sri Lanka residency. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S38 NSDI Location WMS documentation

https://nsdi.gov.lk/location WMS GetCapabilities link ExactWMS1.3.0capabilityURL documented; no feature licence, completeness or service-availability inference. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S39 WeatherLink current and historic endpoint tutorial

https://weatherlink.github.io/v2-api/tutorial Steps 2–4; archive interval explanation Current endpoint and secret header verified. Historic records timestamp the interval end, with selection (start, end]; midnight can close the preceding day. Version: API v2 live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S40 WXT530 interfaces and option bundles

https://docs.vaisala.com/r/M211840EN-G/en-US/GUID-6B30C4BA-CEF6-40DF-9F60-41935D25AB9D Tables 1–2: features and available options Power-up 5–32 V DC; SDI-12, ASCII, NMEA 0183 and Modbus RTU protocols; RS-232/485/422 and SDI-12 interfaces. Heating and auxiliary inputs are configuration options. Version: M211840EN-G. Checked: 2026-11-02. Status: Researched documentation

ARC-S41 CEA laboratory services and surface-water source discovery

https://cea.lk/web/en/2013-05-07-07-51-07/environmental-pollution-contorl-division/water-quality-unit Water Quality Monitoring Unit; services; downloads Official laboratory services include inland water monitoring, analytical reports and a surface-water data download section. Some sample/project services are commercial. No public observation API is established here. Version: Official live documentation. Checked: 2026-11-02. Status: Researched documentation

ARC-S42 CEA selected inland water bodies

https://www.cea.lk/web/en/component/content/article?id=1801&layout=edit Ambient Water Quality Monitoring of Selected Major Inland Surface Water Bodies Lists Kelani River, Diyawanna Oya, Maha Oya, Bolgoda Lake and Benthara Ganga. This programme list does not establish local project coverage or an automated feed. Version: Page last updated 2025-01-09. Checked: 2026-11-02. Status: Researched documentation

ARC-S43 ClimaVue 50 G2 manual, specification discrepancy

https://s.campbellsci.com/documents/us/manuals/climavue50g2.pdf Section 6, specifications Search-indexed manual reports typical RH ±3% and pressure ±5 hPa at 25°C, differing from current product page/brochure specifications. Resolve hardware/revision-specific specification with supplier. Version: Official manual; indexed copy predates current product-page check. Checked: 2026-11-02. Status: Researched official indexed manual; revision confirmation required

ARC-S44 ClimaVue 50 G2 manufacturer brochure

https://s.campbellsci.com/documents/us/product-brochures/b_climavue50-g2-a4-branded.pdf Specification headings: pressure, wind, solar, precipitation, tilt and lightning Current indexed brochure supports product-page pressure, wind, solar and precipitation values. Reconcile delivered hardware and calibration certificate with the older manual. Version: Official product brochure; revision date unconfirmed. Checked: 2026-11-02. Status: Researched official indexed brochure

6 2 Land Use Change Decision Rules

DEC-DP01-001 uses method LAND-CHANGE-1. Help a land-use planner find important changes inside the project area, assess the evidence and choose the next investigation.

Inputs. Use a fixed analysis boundary inside each division. Keep the project portion separate from the full administrative division. The three prototype areas and their shapes are fictional.

Group	Required information
Source and observation	Publisher, original URL or file, dataset release, observation year and season where relevant. Creation or revision years do not automatically identify the observation period.
Area and classification	Division code, fixed analysis boundary and area in hectares, boundary version, native class/code, proposed class and mapping version, physical land area versus seasonal crop extent.
Values and quality	Original area and unit, explicit missing value/reason, unclassified area, coverage, area method, representation, coordinate system, raster resolution and local quality reference.

Formulas and units

Calculation	Definition	Unit
Net change	Later area minus earlier area	ha
Percentage change	100 times net change divided by earlier area; unavailable when earlier area is zero	%
Annual change	Net change divided by elapsed years; interval average, not a forecast	ha/year
Gross loss and gain	Loss sums matched areas leaving a class. Gain sums matched areas entering it. Net equals gain minus loss	ha
Converted extent	Sum matched areas whose from and to classes differ. Count each area once, rather than adding all class gains to losses	ha
Unit conversion	One hectare is 10000 square metres. Retain the original value and unit alongside the converted value	ha

Comparison and input rules

1. Compare matching analysis boundaries, class definitions, measure types, methods, seasons and source series. Both endpoints must cover the complete selected area; otherwise withhold whole-area change and transitions.

2. Class totals plus unclassified area must equal the fixed analysis area. A blank stays missing and zero stays a known zero. Do not invent a balancing value or join chart lines across missing points.

3. Keep native source categories and codes. A conflicting proposed category is rejected. An ambiguous native class stays unresolved with a mapping note and is excluded from analysis until its mapping is resolved.

4. Order divisions by the largest absolute net class-area change, or by the largest absolute percentage change. Show both metrics and the class used. Allow any change, decreases or increases. Exclude zero-baseline percentages from percentage sorting. Sorting does not set an action threshold.

5. Real gross losses, gains and conversions require matched spatial observations. Net area totals cannot establish where conversion occurred. The prototype constructs fictional parcel histories to demonstrate the rule; its generator is not a real conversion-estimation method.

6. Example annual inputs update the in-page numerical records only after structural and area-total checks. Charts, transitions and exports use those revised records. Reference images retain their independently stated source, coverage and date. Official-source selections remain previews.

7. A decision example records the selected division, analysis scope, years, class, sorting rule, comparison, coverage, reason, next action, proposed responsible role, follow-up and dataset/boundary/class/method versions. Incompatible evidence forces a source-data check. Nothing is assigned or sent by the prototype.

Worked example using fictional data

Scope and period	Earlier forest ha	Later forest ha	Loss ha	Gain ha	Net ha
Laggala Pallegama 2015 to 2019	6800	6782	26	8	-18
All three examples 2015 to 2019	14900	14868	56	24	-32

For Laggala Pallegama, net change is 6782 minus 6800 = -18 ha. Percentage change is 100 times -18 / 6800 = -0.2647%. Average annual change is -18 / 4 = -4.5 ha/year. Gross loss of 26 ha and gain of 8 ha reproduce the same -18 ha net change. These values do not establish actual project results.

The numerical transition example uses matched fictional area histories. Its independently sourced historical reference images are not generated from those records. Real transition areas require compatible dated observations, source permissions, definitions and quality evidence.

Sources and method categories

Government publication - Sri Lanka National Spatial Data Infrastructure. Planning Cadastre Landuse and Forest Boundary service metadata. Landuse layer 4 native classifications; Forest Boundary layer 1 forest_type domain and coordinate system. Native labels, codes and spatial metadata. The inspected metadata does not establish a comparable annual project series.

Source:Open reference

Supporting reference:Open reference

Institution publication - Copernicus Global Land Service. CGLS LC100 Collection 3 version 3.0.1. 2015 to 2019 product and discrete classification definitions. Annual broad cover classes at nominal 100 m. Woody crops can enter tree or shrub classes; this source alone cannot split every detailed local land use.

Source:Open reference

Supporting reference:Open reference

Government publication - Department of Census and Statistics Sri Lanka. Paddy Statistics. District and Maha or Yala seasonal extent definitions. Seasonal crop context. Sown, harvested and asweddumized extents are not interchangeable with a physical land-cover map.

Source:Open reference

Institution publication - Intergovernmental Panel on Climate Change. 2006 Guidelines Volume 4 Chapter 3. Sections 3.3 and 3.5 consistent land representation, net versus gross change and uncertainty. Methodological context for matched land representation and transition accounting. This prototype is not a greenhouse-gas inventory.

Source:Open reference

Institution publication - UN Handbook on Remote Sensing for Agricultural Statistics. Chapter 8 Map Validation and Use of Maps for Area Estimation. Sections 8.1, 8.3 and 8.5; Gilberto Camara and Lorenzo De Simone. Reference sampling, accuracy assessment and area uncertainty. A global accuracy figure does not replace local validation.

Source:Open reference

Validation required - SHARED project proposal. LAND-CHANGE-1 local comparison and screening specification. This decision specification and its fictional worked example. Local class grouping, scope, sorting choices and intended use require confirmation in Institution review. Arithmetic, conversion, consistency and input handling are developer checks.

Source:Open reference

Published definitions and methodological guidance retain their publisher and locator. Local grouping, scope, sorting criteria and intended use remain project proposals. Record client and expert confirmation in Institution review only. Developer checks cover arithmetic, units, class conflicts, area closure, missing values and consistent output.

Acceptance. Apply scenarios LU A1 to LU A6 in SRS section 5 6. The 22 retained calculation/input checks and 14 purpose checks are prototype software evidence, not independent scientific or stakeholder acceptance.

6 3 Domain Decision Rules

Published method status. Verified published formula means the calculation matches its cited publication. Verified published component covers only the named part. The decision register gives the publisher and exact locator. Confirm local inputs, settings and intended use through Institution review.

Input checks follow the measurement definition. Keep valid signed measurements, reject impossible physical values, and distinguish wet-basis moisture percentages from other moisture bases. Published measurement definitions and source locators are listed in the calculation appendix. Local comparison limits still require confirmation in Institution review.

The current decision contracts retain all 820 IDs and 57 family IDs across 41 institutions. LAND-CHANGE-1 covers DEC-DP01-001; the other 819 decisions use 110 named variants. The 20 Meteorology decisions use their specific METEO-1 definitions in Weather data and Meteorology decisions. Use each decision ID and method version to select the matching rule.

For every decision, Decision_Register.csv and the online appendix record the question, typed fields, units, worked and changed examples, missing-input check, method version, source category and map role. The matching Institution review page contains the same current dashboard views and its review questions. Published observations retain their source, place and period; realistic examples remain labelled. Changes in one open page do not change another page or its saved feedback.

Use a published method only for its supported component and stated input convention. Local source matching, parameters, intended use and authority remain separate. Published methods and items needing confirmation are listed in Institution review.

Common checks

Retain area, period, units, definitions and source version. Copy source sheet and cell references exactly. Check ranges, balances and denominators. If evidence is missing, show the supported example result and state what is needed. Withhold calculations that require missing or invalid inputs.

Reference maps

The corrected decision examples use locally stored authentic reference images where geographic context helps. The Matale and Kandy district locators do not show the fictional proposal, reservation or hazard areas. The first land-use example also links to source-derived 2015 and 2018 forest-class images of a regional window. Image years and sources remain separate from the numerical example years. Existing live maps elsewhere in the prototype are preserved; this correction does not add or verify a live spatial integration. Target spatial requirements retain their existing scope and approval status.

Realistic examples and published observations

Use meaningful labels such as Bg 300, pepper exports, water-service zones and Laggala Pallegama. The rice grouped-count fixture remains 586 plots with a separate 804 ha area

denominator. Its counts and variety allocation are illustrative. DCS and DOA publications support the crop and variety context, not those counts or institutional adoption.

DCS publishes paddy yields for whole districts. In the all-schemes kg per net hectare column, Kandy is 2859 in 2024 Yala and 3761 in 2025 Yala; Matale is 4500 and 4302; Nuwara Eliya is 3905 and 3941. Retain the period and net-hectare basis. Seasonal differences do not establish a cause.

Sources: Department of Census and Statistics Sri Lanka, Paddy Statistics metric district tables for 2024 Yala and 2025 Yala, page 1, all-schemes average yield column. Government publication.

https://www.statistics.gov.lk/Resource/en/Agriculture/paddystatistics/PaddyStatsPages/Yala2024Metric.pdf

https://www.statistics.gov.lk/Resource/en/Agriculture/paddystatistics/PaddyStatsPages/Yala2025Metric.pdf

Explicit domain variants

Field and map comparison

DEC-DP01-004 checks a place when the map and the field record describe it differently. A map label of Forest and a field description of trees mixed with crops are a reason to check the evidence.

Place and records. Demonstration case reference; Exact site or plot reference; Do both records cover the same place?; Map classification; Field classification; Field description.

Observation dates and definitions. Map observation date; Field observation date; Map classification scheme and version; Field classification scheme and version; Can the classification definitions be compared?; Can the observation periods be compared?; Evidence for matching place, periods and definitions.

Sources and review. Map source and version; Field record and version; Evidence reviewed in this example; What does the reviewed comparison show?; Reviewed document or site-evidence reference; Affected area, if measured (ha).

Method. Check the exact site and extent first; obtain both observation dates, source versions and classification definitions. Compare only documented matching records. Prepare a draft field check when a reviewed difference remains. Reviewed site evidence may support a proposed correction for later review.

Example. DEMO-MAP-01 has no exact site, observation dates or matching classification definitions, so request those records first. DEMO-MAP-03 has matching records and a reviewed difference, so prepare a draft field check. If the records are reconciled, prepare a comparison note. After site evidence is reviewed, a remaining difference supports a proposed correction for the responsible officer to check. Removing the site reference returns the case to an evidence request. These are realistic examples.

Source and limits. Validation required - SHARED project comparison rule. Forest and Agroforestry retain the definitions of their source schemes. Different labels, dates or extents do

not establish an error, land-use change or legal status. A division name and reporting year do not identify a plot or date both observations. Demonstration progress grants no approval. Sources: DD-LOCAL. Exact locators are in the source register. A count of cases does not decide which record is correct.

