

DATACHAIN FOUNDATION
Technical Tokenomics Specification

DC FAT Token Price Mechanism

A Multi-Pillar Fundamental Valuation Framework

Incorporating Tanastok Asset Index, Green Finance Integration,
Revenue-Backed Floor Price, and Network Utility Value

Version: 1.2
Issuer: Datachain Foundation SAS
Status: Confidential – Working Draft
Date: March 2026

Executive Summary

This document establishes a formal, multi-pillar framework for deriving the **fundamental reference price** of **DC FAT**, the native utility token of the Datachain Foundation infrastructure ecosystem. The framework supersedes the prior narrative-based approach and replaces it with a **quantitative model** grounded in four independently verifiable pillars: **Network Utility Value (NUV)**, **Tanastok Asset Index (TAI)**, **Revenue-Backed Floor Price (RBF)**, and **Green Liquidity Premium (GLP)**.

A central innovation is the explicit inclusion of **real-world asset (RWA) listings on Tanastok** as a direct determinant of token value. Projects such as **Pacific Blue Carbon (PBC)** (minimum 10-year revenue stream of €6.5M annually) and **Naturaproof** (perpetual recurring revenues with structural startup valuation) are embedded into the pricing formula via **Net Present Value (NPV)** discounting. The **€100M Green Fund** — enabling institutional guarantors such as the World Bank to back projects including Naturaproof and PBC — introduces a robust liquidity floor and credibility premium.

Role of this specification: It defines the **fundamental reference price (P_{ref})** and the **price floor (P_{floor})** for communication, governance, and future oracle integration. The **observable market price** continues to be determined by on-chain AMM liquidity (e.g. DCSwap) and listed exchanges; P_{ref} and P_{floor} provide an analytically defensible valuation and minimum bound, not a replacement for market price discovery.

Dual-channel price construction: The DC FAT price is built and made available in two complementary ways: **(1) On-chain** — P_{ref} and P_{floor} are published on Datachain Rope so any dApp, smart contract, or backend can read the reference price without depending on DCSwap or Tanastok. **(2) DCSwap (dcswap.net)** — AMM spot price and indexer API provide market-driven price and history for trading, analytics, and UIs that integrate with the DEX.

Feed architecture: The **DCSwap.net price function** and **third-party projects** nourish the **Datachain Rope on-chain price function**; the on-chain price function **provides an API endpoint** for all other platforms (see Section 1.4).

The result is a token price mechanism that is: (i) analytically rigorous, (ii) anchored in real economic activity, (iii) non-inflationary by design, and (iv) communicable to sophisticated investors, regulators, and ecosystem participants.

Definitions and Notation

Symbol / Term	Definition
P_ref	Fundamental reference price of DC FAT (EUR per token), weighted combination of four pillars
P_market	Market price (VWAP across DC Swap and listed exchanges)
P_floor	Minimum effective price; $\max(P_RBF, P_GLP)$
P_NUV	Network Utility Value component (Equation of Exchange)
P_TAI	Tanastok Asset Index component (RWA NPV-derived)
P_RBF	Revenue-Backed Floor Price (Private Pool revenue support)
P_GLP	Green Liquidity Premium (Green Fund + guarantee multiplier)
M_circ	Circulating supply of DC FAT (tokens)
M_staked	DC FAT staked in active Private Pools
V_annual	Velocity: transactions per token per year (on-chain)
Q_total	Total on-chain economic output (EUR equivalent per year)
Private Pool	Staking pools receiving a share of platform revenue (e.g. 60%) with target APY 15–25%
NPV	Net Present Value (EUR)
PBC	Pacific Blue Carbon (blue carbon RWA)
NP	Naturaproof (perpetual revenue / Green Fund anchor)

1. Current Mechanism — Baseline Assessment

1.1 Prior Definition

Prior to this specification, the DC FAT price was informally described as a function of qualitative network metrics:

- Data volume stored on Datachain Rope
- Number of transactions processed per period
- Number of active Federations and Communities
- Volume of AI Testimony validations
- Platform subscription revenue feeding Private Pools

This formulation lacked: a quantitative formula, a transparent derivation methodology, a linkage to tokenized asset values, and a defined price floor. It was not suitable for institutional or regulatory presentation as a rigorous valuation framework.

