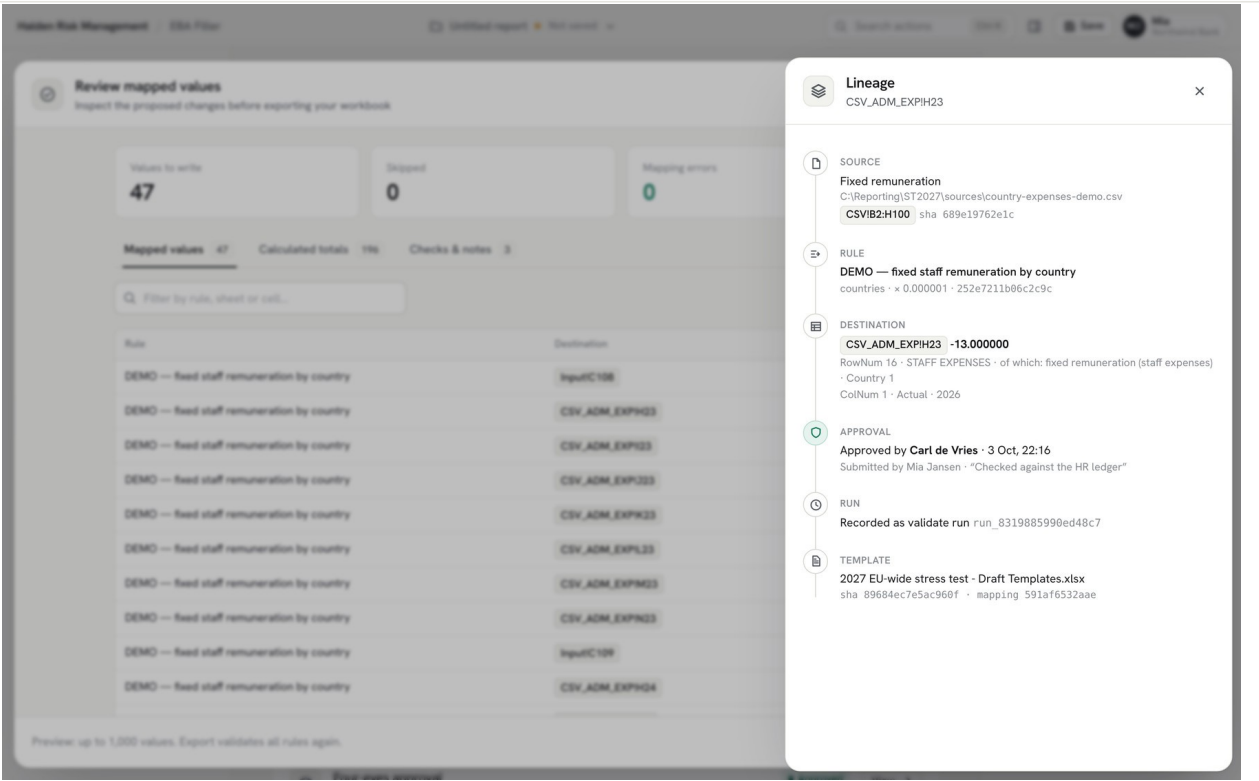


EBA Filler

Methodology

How the template is read, what every mapping rule and check does, how approvals and lineage are evidenced, and what is not checked.



VERSION	DATE	APPLIES TO	AUDIENCE
0.9.0	October 2026	EBA 2027 EU-wide stress test (draft templates)	Risk, audit, model validation

Independent software; not an official EBA product. Screenshots show fictitious example data.

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Principles

The EBA Filler writes values only into the template's own reporting cells, checks them against the rules the template itself encodes, and makes every value traceable to its source and its approval. It never calculates the stress test, never changes the template's formulas, and never guesses data that is missing.

Five principles follow from that:

- 1. The template is the specification.** What a cell means comes from the EBA identifiers, formulas and data validations in the workbook, read programmatically for all 46 tabs.
- 2. Read-only inputs.** The template and the source files are never modified; every export is a new file.
- 3. Explicit over inferred.** Units, signs, country order and the meaning of blanks are user choices recorded in the rules, not guesses by the tool.
- 4. Missing is not zero.** A blank source cell is an error unless a rule says otherwise; incomplete totals are flagged.
- 5. Evidence for every number.** Each mapping version has a hash; approvals, runs and exports are logged in a hash chain; each value has lineage.