Fragmentation
Total holding area / parcel count, alongside count and documented separation. This is a descriptive summary, not a validated fragmentation index or coordination decision. Result units: ha/parcel, parcels. Small parcels do not establish agreement to consolidate holdings. The holding area, parcel count and documented separation describe different aspects; no validated fragmentation index is produced.

Decision bindings: DEC-DP01-012. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Land change
Net=later−earlier; percentage=100×net/earlier when earlier>0. Matched transitions must reproduce net=gain−loss. Net totals alone do not establish conversion. Result units: ha, %. Same boundary, definitions, observation basis and adequate map quality are required. Coverage changes and classification error are not proven land-use change. Example boundaries and transitions are fictional.

Decision bindings: DEC-DP01-013, DEC-DP07-001, DEC-DP12-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Erosion area
Category share = 100 × category amount / total compatible category amounts. HHI = sum of squared fractional shares, displayed on a 0–1 scale. Result units: ha, %. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Decision bindings: DEC-DP02-003. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Water productivity
Saleable crop output / Matching irrigation water input, for the same product, process and period. Result units: kg/m³.

Decision bindings: DEC-DP02-010, DEC-DP05-013, DEC-DP06-011, DEC-DP10-014. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Cost ha
Sum non-overlapping costs, then divide by the matching verified quantity for the same currency and accounting period. Result units: LKR/ha, LKR. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Decision bindings: DEC-DP02-017, DEC-DP03-002, DEC-DP10-003, DEC-DP33-006. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Rice plots
Plot share =100 × distinct eligible plots in category / eligible plots in all categories. Sown-area shares use a separate hectare denominator; grouped inputs do not verify plot identity. Result units: plots, %. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Decision bindings: DEC-DP03-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Dated variance
Observed date minus planned date in calendar days. Missing actual dates are pending, not zero delay. Approved working-day rules require a defined calendar. Result units: days.

Decision bindings: DEC-DP03-004, DEC-DP05-018, DEC-DP06-018, DEC-DP11-008, DEC-DP16-015, DEC-DP29-001, DEC-DP33-004. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Crop yield
Harvested crop output / Matching harvested crop area, for the same product, process and period. Result units: kg/ha.

Decision bindings: DEC-DP03-006, DEC-DP09-004. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Cash balance
Opening + receipts/additions − payments/reductions − other documented adjustments. Compare with independently recorded closing. A negative cash scenario is a shortfall, not an invalid water volume. Result units: LKR. Use the same physical boundary, period and units. A residual is a reconciliation issue, not automatically a measured loss.

Decision bindings: DEC-DP04-010, DEC-DP24-007, DEC-DP28-011, DEC-DP32-011, DEC-DP35-018, DEC-DP41-013. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Pump energy
Electric energy consumed / Water pumped, for the same product, process and period. Result units: kWh/m³.

Decision bindings: DEC-DP05-016, DEC-DP22-009. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Mahaweli plan
Compatible + conditional + reported conflict + unresolved area must equal total proposal area. Reported conflict share = 100 × conflict area / total proposal area. These are supplied area records, not a map calculation. Result units: ha, %. A percentage cannot establish plan compatibility or permission. Unresolved plan matches and conditions remain visible. The reference image is geographic context, not the source of these areas.

Decision bindings: DEC-DP06-008. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Mahaweli reservation
Reported overlap share = 100 × reported activity overlap / total observed activity area. Count common overlapping parts once in the supplied survey record. No map intersection is performed. Result units: ha, %. A reported overlap is not a finding of unlawful occupation. Confirm the applicable survey, reservation basis, permissions and inspection evidence. No fixed reservation width, eviction, penalty or safety determination is inferred.

Decision bindings: DEC-DP06-009. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Probability forecast
Use the METEO-1 definition for DEC-DP08-008 in Weather data and Meteorology decisions. It gives the current fields, calculation or review steps, matching records, source and limits.

Decision binding: DEC-DP08-008. Method: METEO-1. Sources: DD-BRIER, DD-LOCAL. The current online appendix entry uses the same decision ID.

Series mismatch
Use the METEO-1 definition for DEC-DP08-011 in Weather data and Meteorology decisions. It gives the current fields, calculation or review steps, matching records, source and limits.

Decision binding: DEC-DP08-011. Method: METEO-1. Sources: DD-LOCAL. The current online appendix entry uses the same decision ID.

Point overlay
100×distinct spatially matched receptors / receptors in the same frame. Count a receptor once across overlapping areas; do not invent hectare areas from points. The areas/counts are supplied records; this decision view does not calculate intersections, distances or locations. Result units: %, facilities, assets. Geometry preparation must use matching coordinate systems, dated boundary editions and valid spatial predicates. Overlap supports referral; it does not determine ownership, permission or site safety. A static reference image does not verify these supplied measurements or boundaries. Use the exact unit declared by the selected decision; compare matching units only.

Decision bindings: DEC-DP16-012, DEC-DP17-003. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register. DEC-DP08-016 uses the separate METEO-1 definition in Weather data and Meteorology decisions.

Numeric mismatch
Later/comparison value minus Earlier/source value. Relative change = 100 × difference / Earlier/source value when the earlier value is positive. Result units: kg, %, ha, mm, mg/kg, LKR, LKR/kg, t C/ha. Keep both originals, units, scope, method, calibration and correction history. A difference does not identify which source is correct; no automatic averaging or overwrite. Use the exact unit declared by the selected decision; compare matching units only.

Decision bindings: DEC-DP10-019, DEC-DP14-002, DEC-DP17-010, DEC-DP23-014, DEC-DP23-017, DEC-DP24-006, DEC-DP25-017, DEC-DP40-009. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register. DEC-DP08-018 uses the separate METEO-1 definition in Weather data and Meteorology decisions.

Lineage
Follow recorded upstream→downstream links within the same scope and period. Flag missing links; a confirmed defect identifies downstream linked candidates for authorized investigation. Result units: items. Recorded lineage is not proof of product identity or recall authority. Preserve multi-source batches, transfers and versions; do not clear unlinked lots as safe.

Decision bindings: DEC-DP09-013, DEC-DP18-012, DEC-DP34-017, DEC-DP36-016. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Variety area
Category share = 100 × category amount / total compatible category amounts. HHI = sum of squared fractional shares, displayed on a 0–1 scale. Result units: ha, %. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Decision bindings: DEC-DP10-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Cost progress
100 × spending/phased budget, and verified−planned physical progress. Do not subtract LKR from physical progress, infer earned value or equate expenditure with outcomes. Result units: %, percentage points.

Decision bindings: DEC-DP11-002. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Study design
Check whether the question has a defined outcome, appropriate study design, comparison, baseline/follow-up, sampling, confounding and attrition evidence. Do not manufacture an effect estimate from missing design information. Result units: items. The arithmetic alone does not establish causation. Design, parallel trends, confounding, attrition, uncertainty and adverse effects need appropriate evidence.

Decision bindings: DEC-DP12-007, DEC-DP35-004, DEC-DP40-012. Sources: S92, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Location mismatch
Display supplied location separation with the two reported accuracies and coordinate-reference evidence. Do not treat a matched name or boundary overlap as confirmed identity. Result units: m.

Decision bindings: DEC-DP13-004, DEC-DP31-004. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Feature changes
Changed-feature share = 100 × documented changed features / matching feature frame. Unchanged-or-no-reported-change = frame − changed − unknown. No material-change threshold is inferred. Result units: %, features. Count each eligible unit once for the selected service and period. Received messages, attendance, adoption and outcomes are separate measures.

Decision bindings: DEC-DP14-011. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Survey cost
Sum non-overlapping survey costs and divide by verified kilometres of the same survey work/terrain class. This does not compare unlike cadastral cases by an undefined survey count. Result units: LKR/km surveyed, LKR. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Decision bindings: DEC-DP14-018. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Schema mismatch
Compare original definitions, identifiers, units and versions against documented equivalence evidence. Preserve conflicts and unresolved mappings; do not subtract category labels or silently merge records. Result units: items.

Decision bindings: DEC-DP15-010. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Damage loss
Asset quantity × replacement/repair unit cost. Show interrupted economic flows separately; no automatic damage+flow total or double counting. Result units: LKR, LKR/period. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Decision bindings: DEC-DP16-002. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Weighted proportion
Weighted proportion = sum(weight×indicator0/1)/sum(weight). Report the classification and eligible population; use design information for uncertainty. Result units: 0 or1. Retain sampling frame, strata, clusters, nonresponse and calibration. The prototype does not invent complex-design variance, confidence intervals or small-area precision. These fictional binary observations demonstrate design weighting. Do not pool changed definitions, population frames or reference periods; no official rate or design variance is produced.

Decision bindings: DEC-DP20-001, DEC-DP20-015. Sources: S91, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Survey precision
Relative standard error=100×design-based SE/abs(estimate), only for a nonzero estimate and an actually supplied design-based SE. Sample count alone does not determine geographic precision. Result units: %. Retain sampling frame, strata, clusters, nonresponse and calibration. The prototype does not invent complex-design variance, confidence intervals or small-area precision. The estimate and standard error are fictional monthly household-income statistics. The 20% review criterion is illustrative; sample count alone does not supply a design-based standard error.

Decision bindings: DEC-DP20-003. Sources: S91, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Publication revision
Match the exact statistical series and version used by each listed publication against its replacement version. A publication using an older version, or with unknown update evidence, needs revision review. Count each listed publication once. Result units: publications. Only documented dependency records are checked. This does not discover unlisted publications or amend a published statistical estimate.

Decision bindings: DEC-DP20-004. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Weighted area production
Estimated production=sum(weight×production); estimated harvested area=sum(weight×area); aggregate yield=estimated production/estimated area. Do not average individual yields without the matching denominator. Result units: kg/ha. Retain sampling frame, strata, clusters, nonresponse and calibration. The prototype does not invent complex-design variance, confidence intervals or small-area precision.

Decision bindings: DEC-DP20-013. Sources: S91, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Groundwater trend
Display observations in dated order. Sample SD uses n−1; coefficient of variation = 100 × SD / positive mean. Result units: m. Groundwater head and depth below ground have opposite directional meanings. Match datum, pumping state and seasonal context; observed drawdown is not itself a safe-yield estimate. Heads refer to an arbitrary stated datum. Compare pumping state, season and measurement method; do not calculate relative percentage or infer sustainable abstraction.

Decision bindings: DEC-DP21-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Aquifer balance
Calculated closing = opening + inflows − releases/transfers − other outflows. Residual = independently observed closing − calculated closing. Result units: m³. A storage-change calculation needs a defined aquifer boundary and compatible volume estimates. Groundwater head in metres is not a storage volume; uncertainty and safe-abstraction review remain separate.

Decision bindings: DEC-DP21-007. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Well proximity
Display measured separation with hydrogeological direction, source type and the reviewed protection criterion. Distance alone cannot determine contamination, safety or a statutory protection area. Result units: m. Geometry preparation must use matching coordinate systems, dated boundary editions and valid spatial predicates. Overlap supports referral; it does not determine ownership, permission or site safety.

Decision bindings: DEC-DP21-008. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Drilling
Drilling cost / completed depth. Display tested yield and the stated success definition separately; cost per metre does not determine safe abstraction. Result units: LKR/m, L/s.

Decision bindings: DEC-DP21-016. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Billed water
NRW=input−billed authorized use. Water losses=NRW−unbilled authorized use. Residual real loss=water losses−estimated apparent losses, only when all components are available. Result units: m³, %. NRW is not all leakage. An unknown apparent-loss estimate keeps residual real loss unavailable. Meter uncertainty and matching time/zone boundaries matter.

Decision bindings: DEC-DP22-001. Sources: DD-NRW, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Leakage evidence
NRW=input−billed authorized use. Water losses=NRW−unbilled authorized use. Residual real loss=water losses−estimated apparent losses, only when all components are available. Result units: m³, %. NRW is not all leakage. An unknown apparent-loss estimate keeps residual real loss unavailable. Meter uncertainty and matching time/zone boundaries matter.

Decision bindings: DEC-DP22-002. Sources: DD-NRW, DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Supply outages
Time availability = 100 × (stated window − union of no-supply intervals) / positive stated window. Record interruption count and longest duration separately; count overlapping outage intervals once. Result units: %, events, hours. This is a fictional return for one stated supply zone and window. Time availability does not establish water quality, pressure, equitable household access or operational continuity.

Decision bindings: DEC-DP22-011. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Food basket
Basket cost = rice kg × rice LKR/kg + red-dhal kg × red-dhal LKR/kg + white-sugar kg × white-sugar LKR/kg. Compare locations only for the same quantities, product specifications, currency and price period. Result units: LKR. This is a fictional three-item basket with stated quantities. It is not an official consumer-price index, nutritional basket, current market quotation or household expenditure estimate.

Decision bindings: DEC-DP25-006. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Input expenditure
Specified quantity × comparable unit price. Sum only non-overlapping items from the same basket specification, location and price period. Result units: LKR. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Fictional same-grade urea prices are in LKR/kg. Quantity and unit price effects are kept separate; no current market price is implied.

Decision bindings: DEC-DP25-011. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Labour
Cash cost/ha = hired days×cash wage/area. Total effort/ha=(hired+unpaid family days)/area. Do not value unpaid labour as zero opportunity cost. Result units: LKR/ha, person-days/ha.

Decision bindings: DEC-DP25-013. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Export composition
Compute export-value and quantity shares independently within compatible product and reporting frames; never add currency and kilograms. Result units: LKR, %. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Decision bindings: DEC-DP26-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Export unit value
Recorded export value / Export quantity on matching product basis, for the same product, process and period. Result units: LKR/kg. A unit value mixes prices and product composition. It is not automatically a like-for-like market price. Match grade, product code, currency and period.