1.2 Dual-Channel Price Construction: On-Chain and DCSwap

The DC FAT price is built and exposed in two ways so that all ecosystem participants can access it:

Channel	Purpose	Consumers
On-chain (oracle / reference contract)	P_ref and P_floor published on Datachain Rope; any project can read via RPC or contract call	All dApps, smart contracts, and backends that need DC FAT price without depending on DCSwap or Tanastok (e.g. Datawallet+, NaturaProof, CareAway, federations, third-party builders)
DCSwap (dcswap.net)	AMM spot price (reserve ratio) + indexer API (history, VWAP, /v1/prices)	Trading UIs, arbitrage bots, analytics, and applications integrating with the DEX

- On-chain spot price from DCSwap is determined by AMM reserves: for FAT/stable pairs, price = reserve_stable / reserve_FAT (e.g. 1 FAT ≈ 0.01 USDC at seed liquidity 100M FAT : 1M USDC).
- On-chain reference price (P_ref, P_floor) is published via the Datachain Rope oracle network so that projects not using DCSwap or Tanastok can obtain a consistent, auditable DC FAT price for valuations, fee calculations, and user-facing displays.
- External / display feeds (e.g. DCScan, DCSwap indexer) may use GeckoTerminal/XDC or reserve-based derivation. The on-chain reference complements AMM price discovery and provides a floor and communication benchmark.

1.3 Observable Price Today (Implementation Context)

In the current technical implementation, the **DCSwap channel** is live (AMM + indexer at dcswap.net). The **on-chain oracle channel** (P_ref, P_floor) is part of the roadmap; once operational, it will allow any project to read the reference price and floor directly from the chain without relying on dcswap.net or Tanastok.

1.4 Price Feed Architecture: Feeders and Canonical API

The canonical DC FAT price is produced by a Datachain Rope on-chain price function that aggregates multiple inputs and exposes a single API endpoint for the whole ecosystem.

Feeders (inputs that nourish the on-chain price function)

Feeder	Role	How it nourishes the on-chain price function
DCSwap.net price function	Primary market-driven input	DCSwap computes spot price from AMM reserves and indexer data (VWAP, history). This price is submitted to or consumed by the Datachain Rope on-chain price function, nourishing it with real trading and liquidity data.
Third-party projects	Additional attestations and data	Ecosystem projects (e.g. Tanastok, Datawallet+, NaturaProof, CareAway, federations, external oracles) may submit price-relevant data or attestations — e.g. P_TAI inputs, volume, fee revenue — that nourish the on-chain price function alongside DCSwap.

The Datachain Rope on-chain price function therefore:

- Is nourished by (i) the DCSwap.net price function (AMM + indexer) and (ii) third-party projects (attestations, pillar inputs, or other agreed data).
- Aggregates these inputs with the four-pillar framework (P_NUV, P_TAI, P_RBF, P_GLP) to produce the reference price P_ref and floor P_floor.
- Publishes the result on-chain and exposes an API endpoint so that all other platforms can read the canonical DC FAT price without depending on DCSwap or any single third party.

Canonical API endpoint

The Datachain Rope on-chain price function provides an API endpoint that returns:

- P_ref (fundamental reference price)
- P_floor (price floor)
- P_market or spot (when available from DCSwap feed)
- Timestamp and source summary (which feeders contributed)

Summary: DCSwap.net price function and third-party projects nourish the Datachain Rope on-chain price function; the on-chain price function provides an API endpoint for all other platforms.

