

TS-GMRI™ Methodology v1.0

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TS-GMRI — Global Metals RWA Index

Methodology v1.0

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Naming discipline (Constitution §16). The canonical first-mention form is **TS-GMRI (Global Metals RWA Index)**. Every subsequent mention in this document uses **TS-GMRI** (or the relevant family ticker, e.g. **TS-GMRI-EW**). The bare token “GMRI” is never used standalone — it appears only inside the Trademark notice and the prior-art context of Section 1. The legacy marks “GMRI” and “Global Metals RWA Index” are retained as parallel registered trademarks and continue to enjoy the same prior-art protection from 7 June 2026 onwards.

1. Status — Prior Art Notice

TS-GMRI (Global Metals RWA Index) is, as of the date of first publication (7 June 2026), the first and only publicly published market index dedicated to tokenized physical metals as an asset class. A reasonable search across the major index publishers — Bloomberg, S&P Dow Jones Indices, MSCI, FTSE Russell, CoinDesk Indices, Refinitiv, CME Group, and the major commodity reporting agencies — returned no equivalent publication on that date. TrueSource Metals therefore asserts authorship of the methodology and prior art over the index name **TS-GMRI**, the legacy mark “**GMRI**”, and “**Global Metals RWA Index**” from 7 June 2026 onwards.

The numerical series itself (daily values of TS-GMRI and TS-GMRI-EW) is a factual record and is not subject to copyright. The **methodology text, constituent-selection rules, weighting and rebalancing rules, computation code, and the names “TS-GMRI”, “GMRI”, and “Global Metals RWA Index”** are protected under Swiss copyright law (LDA / Urheberrechtsgesetz) and analogous Berne Convention provisions in all signatory jurisdictions from the moment of creation.

Trademark registration of the marks “TS-GMRI”, “GMRI”, and “Global Metals RWA Index” is pursued separately (Swissreg, EUIPO, WIPO Madrid Protocol).

2. Index Family

The TS-GMRI family is registered as a single coherent taxonomy at v1.0, with all members sharing the same constituent universe (Section 3), the same base date **7 June 2026 = 100**, and the same data-discipline rules. They differ only in their filter and/or weighting function.

Family members are split into two tiers:

- **Live (published with values):** $N \geq 3$ active constituents on the base date.
- **Methodology slot (registered, value withheld):** rules fixed, but no value is published until the publication threshold is met. This preserves prior-art protection without inventing numbers from sparse data.

Ticker convention. Public display tickers use the TS- prefix (TS-GMRI, TS-GMRI-EW, etc.). Internal machine identifiers in code and data files (code: "GMRI-EW", JSON storage keys) remain as legacy strings to preserve historical continuity — this is the Bloomberg ISIN pattern: stable storage identifiers, evolving display labels.

2.1 Live members

Display ticker	Full name	Filter / scope	Weighting
TS-GMRI	Global Metals RWA Index	All eligible constituents	Market-cap
TS-GMRI-EW	TS-GMRI Equal-Weighted	All eligible constituents	1/N at base
TS-GMRI-CAP20	TS-GMRI Issuer-Capped 20%	All eligible constituents	Market-cap, single-issuer cap 20%
TS-GMRI-AU	TS-GMRI Gold-Only	metal = gold	Market-cap
TS-GMRI-PRE	TS-GMRI Precious	metal ∈ {gold, silver, platinum, palladium}	Market-cap
TS-GMRI-NONAU	TS-GMRI Non-Gold	metal ≠ gold	Market-cap (publish iff N ≥ 3)

2.2 Registered methodology slots (no value published yet)

The slot board mirrors the 10-section metal taxonomy used across the TSM Hub navigation (precious / base / battery / bulk-ferrous / critical / ferroalloys / light / minor / refractory / steel) plus one cross-cutting slot (by jurisdiction). Registering the full board on 15 June 2026 establishes prior art on the full TS-GMRI sub-index family before live tokens exist in each segment.