Decision bindings: DEC-DP26-004, DEC-DP37-004. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Human match
Match documented expertise, available effort, date windows and required conflict/clearance evidence. A match suggests a candidate; it appoints nobody. Result units: hours. A candidate match does not reserve stock, appoint a person, authorize waste reuse or form a contract.

Decision bindings: DEC-DP27-007, DEC-DP40-011, DEC-DP41-012. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Business retention
Lower =100 × known survivors / original cohort. Upper =100 × (known survivors + unknown) / original cohort. Survivors + known failures + unknown = original cohort; replacements do not enter it. Result units: %, enterprises. These bounds account for unknown status; they are not statistical confidence intervals. Use actual follow-up dates and distinguish cohort membership from repeated visits.

Decision bindings: DEC-DP27-009. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Plot match
Compare the same specification and unit, uncommitted quantity and overlapping delivery windows. Keep mandatory quality and use conditions explicit. Result units: m². A candidate

match does not reserve stock, appoint a person, authorize waste reuse or form a contract. Matching text and area do not establish actual utility capacity, rights, environmental permission or a plot allocation.

Decision bindings: DEC-DP28-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Resource efficiency
Energy/output; water/output; and 100 × output/material input. Separate denominators and units; do not sum these efficiencies. Result units: kWh/kg, m³/kg, %.

Decision bindings: DEC-DP28-006, DEC-DP34-011. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Feedback
Category share = 100 × category amount / total compatible category amounts. HHI = sum of squared fractional shares, displayed on a 0–1 scale. Result units: cases, %. Categories must be mutually exclusive and cover the stated frame. Do not mix values, quantities, plots or hectares, or treat an HHI competition threshold as an institutional policy.

Decision bindings: DEC-DP31-020. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Cash timing
Order the supplied dated receipts and payments. Start with the stated opening cash; add each receipt and subtract each payment once. Minimum cash is the lowest chronological balance, including opening cash. Shortfall = max(0, −minimum cash). Closing cash is opening + receipts − payments. Result units: LKR. These are dated fictional cash assumptions, not actual bank balances or a credit recommendation. A positive closing balance can conceal an earlier shortage. Same-day receipt/payment ordering needs evidence.

Decision bindings: DEC-DP33-007, DEC-DP36-011, DEC-DP37-016, DEC-DP38-018. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Buyer offer
Net receipt per initial kg = quoted buyer price × (1 − assumed mass loss% / 100) − matching transfer/handling cost per initial kg. Do not subtract a trader purchase price from a farmer's own produce. Result units: LKR/initial kg. Quotes, loss assumptions and costs are fictional. Compare matching grades, weighing bases, payment timing and terms. The result does not authorize a purchase, sale, financing or supply agreement.

Decision bindings: DEC-DP33-014. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Cost output
Sum non-overlapping costs, then divide by the matching verified quantity for the same currency and accounting period. Result units: LKR/kg green leaf, LKR. An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable. The denominator is green leaf, not made tea. Compare the same moisture, weighing, cost and accounting-period basis.

Decision bindings: DEC-DP34-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Mass conversion
Gross recovery = 100 × made-tea mass / received green-leaf mass, on the explicitly stated incoming and outgoing moisture bases. This is not a dry-matter conversion efficiency. Result units: %. The fictional tea example uses 1,200 kg green leaf and 270 kg made tea. The unrepresented mass includes water removed and cannot all be called waste.

Decision bindings: DEC-DP34-010, DEC-DP37-001. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Procurement offer
Landed cost per retained kg = (purchase price per initial kg + matching transfer/handling cost per initial kg) / (1 − assumed mass loss% / 100), only when some mass is retained. Result units: LKR/retained kg, LKR/initial kg. Quotes, loss assumptions and costs are fictional. Compare matching grades, weighing bases, payment timing and terms. The result does not authorize a purchase, sale, financing or supply agreement.

Decision bindings: DEC-DP36-002. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Tonne km
Shipment cost / (actual load tonnes × verified route kilometres). Match empty-return treatment and cost allocation. Result units: LKR/(t km). An absent or zero denominator has no unit-cost result. Keep fixed, variable and opportunity costs identifiable.

Decision bindings: DEC-DP37-002. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Affected lots
Follow recorded upstream→downstream links within the same scope and period. Flag missing links; a confirmed defect identifies downstream linked candidates for authorized investigation. Result units: items. Recorded lineage is not proof of product identity or recall authority. Preserve multi-source batches, transfers and versions; do not clear unlinked lots as safe.

Decision bindings: DEC-DP37-009. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Process energy
Energy consumed / Saleable product output, for the same product, process and period. Result units: kWh/kg.

Decision bindings: DEC-DP37-011. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Verification cost
Total checking cost = staff + travel + other non-overlapping costs. Cost per accepted hectare = total / accepted hectares. A zero accepted area has no unit-cost result. Result units: LKR/ha, LKR. Illustrative watershed-care agreement. Contract rules, rate, payer, monitoring and

safeguards need confirmation in Institution review. Maintained hectares do not establish a measured water-quality improvement.

Decision bindings: DEC-DP39-004. Sources: DD-LOCAL, PES-FAO. Exact per-decision inputs and evidence remain in the controlled decision register.

Followup retention

Lower =100 × known survivors / original cohort. Upper =100 × (known survivors + unknown) / original cohort. Survivors + known failures + unknown = original cohort; replacements do not enter it. Result units: %, participants. These bounds account for unknown status; they are not statistical confidence intervals. Use actual follow-up dates and distinguish cohort membership from repeated visits.

Decision bindings: DEC-DP40-016, DEC-DP41-017. Sources: DD-LOCAL. Exact per-decision inputs and evidence remain in the controlled decision register.

Mahaweli worked cases

DEC-DP06-008 Does this proposed use fit the system plan?

Fictional 2025 case in the Laggala Pallegama area. The Matale district image linked from this decision is geographic context; it does not establish Mahaweli jurisdiction, an official proposal boundary, a system plan or a reservation line.

Input	Starting value	Unit
Case and version	Proposal 1 / 2025 — fictional	
Geographic context	Laggala Pallegama geographic context; exact system jurisdiction is separate	
Exact site or asset reference	Not provided	
Applicable system jurisdiction established in this example	Missing	
Source for the applicable system office	Not provided	
Boundary and source edition	Fictional survey record / edition 1	
Matching survey and area definitions available in this example	Provided	
Proposed land use	Agricultural storage and access — fictional proposal	

Input	Starting value	Unit
Applicable plan and version	Fictional system plan / edition 1	
Applicable plan and rules available in this example	Provided	
Total proposal area	10	ha
Area matching the stated plan use	4	ha
Area with conditions to review	3	ha
Area with a reported plan conflict	2	ha
Area without a confirmed plan match	1	ha
Conditions and rule reference	Fictional conditions: check access and drainage; no official threshold is supplied	
Affected tenure and rights evidence	Missing	

Result. 10 ha proposed: 4 ha match the example plan, 3 ha have conditions, 2 ha have a reported conflict (20.0%), and 1 ha remain unmatched. No land-use permission is granted. Still needed: Exact site or asset reference; Applicable system jurisdiction and source for the responsible system office; Plan matches for the unmatched area; Affected tenure and rights evidence. The figures describe the supplied example records; they do not settle these gaps. Next check: Obtain the exact site and applicable system-office evidence.

Changed input. Exact site or asset reference = DEMO-CHECKED-SITE; Applicable system jurisdiction established in this example = Provided; Source for the applicable system office = DEMO-OFFICE-SOURCE; Affected tenure and rights evidence = Provided; Area matching the stated plan use = 5; Area without a confirmed plan match = 0. 10 ha proposed: 5 ha match the example plan, 3 ha have conditions, 2 ha have a reported conflict (20.0%), and 0 ha remain unmatched. No land-use permission is granted. Next check: Refer the reported conflict to the planning officer.

Missing source. No usable result. Matching survey and area definitions. Obtain the matching survey before interpreting the supplied areas. No permission, violation or enforcement action is inferred.

Requirements: FR063, FR095, SH-GEO-FEAT-014, SH-GEO-FEAT-020. Method MAHAWELI-1. The online appendix entry, decision page and Institution review use this same stable decision ID.

DEC-DP06-009 Does this activity overlap a reservoir or canal reservation?
Fictional 2025 case in the Laggala Pallegama area. The Matale district image linked from this decision is geographic context; it does not establish Mahaweli jurisdiction, an official proposal boundary, a system plan or a reservation line.

Input	Starting value	Unit
Case and version	Inspection 1 / 2025 — fictional	
Geographic context	Laggala Pallegama geographic context; exact system jurisdiction is separate	
Exact site or asset reference	Not provided	
Applicable system jurisdiction established in this example	Missing	
Source for the applicable system office	Not provided	
Boundary and source edition	Fictional survey record / edition 1	
Matching survey and area definitions available in this example	Provided	
Reservoir or canal and case reference	Reservoir-side activity — exact site not provided	
Activity observed	Temporary material storage — fictional observation	
Inspection date	2025-06-12	
Reservation survey and basis available in this example	Provided	
Total observed activity area	0.6	ha
Reported activity area inside the reservation	0.15	ha

Input	Starting value	Unit
Matching permission record	Missing	
Permission reference or reason it is unknown	No matching permission has been supplied in this fictional case	
Maintenance access reported obstructed	Unknown	

Result. 0.15 ha of the 0.6 ha observed activity is reported inside the reservation (25.0%). A matching permission is missing or disputed. This does not establish unlawful occupation. Still needed: Exact site or asset reference; Applicable system jurisdiction and source for the responsible system office; Matching permission record and conditions; Inspection evidence about maintenance access. The figures describe the supplied example records; they do not settle these gaps. Next check: Obtain the exact site and applicable system-office evidence.

Changed input. Exact site or asset reference = DEMO-CHECKED-ASSET; Applicable system jurisdiction established in this example = Provided; Source for the applicable system office = DEMO-OFFICE-SOURCE; Reported activity area inside the reservation = 0.05; Matching permission record = Provided; Permission reference or reason it is unknown = DEMO-PERMISSION; Maintenance access reported obstructed = No. 0.05 ha of the 0.6 ha observed activity is reported inside the reservation (8.3%). A permission reference is supplied for review. This does not establish unlawful occupation. Next check: Review the activity against the documented permission.

Missing source. No usable result. Matching survey and area definitions. Obtain the matching survey before interpreting the supplied areas. No permission, violation or enforcement action is inferred.

Requirements: FR063, FR095, SH-GEO-FEAT-014, SH-GEO-FEAT-020. Method MAHAWELI-1. The online appendix entry, decision page and Institution review use this same stable decision ID.

Reference image sources

Matale District location in Sri Lanka. Reference map image — not live. Matale District location in Sri Lanka. Map date: 2012-07-30. Uwe Dedering; uploaded by BishkekRocks. CC BY-SA 3.0. Detail crop of the published image only; no geographic features, points, labels or scenario overlays added.

https://commons.wikimedia.org/wiki/File:Sri_Lanka_districts_Matale.svg

https://creativecommons.org/licenses/by-sa/3.0/

Kandy District location in Sri Lanka. Reference map image — not live. Kandy District location in Sri Lanka. Map date: 2012-07-30. Uwe Dedering; uploaded by BishkekRocks. CC BY-SA 3.0. Detail crop of the published image only; no geographic features, points, labels or scenario overlays added.

https://commons.wikimedia.org/wiki/File:Sri_Lanka_districts_Kandy.svg

https://creativecommons.org/licenses/by-sa/3.0/

30 × 30 km historical map window around Knuckles; not a project boundary. Reference map image — not live. Copernicus land cover, 2015, 100 m. Contains modified Copernicus Service information (2020). Copernicus Global Land Service. Copernicus Global Land product licence. Previously prepared local crop and binary forest-class colouring. No new spatial processing in this correction.

https://land.copernicus.eu/en/products/global-dynamic-land-cover/copernicus-global-land-service-land-cover-100m-collection-3-epoch-2015-2019-globe

https://cds.climate.copernicus.eu/licences/Copernicus-Global-Land-product-licence

30 × 30 km historical map window around Knuckles; not a project boundary. Reference map image — not live. Copernicus land cover, 2018, 100 m. Contains modified Copernicus Service information (2020). Copernicus Global Land Service. Copernicus Global Land product licence. Previously prepared local crop and binary forest-class colouring. No new spatial processing in this correction.

https://land.copernicus.eu/en/products/global-dynamic-land-cover/copernicus-global-land-service-land-cover-100m-collection-3-epoch-2015-2019-globe

https://cds.climate.copernicus.eu/licences/Copernicus-Global-Land-product-licence

Additional source locators

DD-WATER — FAO56 root-zone water balance — Institution publication

Chapter8 equation85 and ETc = Kc ETo. Daily water balance components; local coefficients and operating assumptions still need review.

https://www.fao.org/4/X0490E/x0490e0e.htm

DD-PESTICIDES — Sri Lanka Registrar of Pesticides — Government publication

Current registration lists, restrictions and label guidance. Registration and label evidence; no treatment recommendation or automatic permission.

https://doa.gov.lk/rop-downloads/

DD-CEA — CEA ambient water regulations — Government publication

Gazette2148/20, Schedule of use-specific categories. Published ambient water categories and limits; do not substitute them for drinking-water, effluent, air or noise rules.

