

WHO Regional Office for Africa | ESPEN

ESPEN-DP-SOP-08

Cartography, map layers and portal specifications: maps and charts of the ESPEN NTD Portal

Expanded Special Project for Elimination of Neglected Tropical Diseases (ESPEN)

Document type	Standard operating procedure — data processing
Reference	ESPEN-DP-SOP-08
Version and status	Draft v0.1, for internal review
Date	19 October 2026
Prepared by	ESPEN Data Team, WHO Regional Office for Africa
Scope	Publication of the ESPEN and trachoma cartography as analytical tables; yearly IU map layers; definition of the map types, legend categories and maps available in the Map Generator Tool; definition of the charts of the country dashboards
Data sources	ESPEN annual boundaries (simplified); IU boundaries of the global trachoma database; disease, co-endemicity and WASH analytical tables (SOP-02 to SOP-07); JRF submission status (SOP-01); list of countries not implementing MDA; curated specification tables maintained by ESPEN
Outputs	Cartography tables by year; compiled GeoJSON of IU boundaries; yearly IU map layers; lookup tables of map types, legend categories, regions, maps available and dashboard charts
Processing scripts	Steps 1.12, 5.1, 6.1, 6.2 and 6.3 (Annex A)
Related documents	SOP-00; SOP-01 to SOP-07

Abbreviations

ITI	International Trachoma Initiative	SAC	School-age children
IU	Implementation unit	SCH	Schistosomiasis
JRF	Joint Reporting Form	STH	Soil-transmitted helminthiasis
LF	Lymphatic filariasis	WASH	Water, sanitation and hygiene
MDA	Mass drug administration		

1. Purpose and scope

This procedure describes how the boundaries and the analytical tables are prepared for display on the ESPEN NTD Portal [1]: the publication of the cartography, the production of yearly IU map layers, and the specification of the maps offered by the Map Generator Tool and of the charts of the country dashboards. Indicator values are not recalculated at these steps, except access to any water source and to any sanitation facility, and the JRF flag of countries that did not implement MDA (Section 3).

2. Cartography tables

- The simplified annual boundary layers of the ESPEN cartography (country, first administrative level and IU) are combined into one table with one record per geographic unit and year from 2013, with the boundary stored in GeoJSON format and standard field names.
- The administrative level of each record is taken from the cartography; when it is missing, it is set to the country or to the first administrative level according to the fields available.
- A separate table holds the most recent IU and first-level boundaries of the global trachoma database.
- Both tables are replaced in full at each update. The ESPEN table is loaded in blocks and the trachoma table in one block, both with automatic retries; the upload stops if the number of records stored differs from the number prepared.
- A compiled GeoJSON file of the IU boundaries of every year from 2014 is exported, in WGS84 coordinates (RFC 7946) with six decimals.

3. Yearly IU map layers

- For each year from 2013 to 2025, the IU tables of LF, onchocerciasis, loiasis, STH, SCH and co-endemicity are joined to the IU boundaries of that year by IU code and year. For STH and SCH, separate layers are produced for the total target population and for school-age children.
- Trachoma indicators for 2010 to 2025 are joined to the most recent boundaries of the global trachoma database by its geographic identifier. The trachoma layers carry all the fields of the trachoma IU table used for the joins, including the TF and TT prevalence values.
- Water and sanitation layers are produced from the IU WASH tables (SOP-07); access to any water source and to any sanitation facility is derived as the complement of surface-water use and of open defecation, respectively. The fields of the layers are selected by position; in the current version, the last indicator of each group (unimproved water, unimproved sanitation) is not carried into the layers.
- Country layers for 2021 to 2025 hold a flag of the JRF reporting status of each country and year; a country that did not implement MDA in a year is given the same value as a country that submitted its JRF (nothing to report).
- IUs without data are kept in the layers with empty attributes.

4. Map Generator Tool

4.1 Map types, legend categories and regions

The map types, the legend categories of each map type, the regions used for regional maps and the countries of each region are maintained as curated tables. They are loaded in full at each update, after checking that map types and region-country links have complete and unique identifiers and that each legend category has a map type identifier (the regions table is checked only for being non-empty); legend categories that refer to an undefined map type are reported. The published version of each table is saved as a dated backup before it is replaced.

4.2 Maps available by country and period

1. **Countries.** For the latest reporting year, maps are added for the countries that submitted their JRF, the countries that did not implement MDA that year, and the countries of the region without any JRF record.

2. **Map set.** Each of these countries receives the set of IU-level maps available in the previous year, taken from the country with the most complete set. Availability therefore follows the reporting status; the presence of data for each disease is not checked at this step.
3. **Periods.** Single-year maps are moved to the new year; cumulative maps keep their start year and are extended to the new year.
4. **Revised map types.** Legacy map types are replaced by their revised versions where the legend categories changed: from 2021 for LF and onchocerciasis endemicity and coverage; from 2023 for SCH and STH endemicity and coverage maps, and for SCH and STH maps of MDA rounds whose period ends in 2023 or later; and from 2025 for LF endemicity (which includes the category of targeted treatment). The rules are applied to existing and new entries.
5. **Regional maps** are extended to a new year when the regional reference year is advanced by the ESPEN data team, once reporting for that year is considered complete. The completeness of JRF reporting is reported, with a warning (not a stop) when the year is incomplete. A regional year is added only if none of its entries exists yet.
6. **Checks.** The update stops if it would create duplicated entries; existing duplicates are removed and the entries renumbered, with a record of the changes; the published lists are backed up before they are replaced.

5. Charts of the country dashboards

The charts of the country dashboards are defined by two curated tables: the chart types (data source, titles, axis labels and tooltips in English, French and Portuguese) and the series of each chart (position, colour, label and rule used to compute it). Both are replaced in full at each update, after checking that the identifiers of charts and series are complete and unique; series that refer to an undefined chart, and charts without series, are reported. The published tables are backed up before they are replaced.

6. Quality assurance

- For every table written to the database, the number of records stored is compared with the number prepared: the cartography upload stops on a difference, the other tables give a warning. Specification tables with no records are not written.
- Specification tables are backed up before each replacement.
- Map entries that refer to undefined map types, entries whose period starts one year before it ends (a sign of single-year maps recorded with a wrong start year), and the completeness of JRF reporting by year are reported.

7. Limitations

- The availability of a map for a country and period follows its reporting status, not the content of the disease tables; a map may therefore show no data for a disease that is not endemic in the country.
- Trachoma layers for all years are drawn on the most recent trachoma boundaries; units that no longer exist cannot be shown.
- Field names of the shapefile layers are limited to ten characters and may be shortened.

8. Revision

This procedure describes the processing as implemented in the versions of the R scripts listed in Annex A (October 2026). It is revised whenever a decision rule, threshold, category or data source changes, and at least once a year before the new reporting cycle. Each revision is recorded in the table below.

Version	Date	Changes
0.1	19 October 2026	First draft of SOP-08, prepared from the code of the processing scripts.

References

1. World Health Organization Regional Office for Africa. ESPEN NTD Portal [Internet]. Brazzaville: WHO Regional Office for Africa; [cited 2026 Oct 19]. Available from: <https://espen.afro.who.int>

Annex A. Processing scripts

Step	Script	Role in this procedure
5.1	IU_AT_GeoJSON.R	Section 2
1.12	IU_AT_shp_v02.R	Section 3
6.1	Maps_Specs_Categories_v02.R	Section 4.1
6.2	Maps_Specs_v04.R	Section 4.2
6.3	Chart_Specs_v02.R	Section 5
–	Functions/JAP_functions.R	Key checks, backups, deployment and revision of map types