Sources: *2027 EU-wide stress test – Draft Methodological Note* (11 June 2026, 626 paragraphs, Annexes I–X) and *2027 EU-wide stress test – Draft Templates.xlsx* (SHA-256 89684ec7e5ac960fa0abc9afe28d8b5a783f29b2ab91b3cf935f4b79f61a6fac).

1 How the template is read

The template marks every cell's role with a fill colour, and identifies every reporting cell with blue identifier rows and columns (RowNum, ColNum and their row and column dimensions). The app reads both.

Cell	Meaning in the Instructions tab	What the app does
White / no fill	Input cell for banks	Candidate input, valid only inside the identifier grid
Blue 5987BF	Identifiers for data extraction	Reads RowNum, ColNum and the row and column labels (scenario, year, portfolio, country)
Yellow / ochre / brown	Calculation, link between tabs, central calculation	Never written; formula kept
Green C6F0DD	Pre-filled parameters	Never written
Grey D9D9D9 / tinted	Not to be filled	Never written

The reporting grid. A white cell is only a reporting cell when it sits on a RowNum row and a ColNum column. On this template that gives **189,281 reporting cells**, against 233,897 white cells in total.

The other 44,616 are padding, reference and comment columns, and white cells on calculated tabs; EBA never extracts them.

Writable cells. On top of the grid, a destination must be an existing cell without a formula, not part of an array or shared formula range, not a non-top-left cell of a merged range, and not a locked cell on a protected sheet. Conditional formatting is kept but not evaluated.

Tab types. The workbook has 46 tabs: Instructions, Input, 36 CSV templates and 8 TRA transparency templates. The TRA tabs, CSV_CR_SUM and CSV_CL_SUM are fully calculated and have no inputs. Input has no identifiers; it holds the selectors other tabs depend on (section 2).

2 Tab profiles

For every tab the app holds a *profile*, generated from the template by a build tool and pinned to the template's SHA-256. The methodological knowledge (purpose, paragraph references, constraints) is maintained by hand next to it.

Profile element	Source in the template	Used for
Reporting grid and labels	Blue identifier rows and columns	Which cells exist; labels such as <i>STAFF EXPENSES · of which: fixed remuneration · Country 1 — Baseline · 2028</i>
Dropdowns	26 data validations in 10 tabs, 22 with a fixed list (4 in the x14 extension)	Blocking check on values outside the list
Percentage cells	95,196 cells with a % number format	Warning when a value looks like a whole percentage
Blank is not zero	Formulas of the form <code>IF(J25="",...,...)</code>	Warning when 0 or blank is written there
Sign and unit notes	Table notes ("report expenses as negative amounts")	Sign check on pure expense rows
Dependencies	Formula references to Input blocks and other tabs	Warning when a required Input selector is empty
Methodology	Draft note, Annex IV	Purpose, § references, constraints the template applies vs. the bank must ensure

Input selectors. Many tabs only work when Input is filled first. Examples: credit risk countries (Input C14:C23, max. 10, §§100–102), EEA countries for physical climate risk (C27:C36, §583), NII country/currency pairs (C39:D58), top-5 administrative expense countries (C108:C112, §496), presentation currency (B100) and FX variation against EUR (P11:R170).

Constraints the template applies. Annex IV caps and floors that the template's formulas already apply include NFCI growth parameters, dividend caps, the ADM floor with FX (§505), REA floors (§153, §178), market risk floors and the NII cap (§408). The app marks them *Template applies*: report unconstrained values, or the cap is applied twice.

The profiles are visible in the template guide, the template browser, the overview and the validation review.

3 Mapping rules

A mapping is a JSON file with source labels, rules and the SHA-256 of the template it was made for. File paths are not stored in it: a label such as *Fixed remuneration* is bound to a file per cycle. Every rule has a source (label, sheet, range, or a constant), a destination (sheet and top-left cell), an output type and a factor.

Operation	Exact behaviour
Copy	Copies a rectangle to the same shape from the destination cell, without shifting rows. Blank policy <i>error</i> (default) stops on a blank; <i>skip</i> leaves that destination cell unchanged.
Sum	Adds all numbers in a rectangle into one cell. A blank is an error.
Constant	Writes one explicit number or text. Text that looks like a formula stays text.
Lookup	Matches one exact key (trimmed, case-insensitive) in a key column and sums its rows per value column. Source order does not matter. No match is an error, or zero when <i>missing = zero</i> is chosen.
Other	Sums all keys except an explicit exclusion list. For the same source, sheet and ranges, the engine checks that every key named in a lookup rule is excluded here, so nothing is counted twice.
Compact	Writes the numeric rows in source order into reserved rows, dropping all-zero rows when <i>zero rows = omit</i> . Unused reserved cells are cleared, so no old amounts remain.
Countries	Groups rows by country (duplicates summed), drops all-zero countries when chosen, fills N country selector cells and N value rows, and sends the rest to the Other row. Unused slots are cleared.
Admin expenses	Reconciled CSV_ADM_EXP: a normalised dataset (country, category, 2026 actual, three baseline and three adverse years) for the seven cost categories, one shared top-5 country order, and checks against provided totals. Pinned to this template.