https://www.cea.lk/web/images/pdf/epc/2148-20_E-1.pdf

DD-BRIER — JMA numerical weather prediction outline — Government publication

AppendixA.3, equationsA.3.1 and A.3.3. Brier score and reference skill for binary probability forecasts; the prototype uses one specified event, not an undifferentiated seasonal score.

https://www.jma.go.jp/jma/jma-eng/jma-center/nwp/outline2022-nwp/pdf/outline2022_all.pdf

DD-NRW — JICA non-revenue water training materials — Institution publication

Training materials, section1.1, IWA water-balance table. NRW, unbilled authorized use, apparent and real losses are distinct components.

https://openjicareport.jica.go.jp/pdf/12364485_03.pdf

DD-ILO — ILO controlling occupational risks — Institution publication

Controlling risks; hierarchy of controls. Evidence-led control review; no universal numeric risk score or clearance.

https://www.ilo.org/topics-and-sectors/occupational-safety-and-health-guide-labour-inspectors-and-other/how-can-occupational-safety-and-health-be-managed/controlling-risks

DD-GBIF — GBIF biological survey publishing guide — Institution publication

Version1.0.2, sections5.4 to5.7 and7.3. Survey event, effort, protocol, sampling scope and non-detection context; not a population estimator.

https://docs.gbif.org/guide-publishing-survey-data/en/

DD-LOCAL — SHARED domain decision contracts — Validation required

Domain decision rules and matching fictional examples. Local comparisons, constraints, source matching, sorting and follow-up proposals; developer checks do not establish scientific or client approval.

https://sharedproto.wkslabs.com/reviews/dashboard-portfolio-20261027/srs-document/Calculations_and_Rules.html#domain-decisions

USDA-BULK-DENSITY — USDA NRCS: Soil Quality Indicators — Bulk Density — Government publication

Page 1, definition and Factors Affecting. Defines dry soil mass divided by total core volume, in g/cm³. Supports the measurement definition, not the fictional observations or a local compaction threshold.

https://www.nrcs.usda.gov/sites/default/files/2023-01/Soil%20Quality-Indicators-Bulk%20Density.pdf

FAO-MOISTURE-BASIS — FAO: Prevention of post-harvest food losses — Measurement — Intergovernmental publication

Section 1.1 Definitions, Moisture content, wet basis. Wet-basis moisture is water mass divided by the total mass of water and dry matter. Supports the stated percentage basis, not a commodity acceptance limit or the fictional observations.

https://www.fao.org/4/x0039e/x0039e01.htm

NIST-CELSIUS — NIST: SI Units — Temperature — Government publication

SI Units — Temperature, definition and exact temperature conversion. Zero kelvin is absolute zero and Celsius temperature equals kelvin temperature minus 273.15. Supports the physical lower bound, not shipment specifications or fictional observations.

https://www.nist.gov/pml/owm/si-units-temperature

Published ecosystem accounting context: United Nations DESA, System of Environmental-Economic Accounting Ecosystem Accounting, December 2024, publication entry and SEEA account definitions. Extent, condition, physical service flows and monetary accounts remain separate. The publication entry is available; direct PDF retrieval returned access denied during checking. Obtain the full current method before operational account compilation.

https://desapublications.un.org/publications/system-environmental-economic-accounting-ecosystem-accounting-seea-ea

6 4 Payments for Ecosystem Services

PES means payments for ecosystem services. In this fictional example, upstream farmer groups maintain riverbank vegetation and soil cover. An illustrative downstream water-user fund pays under an annual agreement. The intermediary keeps the agreement and evidence together; an independent checker checks the work.

Follow the example: agree the work and conditions; check the field record; calculate a proposal; then record separate authorisation and actual payment evidence.

Annual work record	Example
Agreed area	24 ha
Checked area	22 ha = 20 ha meeting conditions + 2 ha needing correction
Area still to visit	2 ha; checked 22 ha + unvisited 2 ha = agreed 24 ha
Annual payment proposal	min(20 ha × LKR 12,500 per ha/year, LKR 300,000) = LKR 250,000
Funding and payment	LKR 200,000 available; funding confirmation missing. No amount ready for authorisation. Authorised = 0; paid = 0.

These hectares show work compliance only. They do not prove cleaner water, additional environmental benefits or a monetary value of the ecosystem. Annual rates and caps are fictional agreement settings.

Checking possible displacement of land clearing
DEC-DP39-008 compares two fixed 200 ha observation areas using the same clearing definition, season and observation window. New clearing near the agreement increases from 0.6 ha to 1.4 ha; clearing in a separate comparison area increases from 0.4 ha to 0.5 ha. The two increases are 0.8 ha and 0.1 ha. Their difference is 0.7 ha. Investigate this signal; it does not prove that the agreement caused clearing.

DEC-DP39-007 uses the same published difference-of-changes arithmetic for ground cover: (85 − 60) − (67 − 62) = 20 percentage points. Comparable sites, baseline conditions and a defensible study design must be assessed before making a causal or additionality claim.

The 20 PES questions

Decision	Question
001	Which field checks are due?
002	How much agreed work passed the check?
003	What was checked, proposed and paid?
004	How much does a field check cost?
005	Is the scheme ready to start?
006	Can this group join the scheme?
007	Did the scheme add an environmental improvement?
008	Did land clearing move outside the agreement area?
009	Could the agreed work be lost or damaged?
010	Which service agreement is practical?
011	What payment can we propose?
012	How would the payment be shared?
013	Is the same work being claimed twice?
014	How should we measure the work and its benefits?
015	Is there enough money for the full agreement?
016	Could participation harm a household or its rights?
017	Which complaints need a response?
018	Is the checker independent?

Decision	Question
019	Should the agreement continue, change or close?
020	Do the service name, unit and agreement match?

Data needed

Obtain the versioned scheme and service agreement from its owner, the mapped area and rights/consent records from authorised custodians, field observations and signed protocol from the checker, and the rate schedule, funding commitment, authorisation and transaction references from the responsible payer. Record the original source, year, units, definitions, quality and permitted use. No approved Knuckles PES agreement or tariff is supplied by these examples.

Source basis

FAO, Payments for environmental services: what role in sustainable agricultural development?, ESA Working Paper 11-20, December 2011, section 2, printed pages 3–6: conditional agreements, additionality, displacement risks, durability and monitoring. Published institutional guidance; not a payment formula or a local rate.

https://www.fao.org/docrep/015/an456e/an456e00.pdf

World Bank, Impact Evaluation in Practice, second edition, chapter 7, Table 7.2, printed page 140: difference in differences = (treated after − before) − (comparison after − before). Verified published formula for the arithmetic used in DEC-DP39-007 and DEC-DP39-008. The publication does not verify these fictional data, the comparison design or a causal conclusion.

https://documents1.worldbank.org/curated/en/698441474029568469/pdf/Impact-evaluation-in-practice.pdf

The other PES rules are project checks or illustrative agreement arithmetic. Their status is Validation required. Use Institution review for local scheme authority, service definition, rights, safeguards, rate, funding, checking design and payment responsibility.

Sri Lanka Decision Source Audit

The original audit covers 820 decisions. The current prototype shows 507 active examples. The final section describes the 41 new decisions and links to the archive.

A source match covers the named calculation, method step or data. Confirm the local inputs and intended use in Institution review.

Decision-by-decision source list · Download the source audit · Institution review

Examples of Published References

Land-use change matrix and net area · Intergovernmental Panel on Climate Change

§3.3.2, Tables 3.5 and 3.6, printed pp. 3.14–3.15. Net area change = final area − initial area. The matrix tracks area moving into and out of each class.

Physical ecosystem extent account · United Nations Statistics Division

§4.2.2, paragraph 4.10 and Table 4.1, printed p. 85. Closing area = opening area + additions − reductions.

Ecosystem type change matrix · United Nations Statistics Division

§4.3.2, paragraph 4.34 and Table 4.2, printed pp. 90–91. Compare two dated maps and account for area changing ecosystem type.

Crop yield per harvested area · Food and Agriculture Organization of the United Nations

Metadata, Crop yield, printed p. 161. Crop yield = harvested production ÷ harvested area.

Water storage balance · United States Geological Survey

Appendix A, equation A1, printed p. 6. Change in water storage equals all inflows minus all outflows over the same period.

Temperature difference from a matching reference · NOAA Climate Prediction Center

Anomaly entry. Temperature anomaly is the observed temperature minus the corresponding long-term average.

Sample standard deviation · National Institute of Standards and Technology

§1.3.5.6 Measures of Scale, standard deviation. Sample standard deviation uses the square root of squared deviations summed and divided by n − 1.

Relative standard error percentage · Australian Bureau of Statistics

Relative standard error. For positive estimates, RSE (%) = 100 × standard error ÷ estimate.

Export unit value · International Monetary Fund and partner institutions

Chapter 1, paragraphs 1.188–1.189. Unit value = total value ÷ total quantity for a homogeneous item.

Tonne-kilometres denominator · Eurostat

§3.1 Data description, quantity and performance of road freight transport. Tonne-kilometres = weight carried in tonnes × distance travelled in kilometres.

Published rainfall departure · Department of Meteorology, Sri Lanka

5 November 2026 bulletin, page 4, Table 01. The district data use the period and baseline shown in the bulletin.

Domain References for Decision Rules

The examples on this page include international references. The online decision list identifies the Sri Lankan basis, where available, and the scope requiring local validation.

Decision-by-decision appendix · Download the source audit · Institution review

International Calculation References

Damage cost by affected asset class · World Bank and GFDRR

Section 2.1.4, Housing, and sector damage and loss sections. Damage cost = affected quantity × matching repair or reconstruction unit cost.

Debt-service coverage · World Bank Public-Private Partnership Resource Center

Financial ratios, Debt Service Coverage Ratio. Debt-service coverage = cash available for debt service ÷ (interest + principal due for that period).

Quoted price spread · FAO

Section 5.6.1, marketing margins and Exercise 5.3. Comparable price spread = selling price − buying price.

Cash balance roll-forward · FAO

Table 4.1 Monthly Cash Flow Budget, printed pp. 47–48. Closing cash = opening cash + recorded receipts − payments. Carry it forward to the next period.

Completion share · UK Government Digital Service

How to calculate your completion rate, steps 1–3. Completion share = 100 × completed transactions ÷ transactions started in the matching frame.

Examples of Published Guidance

Rainfall records for drought analysis · World Meteorological Organization

WMO-No. 1090, sections 1–3, author-deposited copy. Check the rainfall series and timescale before calculating SPI.

Water supply hazard review · World Health Organization and International Water Association

Modules 2–7, system description, hazards, controls, improvements and monitoring. Trace documented hazards and controls through the water supply system.

Agricultural price comparisons · Hector Kobbekaduwa Agrarian Research and Training Institute

Page 1, wholesale and retail averages and change, and pages 2 onward, prices by market. Match commodity, grade, market level, location and date.

Environmental service payments · FAO

Chapter 5, identifying services and providers, setting payments and monitoring. Use verifiable service conditions and confirm the local agreement's rates and limits.

Land-use and site evidence · FAO

Chapter 3, steps 4–7. Check present use, land suitability and alternatives before referral.

Survey Costing and Additional Source Checks

Survey Department Costing

Departmental Survey Regulations Chapter IV clauses 4.5 and 4.11

For a chargeable survey, the district office prepares the estimate under the applicable Surveyor General circular. Special cases go through the Provincial Surveyor General for instructions. Obtain the current circular and approved estimate. Compare cost per verified kilometre only for like-for-like line surveys with comparable work, terrain and cost basis.

International Report Links

GAO Schedule Assessment Guide · UNIDO 2020 yearbook · UNIDO and UNEP methods primer

Examples of Sri Lanka Source Matches

Soil-loss factor product · Panditharathne and colleagues

Methods, section 2.3 and equation 1. Estimated soil loss = R × K × LS × C × P.

Disaster damage cost · Government of Sri Lanka, Disaster Management Centre

PDF pp. 53 and 177, definitions of damage and loss and sector valuation method. Multiply affected quantities by the applicable repair or replacement unit cost by damage class.

Cash receipts and payments · Inland Revenue Department, Sri Lanka

Section 3.3 Statement of Cash Flow, printed pp. 56–57. Net cash movement is receipts less payments. Add net movement to opening cash to derive closing cash.

Paddy cash cost per area · Department of Census and Statistics, Sri Lanka

Section 4.1, cost of paddy production, printed p. 21. Normalize included cash production costs by the corresponding paddy area.

Tea manufacturing energy intensity · Sri Lanka Sustainable Energy Authority

Tea-industry benchmark tables 1–4, PDF pp. 10–13. Specific electricity consumption = electricity used in kWh ÷ kilograms of made tea.

176 decisions use a Sri Lankan method. See the decision source audit and the proposals in Institution review.

Sri Lankan Methods for Existing Decisions

The follow-up checked the 800 decisions without a direct Sri Lankan calculation or logic step. It found 66 additional matches for a specific step. Confirm case inputs and current rules in Institution review.

Crop evapotranspiration · Irrigation Department, Sri Lanka

Reservoir drought resilience study, section 2 Methodology. ETc = crop coefficient Kc × reference evapotranspiration ETo. Use mm/day for both ET values.