Display ticker	Full name	Filter / scope	Publication threshold
TS-GMRI-BASE	TS-GMRI Base Metals	metal \in {copper, aluminium, nickel, zinc, lead, tin}	$N \geq 3$ eligible constituents (currently 0 — no live retail token at base)
TS-GMRI-BTR	TS-GMRI Battery Metals	metal \in {lithium, cobalt, manganese, nickel-battery-grade, graphite-natural}	$N \geq 3$ (currently 0 — no live retail token at base date)
TS-GMRI-FE	TS-GMRI Bulk Ferrous	metal \in {iron-ore, hematite, magnetite, dri-pellets}	$N \geq 3$ (currently 0 — no live retail token at base date)
TS-GMRI-CRT	TS-GMRI Critical Materials	metal \in {uranium, lithium, cobalt, manganese, rare earths, neodymium}	$N \geq 3$ (currently 1 — XU3O8 uranium concentrate)
TS-GMRI-FA	TS-GMRI Ferroalloys	metal \in {ferrochrome, ferromanganese, ferrosilicon, ferromolybdenum, ferrovanadium, ferronickel}	$N \geq 3$ (currently 0 — no live retail token at base date)
TS-GMRI-LT	TS-GMRI Light Metals	metal \in {aluminium, magnesium, titanium, beryllium}	$N \geq 3$ (currently 0 — no live retail token at base date)
TS-GMRI-MN	TS-GMRI Minor Metals	metal \in {bismuth, antimony, indium, gallium, germanium, selenium, tellurium, cadmium}	$N \geq 3$ (currently 0 — thinly traded by-products, no retail tokenization)
TS-GMRI-REF	TS-GMRI Refractory Metals	metal \in {tungsten, molybdenum, tantalum, niobium, rhenium, vanadium}	$N \geq 3$ (currently 0 — no live retail token at base date)
TS-GMRI-STL	TS-GMRI Steel	metal \in {steel-rebar, steel-hrc, steel-billet, stainless-steel}	$N \geq 3$ (currently 0 — no live retail tokenization at base date)

Display ticker	Full name	Filter / scope	Publication threshold
TS-GMRI-JUR	TS-GMRI by Jurisdiction	breakdown by issuer's regulator jurisdiction (verified issuers only)	≥ 2 verified issuers per jurisdiction (currently 1 verified each)

Issuer-cap weighting (TS-GMRI-CAP20) — iterative pro-rata redistribution: if any single issuer's combined cap-weight exceeds 20%, that issuer's tokens are scaled down to the cap and the excess is redistributed pro-rata across uncapped tokens; the process repeats until stable. Issuers whose public disclosure cannot be corroborated are treated as their own standalone issuer (verified = false → each token is its own issuer bucket), which is a conservative choice that does not artificially merge concentration.

Honesty rules for slots (v1.0):

1. No value is published for a slot until the threshold is met.
2. When the threshold is first met, the methodology is **not changed**; only the publication state flips from “slot” to “live”. The history starts from that publication date with base value 100 on the date of first publication of that sub-index, and the sub-index is marked **BACKTEST / PRO-FORMA — reconstructed using CoinGecko historical caps** for any retro-history.
3. Slot definitions cannot be silently retired. If a slot is dropped, a public v1.x notice is published with the reason.

3. Eligible Universe

A token is eligible for inclusion if, on the rebalance reference date, **all** of the following hold:

1. **Underlying:** the token represents a claim on a physical metal — including but not limited to precious metals (gold, silver, platinum, palladium), base metals (copper, aluminium, nickel, zinc, lead, tin), battery metals (lithium, cobalt, manganese, nickel), or extractable mineral commodities (uranium concentrate / U3O8, rare earth oxides where on-chain claims exist).
2. **Tokenization layer:** the claim is represented by a transferable on-chain token on a public blockchain (Ethereum, Tron, Solana, BNB

Chain, Polygon, Avalanche, or any chain with a verifiable public ledger).

3. **Issuer transparency:** the issuer publicly discloses the redemption mechanism and the location/auditor of the physical reserve.
4. **Market-cap floor:** circulating market capitalization \geq USD 1,000,000 (one million) at the reference date. This floor is intentionally low to capture early-stage tokens; it is reviewed annually.
5. **Liquidity:** at least one venue with a public price feed (CoinGecko, CoinMarketCap, DEX subgraph, or issuer-disclosed AP price).
6. **No double-counting:** wrapped or bridged versions of an already-included token are excluded (e.g., a wrapped gold token derived from an included gold token).

Stablecoins pegged to fiat, synthetic exposure tokens not backed by physical reserves, and pure futures/derivatives tokens are **not eligible**.

Tokens of issuers under active OFAC/EU/UN sanctions, where the sanction prohibits dealing in the financial instrument, are **excluded** with effect from the publication date of the relevant sanctions list.