Rules that apply to all operations

- **Blank is not zero.** In numeric groupings, a partly blank row is an error. Only fully blank trailing rows (key included) are ignored.
- **Zero rows.** A row is dropped only when all chosen value columns are zero and *omit* is selected. A zero in 2026 with an amount in a later year stays.
- **Units.** The factor converts units explicitly, for example 0.000001 from euro to million euro. The tool does not infer units, percentages or signs.
- **Country order.** *Magnitude* sorts by the absolute value of the first chosen value column, ties alphabetically; *source* keeps first appearance. Both are user choices, not EBA selection rules.
- **No double writes.** Two rules writing the same cell are blocked.
- **Source formulas.** Cached formula values are blocked unless explicitly allowed, because the tool cannot prove they are current. Workbooks with different Excel date systems are blocked.

- **Shared selectors.** The same Input country selectors drive several tabs. Configure one countries rule per shared selector block; other mappings for that block must use the same order and Other definition.

Worked example: top-5 countries

The sample mapping fills fixed staff remuneration by country.

Setting	Value
Operation	Countries, capacity 5
Source	<i>Fixed remuneration</i> , sheet CSV, keys A2:A100, values B2:H100 (7 columns)
Country selectors	Input!C108:C112
Amounts	CSV_ADM_EXP!H23:N27
Other row	CSV_ADM_EXP!H28:N28
Factor	0.000001
Zero rows	omit
Country order	magnitude

The Netherlands appears twice in the source and is summed. France is zero in every column and takes no slot. The five largest countries are written; Austria goes to Other.

4 Validation

Validation runs every rule against the current files in two layers: the mapping engine (can this value be written here at all?) and the tab profiles (does it fit what this tab expects?). Nothing is written until export, and export runs the whole validation again.

Mapping errors (always blocking)

- destination is coloured, has a formula, is part of an array or shared formula, a non-top-left merged cell, or a locked cell on a protected sheet;
- two rules write the same cell;
- a blank or partly blank source row where numbers are required (unless the blank policy allows it);
- a lookup key without rows (unless *missing = zero*), or a country named in a lookup but not excluded from Other;
- cached source formula values without explicit permission, or mixed Excel date systems;
- a mapping made for a different template hash.

The same engine checks run already when a rule is saved in the rule editor, as soon as its source file is attached: a rule whose destination errors appear above is not saved, and the editor names

the cell. Point-and-click links are checked the same way before they are added. Validation then repeats all checks for the whole mapping with the current files.

Tab checks

Check	Level	Fires when
Calculated tab	Blocking	A value is written to a fully calculated tab (TRA, CSV_CR_SUM, CSV_CL_SUM)
Dropdown	Blocking	A value is not in the cell's list, with a suggestion for case differences (ca → CA)
Outside grid	Review	A white cell without EBA row and column identifiers
Comment column	Review	A number in a reference or comment column
Percentage scale	Review	value > 100% in a % cell (LTV: > 500%); enter 5% as 0.05
Blank vs zero	Review	0 or blank written where the template's formula treats them differently, with the meaning (e.g. NFCI approach i vs ii, §503)
Sign	Review	A positive amount on a pure expense row where the tab reports expenses as negative (§505); mixed rows such as "gains or (-) losses" are skipped
Baseline zero	Review	A non-zero market risk impact in the baseline
Bank type	Review	The bank type (CA, CA-adv, TE) exempts the bank from a tab it fills
Empty Input block	Review	A tab depends on an Input block that is empty
Selector or bank type missing	Info	A selector the tab depends on is not set
Template constraints	Info	The template already applies these caps or floors

Calculated totals

For the known additive totals (for example the seven category totals and grand totals of CSV_ADM_EXP), the review recomputes each total from the mapped components and shows *Incomplete* when a component is missing. Other formulas are left to Excel.