Decision references DP03-003, DP05-001, DP06-001, DP32-003, DP33-002

Area and yield production identity · Department of Census and Statistics, Sri Lanka

Explanatory notes, Paddy yields and Paddy production. For paddy, estimated production = net harvested area × average yield. Yield = production ÷ matching net harvested area when derived from compatible totals.

Decision references DP03-006, DP20-013

Same-period market price spread · Hector Kobbekaduwa Agrarian Research and Training Institute, Sri Lanka

Calculation of marketing margins, printed p. 52. Subtract the preceding market-stage price from the next-stage price using observations at the same point in time.

Decision references DP25-001, DP25-009, DP36-003

Gross margin per hectare · Hector Kobbekaduwa Agrarian Research and Training Institute, Sri Lanka

Paddy economics table with gross benefit, sum of variable costs and gross margin per hectare. Gross margin per hectare = gross benefit per hectare − variable costs per hectare.

Decision references DP03-017, DP25-007, DP33-001

Discounted net cash flows · National Planning Department guidance hosted by Sabaragamuwa Provincial Planning, Sri Lanka

Financial analysis, item 1 Financial Net Present Value. Financial net present value is the sum of discounted net benefits. Include the initial outlay at time zero.

Decision references DP05-017, DP09-012, DP11-016, DP22-018, DP25-015, DP26-012, DP27-005, DP28-005, DP32-017, DP33-013, DP33-018, DP34-013, DP37-017, DP38-001, DP38-004

Sri Lankan Methods for Existing Decisions (continued)

Non-revenue water volume · National Audit Office, Sri Lanka

Section 5.10.1, printed p. 103. Non-revenue water = produced water entering the stated supply system − water billed as authorized use.

Decision references DP22-001

Made-tea out-turn · Tea Research Institute of Sri Lanka

Net out-turn and green leaf price formula, Annexure I. Out-turn (%) = 100 × made-tea mass ÷ green-leaf mass.

Decision references DP34-010

Written permission for non-agricultural paddy use · Government of Sri Lanka

Section 34(1), printed p. 31. When the applicable rule identifies paddy land and the proposed use is non-agricultural, check the Commissioner-General's written permission before referral.

Decision references DP01-006, DP04-007, DP30-005

Mahaweli land request routing · Mahaweli Authority of Sri Lanka

Land disposal procedure for agricultural and commercial purposes. Use the land purpose and responsible Mahaweli office to identify the applicable land-disposal procedure before referring the application.

Decision references DP06-007

Reservation boundary source · Survey Department of Sri Lanka

Clause 10.4, major irrigation scheme reservations. For a major irrigation scheme, obtain the reservation from the Irrigation Department or Mahaweli Authority blocking-out diagram.

Decision references DP06-009

Sri Lankan Methods for Existing Decisions (continued)

Metadata discovery check · Sri Lanka National Spatial Data Infrastructure

Metadata standard section. Review whether the metadata is enough to discover the data, judge its suitability and find the route to access it.

Decision references DP15-017

Evidence used for landslide warning review · National Building Research Organisation and JICA

Section 6.1, Table 13, printed p. 44. Check the relevant 24-hour rainfall evidence and soil-water status against the archived NBRO warning and its stated criteria.

Decision references DP17-011

Ambient water limit comparison · Government of Sri Lanka

Gazette 2148/20, regulations 2–3 and Schedule. Select the applicable water-use category and compare the measured parameter in the schedule's unit and limit type.

Decision references DP18-001, DP05-011

Air quality averaging-period comparison · Government of Sri Lanka

Gazette 1562/22, Schedule and minimum observations note. Compare the matching pollutant with the limit for its averaging period only when enough valid observations support that average.

Decision references DP18-008

Boundary noise comparison · Government of Sri Lanka

Gazette 924/12, regulations 2–4 and Schedules I–II. Use the boundary measurement and the applicable zone and time-period limit. Check the background-noise provision when applicable.

Decision references DP18-009

Sri Lankan Methods for Existing Decisions (continued)

Effluent limit selection by receiving environment · Central Environmental Authority, Sri Lanka

Wastewater discharge standards, Gazette 2264/17 schedules. Select the applicable effluent schedule and limit using the discharge destination, parameter and unit.

Decision references DP22-016

Licence application routing · Central Environmental Authority, Sri Lanka

Prescribed activity categories and issuing authority table. Match the prescribed activity category and jurisdiction to the licensing authority before referring the case.

Decision references DP18-005

Environmental assessment screening · Central Environmental Authority, Sri Lanka

Procedure summary, prescribed projects and Project Approving Agencies. Check project type, scale and sensitive location against the prescribed-project rules. Refer a matching project for determination of the IEE or EIA route.

Decision references DP18-007

Protected wildlife research permit check · Department of Wildlife Conservation, Sri Lanka

Guidelines and General Conditions, opening paragraph and section 1. Refer regulated research involving protected species or protected areas for DWC permit review. Check the proposal, methods, site and proposed collections.

Decision references DP19-012, DP40-006

Industrial-mineral application evidence · Geological Survey and Mines Bureau, Sri Lanka

Mining Licence section, industrial mineral application evidence. For industrial mineral mining, check the detailed exploration report and relevant documents before referral.

Decision references DP23-005

Sri Lankan Methods for Existing Decisions (continued)

Mineral transport source check · Geological Survey and Mines Bureau, Sri Lanka

Regulation 9, Form 7 items 3–10. Check the applicable source licence, mine, mineral, quantity and destination against the transport application.

Decision references DP23-015

Successor nomination form check · Land Commissioner General's Department, Sri Lanka

Nomination of a successor for a Deed/Grant under the Land Development Ordinance. For the stated deed or grant route, check the required nomination form and supporting title record before referral.

Decision references DP24-010

Food export certificate referral · Food Control Administration Unit, Ministry of Health, Sri Lanka

Registration and factory inspection prerequisites for export certification. Check the establishment registration evidence and factory inspection status before referring an application for the applicable export certificate.

Decision references DP37-018

Green-finance activity screening · Central Bank of Sri Lanka

Environmental objectives, guiding principles and metric and threshold columns. Match the economic activity to its taxonomy row and check the activity-specific metric, threshold and do-no-significant-harm evidence.

Decision references DP38-007

Intercensal population change · Department of Census and Statistics, Sri Lanka

Section 3.1, Table 3.1, printed p. 50. Change = later census count − earlier count. Intercensal increase (%) = 100 × change ÷ earlier count.

Decision references DP20-016

Sri Lankan Methods for Existing Decisions (continued)

Registered-use evidence check · Department of Agriculture, Sri Lanka

Procedures and Guidelines in Pesticide Usage. Check the proposed use against the current registered product and approved label before referral.

Decision references DP03-012, DP33-010

Procurement action schedule · National Procurement Commission, Sri Lanka

Section 4.1.5 and Annexures VI–VII, Procurement Time Schedule. Use the approved procurement time schedule to check the dates and sequence of the pre-contract activities.

Decision references DP11-007, DP29-016

Budget utilization · National Audit Office, Sri Lanka

Section 2.1, financial progress and physical progress, printed p. 3. Budget utilization (%) = 100 × spending for the period ÷ allocation for that period. Report physical progress separately.

Decision references DP11-002

Seed-lot laboratory evidence · Department of Agriculture, Sri Lanka

Laboratory tests and seed certification services. Check the required seed-lot test results against the applicable certification standard. Include germination, viability, purity and moisture as relevant.

Decision references DP03-009, DP33-011

Export earnings year-on-year change · Central Bank of Sri Lanka

Summary of Merchandise Trade Statistics, Export Performance. Growth (%) = 100 × (current export earnings − corresponding prior-year earnings) ÷ prior-year earnings.

Decision references DP26-003

Sri Lankan Methods for Existing Decisions (continued)

Manufactured tea cost per kilogram · Department of Census and Statistics, Sri Lanka

Cost of production of tea, rubber and coconut, Tea. For made tea, normalize matching production cost by kilograms of manufactured tea.

Decision references DP34-001

Seasonal grain output per diverted irrigation volume · Lakmali, Gunawardena and Dayawansa, University of Peradeniya

Table 4, printed p. 347. Water productivity = seasonal paddy output in kg ÷ diverted seasonal irrigation supply in m^3.

Decision references DP05-013, DP06-011

Industrial well approval and metering · Government of Sri Lanka

Gazette 2010/23 (linked on WRB Acts & Gazettes), paragraphs 2–4, p. 2A and Annex 01. Check for a WRB-supervised safe-yield assessment and relevant approval. The directive also requires daily metering records for covered industry wells.

Decision references DP21-010

Forest transition and deforestation activity data · Government of Sri Lanka

Sri Lanka modified submission, Sections 9–10, Tables 10-2 and 10-3, and Section 12. Report forest-to-nonforest change and forest gain separately. Use reviewed area estimates and report their uncertainty.

Decision references DP07-001, DP12-001

Sri Lanka Decision Proposals

Review 28 proposals based on Sri Lankan methods. Open a proposal to see the data, worked example and source in Institution review.

Land Use Policy Planning Department · Review forest-to-nonforest transitions before choosing field visits

Natural Resources Management Centre · Compare paddy practices using rainfall and irrigation together

Department of Agriculture · Find handling stages with the most measured crop damage

Department of Agrarian Development · Check whether a seasonal paddy production return is consistent

Irrigation Department · Review reservoir storage under a constant-withdrawal scenario

Mahaweli Authority of Sri Lanka · Compare expected paddy production by Mahaweli block

Forest Department · Check forest conversion area before estimating emissions

Department of Meteorology · Compare station drought signals using published SPI bands

Provincial Departments of Agriculture · Compare district paddy yield with the matching major-scheme benchmark

Project Management Unit · Find a missing or late procurement stage before contract award

Sri Lanka Decision Proposals (continued)

Sub-Watershed Integrated Delivery Teams · Check restoration results using survival and water turbidity

Survey Department · Check the estimate for a chargeable survey request

Disaster Management Centre · Check which local teams should receive an issued landslide bulletin

National Building Research Organisation · Return incomplete geotechnical clearance applications for evidence

Central Environmental Authority · Check whether a wetland proposal requires environmental screening

Department of Census and Statistics · Check whether a district estimate is precise enough to compare

Water Resources Board · Follow up industrial wells missing metered-use evidence

National Water Supply and Drainage Board · Prioritize areas with many households collecting water off premises

Geological Survey and Mines Bureau · Ask for mining rehabilitation evidence before closure review

HARTI · Compare wholesale price margins relative to the producer price

Sri Lanka Decision Proposals (continued)

Export Development Board · Review export price movements using the published unit value index

District Secretariats · Recheck district budget use separately from physical completion

Grama Niladhari Officers · Check the village paddy parcel return before district reporting

Farmer Organizations · Allocate shared canal maintenance by registered paddy area

Plantation Workers/Community Groups · Check a drinking-water sample before referring it for lab testing

Processors and Exporters · Check food export inspection evidence before packaging approval is assumed

Banks and Finance Institutions · Check the evidence for a green activity claim against the taxonomy

PES Intermediaries · Estimate a metered water contribution for a watershed pilot

Published Methods for Remaining Decisions

The follow-up checked the remaining 624 decisions. It found 90 additional matches from Sri Lankan publications and 180 from international publications. Each match applies to the stated calculation or step.

Across all 820 decisions, 176 use a Sri Lankan method, 290 use an international method as the primary match, and 354 still need a direct published method. The audit records the subject, source and local check for each decision reviewed in this round.

Download the decision source audit or check a decision in Institution review. Local inputs, rules and approvals remain pending there.

Sri Lankan Sources for This Review

Compare feasible project alternatives · External Resources Department of Sri Lanka

Introduction to Project Planning and Logical Framework Approach. Selecting the most viable alternative, p. 54.

Compare the documented costs, benefits, feasibility and social and environmental effects of each option. Applies to 50 reviewed decisions.

Review environmental alternatives or mitigation · Central Environmental Authority of Sri Lanka

Environmental Impact Assessment Procedure. EIA process, alternatives and mitigation.

Identify potential impacts, document relevant alternatives and review the measures proposed to reduce significant impacts. Applies to 5 reviewed decisions.

Use the applicable soil-test interpretation · Department of Agriculture of Sri Lanka

Site Specific Fertilizer Recommendation Using Soil Tests. Soil sampling and Table 1 on interpretation of soil test values.

Use the soil test and the table for the stated parameter to support crop-specific nutrient advice. Applies to 3 reviewed decisions.

Use local land characteristics in suitability review · Ministry of Environment of Sri Lanka

National Land Use Policy of Sri Lanka. Land Use Planning, Land Capability Classification and Land Suitability.

Assess the potential of the land and water and the social and economic conditions for the specified use. Applies to 1 reviewed decision.

Match restoration approach to the site · Postgraduate Institute of Science, University of Peradeniya

Guidebook for Forest Restoration in Sri Lanka. Site selection, restoration approaches, and §9 monitoring and evaluation.

Use the baseline and site conditions to choose a restoration approach and monitor its performance after implementation. Applies to 3 reviewed decisions.

Calculate a survey response rate from eligible units · Department of Census and Statistics of Sri Lanka

Global Adult Tobacco Survey Sri Lanka 2020. Appendix A, response rates and final disposition categories.

Relate completed interviews to the eligible sample under documented disposition rules. Applies to 1 reviewed decision.

Price a common basket or set of quantities · Department of Census and Statistics of Sri Lanka

Technical Note on Colombo Consumer Price Index 2021. Price-updated values of the base-year basket.

Multiply comparable quantities by their matching prices and sum the component costs. Applies to 2 reviewed decisions.