4. Constituent Universe — Snapshot at v1.0 Publication

As of 15 June 2026 the active universe contains **18 constituents**: 15 gold-backed, 2 silver-backed, 1 uranium concentrate (XU3O8). The full list with per-token weights is published at <https://www.truesourcemetals.com/gmri> and in the live data file `/data/gmri/latest.json`. The same file carries the full family block with the live values and the registered methodology slots from Section 2.

Issuer/jurisdiction metadata (verified, issuer_key, jurisdiction) is published at `/data/gmri/universe.json` and is the input to TS-GMRI-CAP20 and TS-GMRI-JUR. “Verified” requires corroboration from issuer’s own public docs (terms, prospectus, regulator registry).

The universe is open and additive: new tokens that satisfy Section 3 are added at the next monthly review.

5. Rebalance Schedule

- **Daily computation:** index values are recomputed daily at 00:00 UTC using closing-day prices and market caps from the primary data sources (Section 7).
 - **Monthly review:** the first business day of each calendar month, new constituents are admitted and existing constituents are checked against Section 3 eligibility.
 - **Ad-hoc exclusion:** an issuer that loses regulatory standing or whose underlying reserve is publicly proven to be misrepresented is excluded immediately, with a published explanatory note.
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6. Calculation

Let N be the number of active constituents on day t , $MC_{i,t}$ be the circulating market capitalization of constituent i on day t , and $MC_{i,0}$ be the market capitalization of constituent i on the base date (7 June 2026, base value 100).

Cap-weighted (TS-GMRI):

$$\text{TS-GMRI}_t = 100 \times (\sum_i MC_{i,t}) / (\sum_i MC_{i,0})$$

where the sum runs over all constituents active **both** on the base date and on day t . New constituents are chained in at the next monthly review using a continuity multiplier so the historical series is not distorted.

Equal-weighted (TS-GMRI-EW):

$$\text{TS-GMRI-EW}_t = 100 \times (1/N) \times \sum_i (MC_{i,t} / MC_{i,0})$$

Both variants are rounded to 2 decimal places for display.

7. Data Sources

Primary, OTSFA principle (“One True Source for All”):

- **Token market caps and prices:** CoinGecko public API (<https://www.coingecko.com/>) — primary; CoinMarketCap (<https://coinmarketcap.com/>) — secondary cross-check.

- **Issuer disclosures:** issuer official websites and on-chain transparency reports.
- **Sanctions checks:** OFAC SDN list, EU consolidated list, UN consolidated list, UK OFSI.

When sources disagree by more than 1%, the issuer's official reserve disclosure is the tiebreaker. When the issuer is silent, the constituent is suspended until clarification.

8. Caveats, Limitations, and Honest Disclosure

- TS-GMRI is an information product, not investment advice.
 - The index is unaudited at v1.0. An independent attestation is planned once 12 months of stable computation are available.
 - Survivorship: tokens that wind down are removed from the index from the date of wind-down. Historical values are not retroactively restated.
 - Liquidity in the underlying tokens is uneven; index values are sensitive to large XAUT and PAXG movements under cap-weighting.
 - The methodology may be revised; revisions are published as **v1.1**, **v2.0**, etc., with a public diff and effective date.
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9. Licensing

TS-GMRI methodology, name, and computation code are © 2026 TrueSource Metals.

- **Non-commercial use** (research, journalism, education): permitted with attribution.
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10. Version History

Version	Date	Change
v1.0	15 June 2026	First formal methodology document — full family registered (6 live + 10 slots)
v1.0a	16 June 2026	Document filename and display tickers renamed to TS- prefix per Constitution §16. Internal machine codes and base values unchanged. Legacy marks “GMRI” / “Global Metals RWA Index” preserved as parallel TMs. No data or computation change — display rename only.

11. Provable Timestamp

A SHA-256 hash of this document at v1.0 release will be timestamped via **OpenTimestamps** (<https://opentimestamps.org/>) using the Bitcoin blockchain, providing an immutable proof of authorship and date. The proof file will be hosted at `/gmri/methodology-v1.0.ots`.

SHA-256 hash of this document (v1.0, as published): *to be inserted at release*. SHA-256 hash of this document (v1.0a rename revision, as published): *to be inserted at release*.

End of methodology v1.0a.

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