5 What an export writes

An export copies the template's file and changes exactly two things: the chosen white input cells, and the setting that makes Excel recalculate on open. Every other part of the workbook file (formulas, styles, validations, other sheets) is carried over byte for byte.

- No rows are inserted, deleted or hidden; template row numbers and formulas stay where they are.
- *Selected tab* exports update one tab in a workbook exported earlier and keep all other worksheets unchanged.

- Shared Input selectors are only changed when you allow it (*Allow required shared country-selector updates*), because they affect other tabs.
- The institution name and reference date from step 1 are not written unless a rule does so.
- The optional audit JSON holds the mapping, every old and new cell value, and the SHA-256 of template, sources and output.

6 Mapping versions, four-eyes approval and lineage

An approval is given to one exact mapping version, identified by its SHA-256. Export compares the hash of the mapping in use with the approved hash; any difference blocks the export when the organisation requires approval (the default).

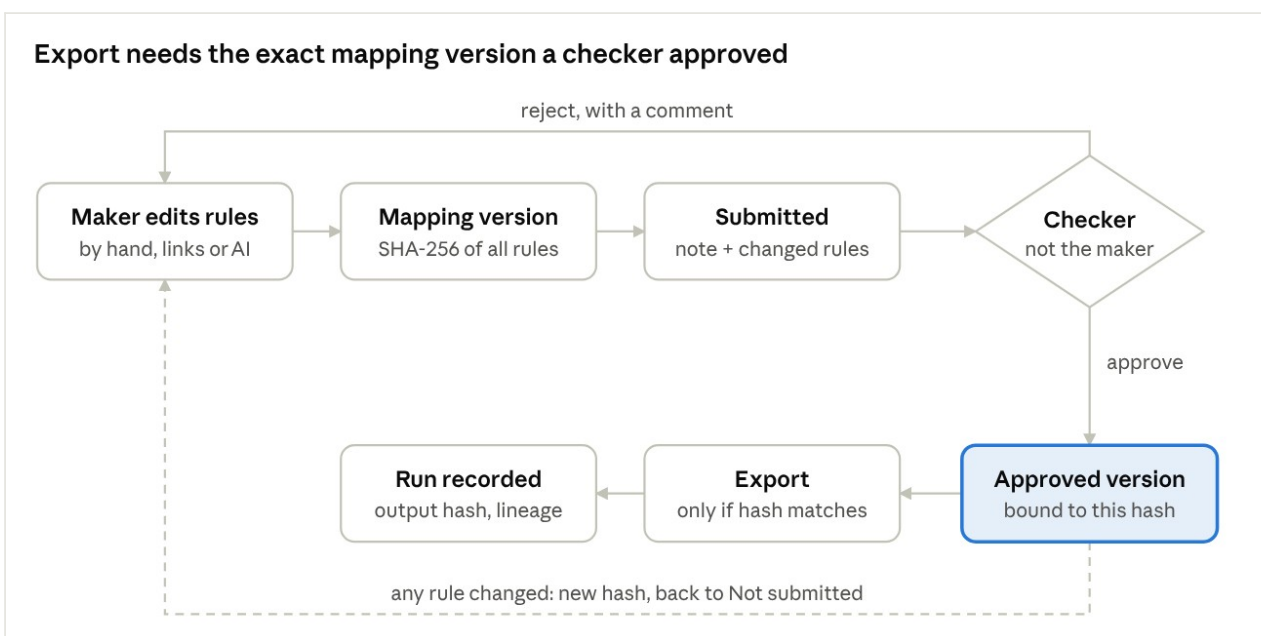


Figure 1 four-eyes approval of a mapping version

A rejection or any change to a rule sends the mapping back to the maker; only a checker other than the maker can approve.

- **Diff.** The submission lists rules added or changed, removed and unchanged against the last approved version, by rule hash.
- **Supersession.** A new submission for the same project supersedes an older pending one; the maker can withdraw a pending submission.
- **Approval not required.** Organisations created with *no approval* still record submissions, runs and lineage, but export is not blocked.
- **Runs.** Every validation and export is recorded with the mapping hash, template hash, output hash, number of values and findings.

- **Lineage.** For one value the app joins: source label, file and hash, cells → rule, factor and rule hash → template cell with EBA RowNum, ColNum and labels → approval (who, when, comment) → run → template name and hash.