Sri Lankan Sources for This Review Continued

Record farm labour by type and unit · Department of Agriculture of Sri Lanka

Cost of Cultivation of Agricultural Crops. Labour-use and labour-cost tables, family and hired labour.

Keep family and hired labour separate and compare labour use and cost on a common area basis. Applies to 1 reviewed decision.

Compare export composition by value · Sri Lanka Export Development Board

Export Performance Indicators of Sri Lanka 2024. Export Performance Indicator 2024, product and destination tables.

Report each product or destination's value against the matching total and retain volume separately. Applies to 1 reviewed decision.

Check warning authority and dissemination · Disaster Management Centre of Sri Lanka

National Emergency Operation Plan. §§2.3 and 3.4–3.5, responsible agencies, warning and dissemination.

Use the warning from the responsible technical agency and follow the documented dissemination arrangements. Applies to 3 reviewed decisions.

Check emergency readiness and assigned responsibilities · Disaster Management Centre of Sri Lanka

National Emergency Operation Plan. §2.3 emergency functions and preparedness arrangements.

Check the documented preparedness arrangements, responsible organizations and available support for the affected area. Applies to 3 reviewed decisions.

Trace a scheduled waste movement · Government of Sri Lanka

National Environmental Protection and Quality Regulations No. 1 of 2008. Gazette Extraordinary 1534/18, scheduled waste provisions and consignment schedules.

Use consignment and receiving records to trace the waste from the generator through transport to the receiving facility. Applies to 1 reviewed decision.

Match administrative areas to official codes · Department of Census and Statistics of Sri Lanka

Administrative Division Codes. Province, district, divisional secretariat and Grama Niladhari division codes.

Use the published code for the corresponding division level and edition. Applies to 3 reviewed decisions.

Check essential geographic metadata · Sri Lanka National Spatial Data Infrastructure

Reference Standards and Metadata Catalogue. ISO 19115 geographic metadata and data catalogue standards.

Check dataset identity, date, spatial coverage and lineage where applicable. Applies to 9 reviewed decisions.

Sri Lankan Sources for This Review Continued

Check comparable offers against stated requirements · National Procurement Commission of Sri Lanka

Procurement Manual 2024 for Goods Works and Non-Consulting Services. Bid evaluation, substantial responsiveness and delivery schedule criteria.

Compare offers with the stated specifications, material requirements, delivery terms and applicable price adjustments. Applies to 1 reviewed decision.

Identify the official survey estimate basis · Survey Department of Sri Lanka

Departmental Survey Regulations Sixth Edition. Chapter IV, clauses 4.5 and 4.11.

Use the official chargeable-survey estimate and applicable Surveyor General circular for the work type. Applies to 1 reviewed decision.

Compare planting dates with the applicable calendar · Department of Agriculture of Sri Lanka

Crop Calendar. Crop calendars by season and cultivation area.

Use the calendar for the crop, season and locality to check the proposed planting window. Applies to 2 reviewed decisions.

International Sources for This Review

Check schedule dependencies and resource conflicts · U.S. Government Accountability Office

Schedule Assessment Guide. Best practices 2, 3 and 9, dependencies, resources, and actual progress.

Sequence dependent tasks, assign resources and check whether simultaneous work exceeds available resources. Applies to 24 reviewed decisions.

Compare observed progress with the schedule baseline · U.S. Government Accountability Office

Schedule Assessment Guide. Best practices 9 and 10, actual progress and baseline schedule.

Retain the approved baseline and compare the reported actual milestone dates with the matching planned dates. Applies to 5 reviewed decisions.

Measure how long an open case has been waiting · Utah State Courts

Age of Active Pending Cases. Definition of case pending age.

Measure elapsed time from receipt of an open case to the assessment date. Applies to 54 reviewed decisions.

Compare usable capacity with demand · eCampusOntario Open Library

Fundamentals of Operations Management. §4.4 capacity planning, design and effective capacity.

Allow for known capacity constraints and compare the remaining capacity with demand in matching units and periods. Applies to 16 reviewed decisions.

Compare available stock with new demand · World Food Programme Logistics Cluster

Logistics Operational Guide. Managing Inventory Levels, committed inventory.

Distinguish physical stock from stock already committed. Use the available balance for planning. Applies to 12 reviewed decisions.

Reproduce a result from its original evidence · National Academies of Sciences Engineering and Medicine

Reproducibility and Replicability in Science. Chapter 3, computational reproducibility.

Repeat the analysis with the same data, methods and computational conditions and compare the outputs. Applies to 8 reviewed decisions.

Document dataset scope and revisions · World Wide Web Consortium

Data Catalog Vocabulary Version 3. Dataset temporal and spatial properties and previous version.

Retain dataset identity, coverage and version relationships when checking whether sources can be compared. Applies to 6 reviewed decisions.

International Sources for This Review Continued

Record documented mappings between source classifications · World Wide Web Consortium

SKOS Simple Knowledge Organization System Reference. §10 mapping properties, exactMatch and closeMatch.

Keep source concepts and use an explicit mapping to distinguish equivalence from approximate correspondence. Applies to 9 reviewed decisions.

Check whether biological surveys are comparable · Global Biodiversity Information Facility

Guide for Publishing Biological Survey and Monitoring Data. Survey Event, sampling protocol and sampling effort.

Retain the survey protocol, effort and event scope when comparing observations. Applies to 5 reviewed decisions.

Check what a study design can support · World Bank

Impact Evaluation in Practice Second Edition. Chapters on counterfactuals, sampling and attrition.

Check outcomes, comparison, baseline and follow-up evidence against the study design before attributing effects. Applies to 3 reviewed decisions.

Verify the alert record and its revision · OASIS

Common Alerting Protocol Version 1.2. §3.2 alert and information elements, status, message type, references, expiry and area.

Check the alert identity, status, update references, validity and geographic scope. Applies to 2 reviewed decisions.

Calculate the share of a footprint intersecting constraints · Esri

Tabulate Intersection. Usage, zone overlap percentages and overlapping input features.

Intersect the comparable geometries and divide the overlap area by the footprint area. Merge overlapping constraint areas before totaling the combined footprint share. Applies to 13 reviewed decisions.

Compare spatial positions against independent control · Federal Geographic Data Committee

National Standard for Spatial Data Accuracy. §3.2 testing positional accuracy, identical points and independent reference.

Compare the same locations against independently checked positions of higher accuracy, with consistent coordinate reference information. Applies to 2 reviewed decisions.

Compare matched quantities at a process stage · Food and Agriculture Organization of the United Nations

Food Loss Assessments in Small Scale Agriculture and Fisheries. Load tracking and parallel measurement of intended weight change.

Measure comparable amounts before and after a stage and account separately for intended weight changes such as drying. Applies to 7 reviewed decisions.

International Sources for This Review Continued

Monitor survival after planting · Food and Agriculture Organization of the United Nations

Forest Restoration Module. Table 3, monitoring and maintenance of planted forests.

Check the survival of planted trees at follow-up and distinguish established trees from failed areas before considering replanting. Applies to 2 reviewed decisions.

Link proposed payment to verified service delivery · Food and Agriculture Organization of the United Nations

Payments for Environmental Services. Conditionality and monitoring of service delivery.

Use monitoring evidence to check that the contracted activity or service was delivered before recommending payment. Applies to 2 reviewed decisions.

Keep physical and monetary service accounts distinct · United Nations Statistics Division

System of Environmental Economic Accounting Ecosystem Accounting. Chapters 6 and 9, physical and monetary ecosystem service flow accounts.

Record physical ecosystem service quantities and monetary service flows in their respective accounts using consistent scope. Applies to 1 reviewed decision.

Compare energy use per unit of output · UNIDO and United Nations Environment Programme

Enterprise Level Indicators for Resource Productivity and Pollution Intensity. §2.2 resource productivity, energy use and output indicators.

Relate energy use to output over the same operating period. State the reciprocal when reporting energy intensity rather than productivity. Applies to 2 reviewed decisions.

Code recurring feedback and route it for follow-up · International Federation of Red Cross and Red Crescent Societies

Community Engagement and Accountability Toolkit. Tool 15, feedback starter kit and feedback management.

Log feedback, group it by topic and use the agreed response and referral process. Applies to 1 reviewed decision.

Review hazards across the water supply system · World Health Organization and International Water Association

Water Safety Plan Manual Second Edition. Module 3, identify hazards and hazardous events and assess the risks.

Review hazards and controls at each step from catchment to consumer before prioritizing the risks. Applies to 1 reviewed decision.

Check station exposure and siting · World Meteorological Organization

Siting Classification. Siting classification for surface observing stations, by instrument or parameter.

Compare the documented surroundings and exposure with the siting requirements for the measurement. Applies to 1 reviewed decision.

International Sources for This Review Continued

Review environmental and social risks and controls · International Finance Corporation

Performance Standard 1 Assessment and Management of Environmental and Social Risks and Impacts. Identification of risks and impacts, and management programs.

Identify project impacts and check that the management program sets out measures to avoid or mitigate them. Applies to 1 reviewed decision.

Identify the threat and proposed action before STAR assessment · International Union for Conservation of Nature

Species Threat Abatement and Restoration Metric. STAR method, threat abatement and restoration components.

Check documented species, threats and sites to decide whether the threat-abatement or restoration component applies. Applies to 1 reviewed decision.

Match crop requirements with site limitations · Food and Agriculture Organization of the United Nations

A Framework for Land Evaluation. Chapters 3 and 4, land use requirements and matching land qualities.

Compare the requirements of the stated crop or land use with relevant land qualities and identify limiting conditions. Applies to 2 reviewed decisions.

Active Decision Catalogue

The prototype retains 466 decisions with published methods and adds 41 proposed decisions. Of the additions, 35 use Sri Lankan publications and 6 use international publications. The 354 earlier decisions remain in the archive. Local use awaits Institution review.

Active decision register · Archived decisions

Land Use Policy Planning Department · Decide where to check the accuracy of a land-change map

Draw reference samples from mapped change and stable classes. Estimate accuracy with an area-weighted error matrix and report uncertainty.

Sections 3–5, stratified sampling and area-adjusted accuracy. Olofsson et al., Good practices for estimating area and assessing accuracy of land change

Natural Resources Management Centre · Review paddy fields using RRDI soil salinity guidance

Apply the RRDI bands for soil EC measured using a 1:5 soil-to-water test. Below 0.15 dS/m, the guidance calls for no salinity package. From 0.15 to 0.40 dS/m, review a salt-tolerant rice variety. Above 0.40 dS/m, review the salinity package.

Soil EC level and recommended measures table. Rice Research and Development Institute, Map based soil reclamation in rice cultivation

Department of Agriculture · Shortlist rice varieties for drought-prone rainfed fields

Use the RRDI drought-tolerant recommendations for rainfed rice in the Dry and Intermediate Zones. Compare maturity duration with the planting window.

Bg 251 and Bg 314 recommendations for rainfed Dry and Intermediate Zones. Department of Agriculture, RRDI drought-tolerant rice varieties

Department of Agrarian Development · Check the seasonal paddy production return before submission

Calculate production from net harvested hectares times the matching average yield in tonnes per hectare. Reconcile any unexplained difference with the return.

Explanatory notes under Paddy yields and Paddy production. Department of Census and Statistics, Statistical Abstract agriculture chapter

Irrigation Department · Flag a reservoir nearing its agreed storage floor

Under the constant-withdrawal scenario, divide storage available above the floor by the stated positive daily withdrawal. Record the scenario assumptions.

Padaviya Reservoir drought resilience study, §2 Methodology, printed p. 9. Irrigation Department, World Water Day technical articles

Active Decision Catalogue Continued

Mahaweli Authority of Sri Lanka · Check which Mahaweli blocks need a revised paddy production estimate

Apply the DCS paddy production relationship to each matched block and season. Compare revised estimates with the approved planning figures.

Introduction and Mahaweli block-level area, yield and production tables. Department of Census and Statistics, Paddy Statistics Yala 2023

Forest Department · Hold nursery seed lots whose origin cannot be traced

Match the seed lot to its origin record and retain the link through nursery handling. Resolve missing or conflicting provenance before dispatch.

Seed certification and provenance documentation. FAO, A Guide to Forest Seed Handling

Department of Meteorology · Compare drought signals from stations using the same SPI period

Compare reviewed SPI for the same month, accumulation period and reference years. Apply the Department's SPI classes. Separately calculate rainfall as a percentage of normal: 100 × monthly rainfall ÷ matching positive monthly normal.

Pages 1–3: Interpretation of Maps, Figure 2 and SPI Classification. Department of Meteorology, Sri Lanka · December 2024 Drought Bulletin

Department of Export Agriculture · Check black pepper moisture before accepting a lot for export handling

Compare measured moisture with the applicable limit for the stated pepper form and grade. Use a comparable test method and retain the result by lot.

Codex CXS 326-2017, Annex I, copy hosted by India's Food Safety and Standards Authority. Codex Alimentarius Commission, Standard for Black, White and Green Peppers

Provincial Departments of Agriculture · Target extension visits where paddy yields lag the same irrigation class

Compare district paddy yields within the same season and irrigation class. Rank verified yield gaps after excluding incompatible groups.

Table 4, printed p. 347, paddy yield by irrigation management group. Lakmali, Gunawardena and Dayawansa, University of Peradeniya

Active Decision Catalogue Continued

Project Management Unit · Check works completion evidence before taking over a project asset

Check the contract's completion and taking-over requirements against the inspection and contractor records. Record unresolved defects and the responsible officer.