7 Audit trail and hashing

Every state-changing action on the server writes an audit event whose hash includes the previous event's hash, per organisation. Editing, inserting or deleting any past event breaks the chain from that point, and the app shows *Chain verified* only when every link recomputes.

$$h(n) = \text{SHA-256}(h(n-1) \mid \text{org} \mid t(n) \mid \text{user}(n) \mid \text{action}(n) \mid \text{target}(n) \mid \text{detail}(n))$$

$$h(0) = 64 \text{ zeros}$$

What	How it is identified
Template	SHA-256 of the file; profiles and the ADM workflow are pinned to it
Source file	SHA-256 per file, in lineage and in the audit JSON
Mapping version	SHA-256 over template hash, sorted source labels, the cached-formula setting and all rules in order
Single rule	First 16 hex characters of the SHA-256 of the rule; used to show added, changed and removed rules
Output workbook	SHA-256 of the exported file, recorded in the export run

Events include sign-in (with method: SSO or password), failed sign-in, user and SSO configuration changes, project creation, submission, approval, rejection, withdrawal, supersession, validation runs, exports and AI draft requests. Passwords are stored as PBKDF2-HMAC-SHA256 (240,000 iterations, per-user salt); session tokens and license keys only as SHA-256 digests.

8 The AI mapping assistant

The assistant proposes rules; it never applies them. Its output goes through the same checks as a rule a person types, and a person decides.

1. **Evidence is chosen and limited.** One source range of at most 200 cells and 20 columns, the template area with its labels, and the user's instruction (max. 3,000 characters; cell text max. 500). Nothing else from the files is read.
2. **Evidence is shown before it is sent.** The exact JSON is displayed. Nothing leaves the app until the user ticks the consent box.
3. **Freshness is guarded.** If a source file changes after the preview, generation and acceptance are refused until the evidence is prepared again.
4. **Proposals are checked technically.** Each proposal is parsed into a normal rule and validated against the template and the current mapping; failures are listed as rejected with the reason.

5. **People accept explicitly.** Only ticked proposals are added, after a second check together with the existing rules. With a team account they still need four-eyes approval.

The server enforces the premium license on every request, a limit of 10 generations per hour per license or organisation, and logs each draft request in the audit trail. The AI backend is either Groq cloud or a local Ollama model, chosen by the server administrator. Manual mapping never needs a license.

9 Limitations

The tool supports the bank's own controls; it does not replace them, and it is not approved by the EBA.

- **Formula results.** The app does not recalculate the template. Caps, floors, the NII cap and REA floors become visible after recalculation in Excel.
- **EBA business rules.** The EBA's validation rules are not implemented; only the template's own identifiers, validations and formula patterns are checked.
- **Thresholds that need more data.** Country selection (10% test, >1% materiality, max. 10 countries), sector materiality ($\geq 0.5\%$), the securitisation threshold (5%) and the one-off threshold (5 bp) are reported as guidance, not tested.
- **FX conversion** of floors and NFCI outside the template formulas.
- **Content.** NACE classification, climate overlays, nGAAP mapping (Annex VI) and one-off evidence (§§507–515) are not assessed.
- **Implementation choices.** The top-5 ADM countries are ranked by absolute 2026 expenses, a reasonable reading of \$496 ("top 5 countries where administrative expenses are located") but still a choice.

Issues found in the draft documents themselves (reported, not enforced): Annex IV names "CSV_REA_IRB"/"CSV_REA_STA" where the tabs are CSV_CR_REA_IRB/STA; the instructions write "CSV_NII_CALC_FUNDING MATCH" with a space; Input!B81 says "NFCI 2020" for a 2026 block; Table 5's caption reads "CV_CR_SCEN_OFF_BS"; Input C25 has a dropdown no formula uses; CSV_MR_SUM row 8 asks for "CA or TE" while the list also has CA-adv.

10 Template versions

All template knowledge is tied to one file: the 2027 draft with SHA-256 89684ec7...f61a6fac. A different file (a later EBA release, or the draft re-saved in Excel) is still usable for basic mapping, but the tab profiles, the ADM workflow and the template-aware checks switch off, and the app says so in step 2.

When the EBA publishes the final template:

1. Regenerate the profiles: `python tools/build_profiles.py "<final template>.xlsx"` (about 70 seconds).

2. Review `engine/eba_filler/services/tab_rules.py` against the final methodological note: purposes, § references, constraints and the blank-versus-zero cells.
3. Update the pinned hash in the ADM workflow after checking its row and column layout.
4. Run the test suite against the new template (`EBA_TEST_TEMPLATE=<path> npm test`).
5. Existing mappings carry the old template hash. Load them against the new template, fix any moved cells, and approve them again: a new template is a new mapping version.