Chapter 9, B(e) and C, taking over and certification of completed works, printed p. 211. National Procurement Commission, Procurement Manual 2024

CIFOR-ICRAF and Research Partners · Shortlist agroforestry trees for a defined farm niche

Use the Sri Lankan tea and coconut pilot designs to compare crops and trees by their function, site conditions, planting space and maintenance needs.

Plantation models and Halgolla tea pilot, design and establishment. Guidelines Agroforestry in Sri Lanka, tea and coconut plantation pilots

Sub-Watershed Integrated Delivery Teams · Check whether a restored stream buffer needs a follow-up visit

Use the buffer restoration indicators from the Sri Lankan PES guidebook. Compare observations only under documented sampling conditions and record gaps in survival or water evidence.

Functional buffer-zone example, p. 23. UNDP BIOFIN and Revenues for Nature, Payments for Ecosystem Services in Sri Lanka

Survey Department · Refer a disputed cadastral boundary through the published procedure

Record the boundary dispute and any agreement. Follow the Survey Department's prescribed referral where the parties cannot agree.

Chapter XXI, cadastral surveying and Annexure 2 boundary dispute procedure. Survey Department, Departmental Survey Regulations

National Spatial Data Infrastructure · Return invalid boundary polygons before publishing a layer

Apply the Simple Feature Access rules for polygons. Flag self-crossing rings and holes outside their exterior ring against the feature IDs.

§6.1.11, Polygon validity. Sri Lanka NSDI lists ISO 19125-1.. Open Geospatial Consortium, Simple Feature Access Part 1 Common Architecture

Active Decision Catalogue Continued

Disaster Management Centre · Identify safe centres that need additional water supplies

Estimate household water need from people × days × litres per person per day. The Ministry of Health article cites the Sphere figure of 15 L per person per day for drinking, cooking and hygiene. Compare with usable supply.

Weekly Epidemiological Report, Vol. 43 No. 24, p. 1, Sphere indicators. Epidemiology Unit, Ministry of Health, Water Supply in Disaster Management, Part I

National Building Research Organisation · Check whether a proposed development requires NBRO landslide clearance

Use NBRO's published clearance scope and exemptions for construction or development in the listed landslide-prone districts. Document the requirement that applies to the site.

Application scope, listed districts and exemptions. National Building Research Organisation, Landslide Clearance for Construction in Landslide Prone Areas

Central Environmental Authority · Find environmental licences approaching their renewal window

Use the CEA's stated three-month lead time for renewal. Check the application and supporting evidence against the responsible licensing route.

Renewal timing and application instructions. Central Environmental Authority, How to renew an EPL

Department of Wildlife Conservation · Send new invasive species records for early risk assessment

Use Sri Lanka's invasive species policy to route a new or uncertain occurrence to early detection and risk assessment. Keep confirmed and unverified records separate.

Risk assessment, early detection and rapid response objectives. Ministry of Environment, National Invasive Alien Species Policy

Department of Census and Statistics · Route requests for statistical microdata through the applicable access procedure

Check the request against the DCS microdata dissemination policy, including use restrictions and confidentiality requirements.

Application, data use and confidentiality provisions. Department of Census and Statistics, Policy on Microdata Dissemination

Water Resources Board · Find industrial wells that lack metered-use records

Apply the meter and recording conditions in the applicable WRB Gazette to the stated well use. Flag missing evidence for wells in scope.

Gazette 2010/23, paragraphs 2–4 and Annex 01. Government of Sri Lanka, Water Resources Board Acts and Gazettes

National Water Supply and Drainage Board · Prioritize areas where more households collect drinking water off premises

Divide the off-premises count by the comparable household total. Display the count and share together for each published area.

§11.6 and Tables 11.9 and 11.10 on drinking water availability. Department of Census and Statistics, Census of Population and Housing 2024

Geological Survey and Mines Bureau · Check mine rehabilitation evidence before closure review

Check submitted rehabilitation evidence against the bureau's report instructions and applicable licence commitments.

Instructions for preparation of a mine rehabilitation report. Geological Survey and Mines Bureau, Licensing Application Forms

Land Commissioner General's Department · Check the published route for a state-land long-term lease request

Use the department's lease guidance to determine the applicable application route and check that the stated documents are available.

Long-term lease service instructions and applications. Land Commissioner General's Department, Land Lease

HARTI · Check whether a food price rose after allowing for inflation

For a comparison in base-period purchasing power, divide each nominal price by the matching consumer price index and multiply by the base index level. Apply the same index to both periods.

Basic data series and their use, nominal and real prices. FAO, Policy Analysis for Food and Agricultural Development

Active Decision Catalogue Continued

Export Development Board · Identify the documents needed before a first export shipment

Check the EDB sequence for registration, approvals and shipment documents. Apply origin documentation only when required for the stated market or treatment.

Export procedure, registration, permits and export documentation. Sri Lanka Export Development Board, Logistics and Export Requirements

National Enterprise Development Authority · Screen a product for the Made in Sri Lanka logo

Apply the published product-specific selection criteria, including the applicable local value-addition category. Flag missing evidence for committee review.

Sections i and ii, eligibility and conditions. National Enterprise Development Authority, Made in Sri Lanka Logo Selection Criteria

Industrial Development Board · Check whether an industrial land application is ready for IDB review

Check the project and site fields against the IDB land or building application and the current estate invitation, where applicable.

Application form, project, premises, investment and utility particulars. Industrial Development Board, Application for Land or Building from IDB

District Secretariats · Review district projects where spending and physical progress diverge

Compare financial progress with physical progress as separate measures. Keep the financial denominator and the basis for physical completion visible.

§2.1, financial and physical progress reported separately. National Audit Office, Financial Sector Modernization Project audit

Divisional Secretariats · Route an Aswesuma case to the correct appeal or objection process

Distinguish an applicant’s appeal from an objection using the current Welfare Benefits Board forms and instructions.

Aswesuma appeal and objection forms and supporting instructions. Welfare Benefits Board, Forms

Active Decision Catalogue Continued

Grama Niladhari Officers · Prepare the evidence for a disaster-damaged household assessment

Record the observed damage and required supporting information on the applicable disaster relief assessment form. Identify incomplete cases for follow-up.

Guidelines for the specified disaster, §11.5 housing damage classification and §11.6 assessment route. National Disaster Relief Services Centre, Disaster Relief Guidelines

Farmer Organizations · Flag a farmers' organization missing its annual general meeting

Check the annual general meeting requirement under the Agrarian Development Act and retain the meeting evidence by year.

§43(9), annual general meeting and council power after the stated period. Government of Sri Lanka, Agrarian Development Act No. 46 of 2000

Farmers · Check rice seed moisture before storage where grain moth is a risk

Apply RRDI's grain moth guidance to the rice seed lot. Check moisture against the stated 8% target for this specific control and record the packing method.

Grain Moth guidance, prevention before seed storage. Department of Agriculture, Rice Research and Development Institute

Plantation Companies · Refer a reportable accident at an estate factory

Check the incident against the Department of Labour's factory accident and dangerous occurrence reporting requirements. Use the prescribed notice when the event falls within scope.

Factory accident and dangerous occurrence notifications and prescribed forms. Department of Labour, Industrial Safety Division

Plantation Workers/Community Groups · Check whether a community drinking-water sample is ready for lab referral

Compare the sample type and test request with the laboratory's accepted samples and potable water testing information. Check the lab's collection requirements before delivery.

Accepted samples and standards, Potable water row. National Institute of Health Sciences, Food and Water Microbiology

Active Decision Catalogue Continued

Buyers and Traders · Hold a rice lot that exceeds its applicable moisture specification

For rice covered by CXS 198, compare mass-percent moisture with the applicable limit. Codex gives 15% as the general maximum and allows lower limits for specified destinations or conditions.

CXS 198-1995, §§1 and 3.2.1, product scope and moisture content. Codex Alimentarius Commission, Standard for Rice

Processors and Exporters · Check food factory evidence before applying for export certification

Check registration and inspection evidence against the Food Control Administration Unit's export certification route. Identify destination-specific documentation separately.

Food export certification and factory registration and inspection prerequisites. Food Control Administration Unit, Ministry of Health

Banks and Finance Institutions · Check a cultivation credit request against the published crop scheme

Check the cultivation purpose and crop against the published NCRCS coverage. Confirm eligibility conditions and the participating institution's current terms.

Scheme description, eligible crops and participating financial institutions. Central Bank of Sri Lanka, New Comprehensive Rural Credit Scheme

PES Intermediaries · Estimate a metered water contribution for a watershed pilot

Multiply matched billable volume by the scenario contribution rate. Use the Sri Lankan watershed example as the billing model.

Weerapana water supply and Kanneliya watershed example, pp. 31–32. UNDP BIOFIN and Revenues for Nature, Payments for Ecosystem Services in Sri Lanka

Universities and Researchers · Check a laboratory's accreditation for the actual research test

Match the proposed test and matrix to the specific method covered by the laboratory's current scope. Check its accreditation status in the national directory.

Testing laboratory listing, certificate status and attached accreditation scope. Sri Lanka Accreditation Board, Accredited Organizations Directory

Active Decision Catalogue Continued

Community-Based Organizations and NGOs · Find missing annual records before a registered NGO submits its report

Compare the organization's records with the NGO Secretariat's published document requirements for registered organizations.

Document requirements for registered voluntary social service organizations and NGOs. National Secretariat for Non-Governmental Organizations, Maintenance of Documents

Meteorology: published Sri Lankan methods

Check the area and time covered by a warning. Match the affected area and selected time to the Department's warning. Check the warning ID, original level, issue time and validity window. Use Sri Lanka time (UTC+05:30). Confirm the duty officer, observation evidence and escalation procedure in Institution review. Department of Meteorology, Sri Lanka · Weather Advisory System (Warnings endpoint, response fields and time format). CAP 1.2 format reference

Verify the original warning before sharing. For a Department warning, check the warning ID, original level, issue time, validity and affected area against the Department's current record. Confirm reuse permission and the publication reviewer in Institution review. Public availability does not grant permission. Department of Meteorology, Sri Lanka · Weather Advisory System (Warnings endpoint, response fields and time format). CAP 1.2 format reference

Classify SPI and compare monthly rainfall. Compare reviewed SPI for the same month, accumulation period and reference years. Apply the Department's SPI classes. Separately calculate rainfall as a percentage of normal: 100 × monthly rainfall ÷ matching positive monthly normal. Confirm the matching month, SPI period, reference years and station records in Institution review. The cited bulletin uses 1981–2010 for monthly rainfall normals. Rainfall percentage does not calculate SPI. A 3-month SPI of −1.60 is severely dry. 72 mm ÷ 120 mm × 100 = 60% of normal for the month. Department of Meteorology, Sri Lanka · December 2024 Drought Bulletin (Pages 1–3: Interpretation of Maps, Figure 2 and SPI Classification). WMO SPI background

Worked examples for institution review

Land Use Policy Planning Department. Divide the map into changed and stable areas. Sample both groups, then weight the accuracy results by the area each group covers. Recheck areas with weak reference evidence. Published source

Natural Resources Management Centre. A paddy-field result of 0.25 dS/m from a 1:5 soil-to-water test falls in RRDI's salt-tolerant variety band. Check the field and available varieties with the local extension officer. Published source

Department of Agriculture. A rainfed field in the Dry Zone has a short planting window. Compare the maturity periods of RRDI-listed Bg 251 and Bg 314 with that window before checking seed availability. Published source

Department of Agrarian Development. A Yala return lists 24 ha harvested and 4.2 t/ha. The calculated production is 100.8 t. Check the area or yield if the return shows 100 t. Published source

Irrigation Department. With 27 million m³ in storage, a planning floor of 21 million m³ and withdrawals of 0.6 million m³ per day, the constant-withdrawal scenario leaves 10 days to the floor. Published source

Mahaweli Authority of Sri Lanka. A Mahaweli block expects 65 ha to be harvested at 4.2 t/ha. The estimate is 273 t, which is 17 t below its 290 t plan. Ask the block officer what changed. Published source

Forest Department. A nursery tray of kumbuk seedlings has a species label but no seed collection locality. Keep the lot aside until its source can be traced. Published source · Sri Lanka Forest Genetic Resources country report

Department of Meteorology. A reviewed 3-month SPI of −1.60 falls in the severely dry band. Separately, 72 mm of monthly rainfall against a 120 mm normal is 60% of normal. Published source

Department of Export Agriculture. A whole black pepper lot tests at 13.5% moisture against a 13% buyer limit. Hold the lot for a quality review and check the agreed method and destination specification. Published source · Department of Export Agriculture pepper guide

Provincial Departments of Agriculture. Compare two Yala paddy yields from the same irrigation class. If the district yields 3.6 t/ha against a comparable 4.1 t/ha, investigate the 0.5 t/ha gap before choosing an intervention. Published source

Project Management Unit. An inspection finds defects in a completed canal structure. Record them and check the contract's taking-over requirements before the authorized officer certifies the works. Published source

CIFOR-ICRAF and Research Partners. A tea grower wants shade without crowding the tea. Check the site, expected shade, spacing and pruning needs with an extension officer before shortlisting trees. Published source

Sub-Watershed Integrated Delivery Teams. A buffer planting cohort began with 100 seedlings. A visit confirms 72 alive and cannot locate 8. Record the missing follow-up separately and arrange a revisit before comparing sites. Published source

Survey Department. Neighbours disagree on a cadastral boundary. Keep both claims and the survey evidence, then follow the Survey Department's dispute route if the parties cannot agree. Published source

National Spatial Data Infrastructure. A boundary polygon crosses itself. Record its feature ID and return it to the data custodian for correction before publishing the layer. Published source · Sri Lanka NSDI Reference Standards

Disaster Management Centre. A centre houses 160 people for two days. At 15 L per person per day, the example needs 4,800 L. With 4,200 L usable, the planning shortfall is 600 L. Published source · Sphere Handbook

National Building Research Organisation. A proposed building is in a listed landslide-prone district. Check the site, activity and applicable exemption against NBRO's clearance guidance before choosing the referral route. Published source

Central Environmental Authority. A licence expires on 30 September. Use the CEA's three-month lead time to flag a renewal check by 30 June and verify the issuing authority. Published source

Department of Wildlife Conservation. A field team reports a possible invasive species but identification is uncertain. Retain the dated evidence and refer it for identification and early risk assessment. Published source

Department of Census and Statistics. A researcher asks for household-level survey records. Check the dataset's access conditions, intended use and confidentiality requirements before routing the request. Published source

Water Resources Board. An industrial well has an authorization record but no readings for the reporting period. Verify the licence and applicable meter conditions, then request the missing readings. Published source

National Water Supply and Drainage Board. Of 1,200 households in the same census area, 180 collect drinking water off premises. Report both 180 households and 15% so planners can compare counts and shares. Published source

Geological Survey and Mines Bureau. A rehabilitation report lacks evidence for a condition in the mine licence. Ask the licence holder for that evidence before referring the case for closure review. Published source

Land Commissioner General's Department. A business asks to lease state land. Use the published long-term lease route to check the land, purpose and applicable documents before handing off the case. Published source

HARTI. At a common index base of 100, LKR 200 at an index of 150 is about LKR 133.33 in base-period prices. LKR 245 at 175 is LKR 140, a real increase of about LKR 6.67. Published source · DCS Monthly National Consumer Price Index

Export Development Board. An exporter has an invoice and packing list. Check the product and destination rules before deciding whether a permit or certificate of origin is also required. Published source

National Enterprise Development Authority. An applicant uses imported materials in a product sold under a local brand. Select the product's eligibility category and ask for its value-addition evidence before committee review. Published source

Industrial Development Board. An applicant requests factory land but leaves expected water and power needs blank. Ask for those particulars so IDB can assess whether the estate can support the project. Published source

District Secretariats. Eligible spending is LKR 2.4 million against a LKR 4 million budget, or 60%. Verified physical progress is 45%. Ask the project team to explain the 15 percentage-point gap. Published source

Divisional Secretariats. An applicant disputes the decision on their own Aswesuma application. Check the current instructions and route the case to the appeal form. Published source

Grama Niladhari Officers. After a flood, a household reports damaged walls and flooring. Record the observed damage and required evidence for the designated officer's assessment. Published source

Farmer Organizations. A farmer organization's file has a meeting notice but no signed minutes for the year. Ask for the record that confirms the annual general meeting was held. Published source

Farmers. Rice seed measures 9% moisture before storage. It exceeds RRDI's 8% target for the cited grain moth control. Review drying and packing before storage. Published source

Plantation Companies. An estate factory reports an injury. Record the circumstances and check the Department of Labour's reporting criteria and prescribed notice. Published source

Plantation Workers/Community Groups. A community group wants to test drinking water. Confirm the requested test, sample container and collection instructions with the lab before dispatch. Published source

Buyers and Traders. A milled rice lot tests at 14.4%. Compare it with the applicable buyer or destination specification before accepting it. A 15% example limit would pass the moisture check. Published source

Processors and Exporters. A processor requests food export certification but has no factory inspection evidence. Check the Food Control Administration Unit's requirements and request the missing document. Published source

Banks and Finance Institutions. A farmer seeks cultivation credit for a crop covered by NCRCS. Check the cultivation purpose and confirm the lender's current eligibility and loan terms. Published source

PES Intermediaries. A watershed pilot records 140 m³ of billable water. At an illustrative LKR 5/m³, the proposed contribution is LKR 700. Check the service agreement before using a rate. Published source

Universities and Researchers. A lab is listed as accredited. Check that its current scope covers the requested test, sample type and method before selecting it. Published source

Community-Based Organizations and NGOs. An NGO has its annual report but cannot locate an annual financial record required for its registration. Ask the designated officer for the missing record before submission. Published source

Published Sri Lankan steps in other decisions

Department of Meteorology, Sri Lanka. Compare monthly rainfall with the published normal for the same station or area and calendar month. 72 mm against a 120 mm normal is 60% of normal, equivalent to a 40% shortfall from normal. Confirm the station, month and reference years before using the comparison in agricultural advice. December 2024 Drought Bulletin (Figure 2, monthly rainfall as a percentage of the matching normal).

Department of Export Agriculture. The guide reports roughly 30–33 kg dried black pepper per 100 kg raw pepper. Track raw and dried weight for the same lot. Keep normal drying weight reduction separate from unexplained losses. Confirm product form, intake moisture and the applicable operating range before interpreting a yield gap. Pepper cultivation and processing guide (Pepper Products, Black Pepper).

Survey Department. Establish that both plans refer to the same parcel. Compare the new and previous computed areas using the Department's permissible error and area comparison procedure for the applicable survey and boundary class. A percentage difference is a screening result. Have the surveyor confirm the boundary type, survey class and permissible error before correcting the record. Departmental Survey Regulations, sixth edition (Chapter XIII, §§13.11 and 13.18–13.19).

National Building Research Organisation. Match a landslide record to the relevant rain-gauge history and compare accumulated rainfall by event and divisional area. Treat the published Kalutara results as study findings for those areas. Have NBRO confirm the appropriate observation window and station coverage for the area under review. Study of effective rainfall thresholds for landslide initiation in Kalutara (Abstract and study method, rain-gauge and landslide event records).

Central Environmental Authority. Screen the complaint for CEA jurisdiction, retain its reference number and route it to the relevant CEA office or another responsible agency. Confirm the responsible office and any service target separately in Institution review. Compliance Monitoring Unit (How to manage and proceed with a complaint).

National Water Supply and Drainage Board. Distinguish leakage, free supply and unauthorized consumption when investigating non-revenue water. Use matched service areas and periods before comparing quantities. Confirm the current meter coverage and water-balance procedure. Use the cited IWA method for the full calculation. Annual Report 2015 (Non-Revenue Water Reduction and Auditor General report, Non-revenue Water).

Geological Survey and Mines Bureau. Capture the mineral and quantity extracted against the renewal period and unit in Form 11. Compare those quantities with the applicable licence and period before escalating a variance. Confirm licence type, the authorized amount and any approved changes before interpreting the difference. Artisanal Mining Licence Renewal, Form 11 (Section on minerals mined or removed from the mine or quarry).

Geological Survey and Mines Bureau. Match the licence and quarter in Form 14 to the supporting royalty and payment records before comparing amounts. Verify the applicable royalty basis and the payment evidence with GSMB before treating a variance as payable. Mining Royalty Return, Form 14 (Regulation 33, licence, quarter and royalty return fields).

Ministry of Public Administration. Use the service duration and responsible officer in the institution's published Citizen Charter to review delayed district requests. Confirm the relevant charter version and how incomplete submissions affect timing. Public Administration Circular 05/2008(II) (Annex 01, Citizen Charter service time and responsible officer).

Ministry of Public Administration. Match the request to the Divisional Secretariat's published service duration and complaint officer before escalating a delay. Confirm the correct service category, charter version and timing for complete applications. Public Administration Circular 05/2008(II) (Annex 01, Citizen Charter service time and complaint officer).

Department of Labour. For a labour issue, record the complaint type, district of the final workplace and any earlier complaint before referral. Confirm the responsible Labour office. Route other community concerns through their applicable service. Complaint Management System, worker complaint registration (Complaint type, district of final workplace and earlier complaint fields).

7 Official Data Mappings and Draft Domains

Grama Niladhari boundaries

Match the Census 2024 map field ADM_ID to GND_UID in the DCS code register. Build the table ID from the district (2 digits), Divisional Secretariat (2 digits) and GN (3 digits) codes. Pad the codes with leading zeros. The district code includes the province digit.

All 14,008 division IDs matched once in each source. District 11, DS 03 and GN 005 form ID 1103005. The two housing tables give the same occupied housing totals. Use one total and keep households and population separate.

Census 2024 GN boundaries | Administrative Division Codes | GN population | GN households | Occupied GN housing | Detailed GN housing

Rainfall station mapping

Match NSDI rainfall stationid exactly to the gauge register serial_number. Keep the observation date and rainfall in millimetres. Group repeats when the station, date and value agree, retaining the original record references. Flag conflicting values for review.

Six of eight historical rows matched Udaradella gauge 01NE506B. Three were repeats, leaving three observations. Rows 3 and 7 have a date in the station field. Exclude them until the publisher corrects the ID. Use the gauge location from the register.

NSDI rainfall layer | NSDI rain gauge register

Official sources for draft domains

Animal Production and Health. Department of Animal Production and Health. Use published livestock and milk statistics by species, area and year. Request authorised farm records from the department.

DAPH livestock bulletins | DCS livestock statistics

State Livestock Farm Operations. National Livestock Development Board. Use the farm directory and production summaries. Match detailed records by board farm reference and reporting period. Request them from the board.

NLDB farm directory | NLDB annual report

Veterinary Research and Diagnostics. Veterinary Research Institute within the Department of Animal Production and Health. Use published service descriptions and activity totals. Obtain authorisation for case records.

Veterinary Research Institute | DAPH annual reports

Institutional confirmation and data access decisions remain pending in Institution review.

8 Expert Hub Custom Query and Chart Rules

The custom builder queries one saved dataset. The rules below describe the prototype behaviour for FR094 to FR100. See Expert Hub in the SRS.

Filters and counts

The query checks all rows in the saved snapshot. Each row must pass all selected filters. Is matches text without regard to case and matches numbers by value. Contains searches text. At least and At most apply to numeric fields. Numeric filters accept decimal and scientific notation. Is missing finds blanks. A recorded zero remains a value. The table and charts use scientific notation for very small nonzero values. CSV retains the saved number.

Count records by adds one for each matching source row with the same value in the chosen field. A row with a blank group value appears under Not recorded. The builder supports up to 12 output columns or one grouping field and up to 500 result rows or groups. For larger results, narrow the query.

Charts and export

A bar shows the selected numeric measure. If the source gives a unit for each measurement, the table and CSV include it. A chart or grouping by that measure requires one recorded unit. For example, filter wholesale prices to LKR/kg or LKR/egg before charting. A line uses one row per distinct period with consistent date precision. It spaces points by elapsed time and breaks across missing values. Bar and line charts show up to 40 rows. The table shows up to 50. CSV includes the full returned result, source, snapshot and filters.

The existing reviewed join workflow retains its exact input versions and applies the checks described under Report joins and reproducibility.

Example District rainfall departure

In Expert Hub Reports, choose Department of Meteorology and District cumulative rainfall departure. Filter District to Kandy. The result is +16.5% for 1 January to 4 November 2026 against the 1981 to 2010 climate baseline. The builder uses the published percentage directly. The same snapshot lists Kegalle as missing. In the separate three-hour station snapshot, Jaffna has a recorded 0 mm.

Government publication. Department of Meteorology, Sri Lanka. Agrometeorological bulletin, page 4, Table 01. The prototype labels partial snapshots so users can assess coverage.

9 Rules Used in the System Diagram Workflows

The SRS System Drawing Index links all 46 drawings to the requirements. Use this section for the seven workflows' data checks, calculations and review rules. Where a workflow uses example values, treat the result as a demonstration.

Receive and check data. Worked example. The source value 24 is held until the provider confirms millimetres. Keep the original row and the correction. The reviewer records acceptance separately from permission to share.

Check rainfall readings. Published observation. Match station, published observation time and the measurement interval. For the 17:30 release on 10 November 2026, Jaffna recorded 0 mm since 08:30 and Katunayake reported TRACE without a numeric amount. Keep an absent value missing. The same interval is required for a rainfall comparison. Department of Meteorology · Saved observation pair.

Link census data to a map. Published census data. Join on official GN code and Census 2024 boundary edition. Code 1103005 links to 7,640 people and 1,859 households. Occupied housing units are a separate measure. Department of Census and Statistics · Saved census pair.

Check land-cover change. Local comparison using published land-cover classes. Subtract 2015 forest-class area from 2018 forest-class area using land valid in both 100 m maps within the same 30 × 30 km window. The result is a net decrease of about 67 ha. The result guides field checks. The classification and local thresholds require validation. Copernicus product · Knuckles calculation and sources.

Build a report. Worked example. Paddy area of 100 ha plus maize area of 60 ha gives 160 ha. Summarise each source separately for the same district and season. Show the district rainfall of 1,300 mm once with its own unit. Record the source, boundary and method versions. The comparison alone cannot establish what caused an area change.

Review a project deliverable. Review rule. Record the version, reviewer, reason and evidence. A report with a missing inspection sheet goes back for correction. A linked version can be accepted after its evidence passes review.

Understand storage and access. Access and recovery rule. Check current rights when a user opens or exports a result. Restore authoritative records and protected original files before rebuilding search, maps and reports.