1.5 Identified Limitations (Addressed by This Framework)

Limitation	Impact
No price floor guarantee	Investor confidence risk; no minimum value commitment
No linkage to Tanastok AUM	RWA tokenization value not reflected in token price
Qualitative, not quantitative	Not auditable, stress-testable, or presentable to institutions
No NPV model for revenue assets	PBC / Naturaproof revenues absent from valuation
No Green Fund integration	€100M liquidity asset excluded from price support

2. Theoretical Foundations

2.1 Equation of Exchange — Applied to DC FAT

The **Quantity Theory of Money** (Fisher, 1911) provides the macroeconomic foundation for the Network Utility Value component. Applied to a blockchain-native token:

$$M \times V = P \times Q$$

M = Circulating supply of DC FAT
V = Velocity (transactions per token per year)
Q = Total on-chain economic output (EUR equivalent per year)
P = Implied price per DC FAT token

Solving for token price:

$$P_{\text{NUV}} = Q / (M \times V)$$

As the ecosystem grows — more assets tokenized, more transactions, more subscriptions — Q increases while M grows slowly (halving model). This asymmetry creates long-term appreciation pressure on P_NUV.

2.2 Net Present Value — Revenue-Generating Assets

For assets listed on Tanastok with deterministic revenue streams, the contribution to DC FAT fundamental value uses standard NPV methodology.

Finite horizon (e.g. PBC):

$$NPV = \sum [CF_t / (1 + r)^t] \quad \text{for } t = 1 \text{ to } n$$

CF_t = Cash flow in period t (EUR)
r = Risk-adjusted discount rate
n = Duration of revenue stream

Perpetuity (e.g. Naturaproof):

$$NPV^{\infty} = CF_{\text{annual}} / r$$

For growing perpetuity (Gordon model):
 $NPV^{\infty} = CF_{\text{annual}} / (r - g)$, where g = long-term revenue growth rate

The NPV of each major asset class feeds into the Tanastok Asset Index (P_TAI) in the master price formula.

3. The Four-Pillar Price Framework

The DC FAT Reference Price is a weighted combination of four independently derived components:

$$P_{ref} = w1 \times P_{NUV} + w2 \times P_{TAI} + w3 \times P_{RBF} + w4 \times P_{GLP}$$

$$\sum w_i = 1$$

Default weights:

Pillar	Weight	Component
Network Utility Value	w1 = 0.25	P_NUV
Tanastok Asset Index	w2 = 0.35	P_TAI
Revenue-Backed Floor	w3 = 0.25	P_RBF
Green Liquidity Premium	w4 = 0.15	P_GLP

The effective market price is bounded below by the floor:

$$P_{effective} = \max(P_{floor}, P_{market})$$

$$P_{floor} = \max(P_{RBF}, P_{GLP})$$

3.1 Pillar I — Network Utility Value (P_NUV)

Weight: w1 = 0.25 | Source: Datachain Rope on-chain metrics (e.g. DCScan)

$$P_{NUV} = Q_{total} / (M_{circ} \times V_{annual})$$

$$Q_{total} = Q_{storage} + Q_{tx} + Q_{federation} + Q_{AI} + Q_{subscriptions}$$

Component	Description	Unit
Q_storage	EUR value of data stored on Datachain Rope	EUR/yr
Q_tx	EUR value of on-chain transactions	EUR/yr
Q_federation	Subscription fees from active Federations & Communities	EUR/yr
Q_AI	AI Testimony validation fees	EUR/yr
Q_subscriptions	Platform subscription revenue (Tanastok, Datawallet+, CareAway)	EUR/yr

Note: V_annual is derived from on-chain data (e.g. DCScan). A conservative baseline V = 3 is applied at genesis and updated quarterly.

3.2 Pillar II — Tanastok Asset Index (P_TAI)

Weight: $w_2 = 0.35$ | Source: Tanastok on-chain registry | Highest-weight component

This pillar translates the economic value of real-world assets tokenized on Tanastok into token price support.

$$P_TAI = (1 / M_circ) \times [\Sigma_i (FeeRate \times NPV_i) + \Sigma_j (FeeRate \times NPV_j^\infty + 0.5\% \times V_N,j) + \Sigma_k (Fee_k \times NPV_k)]$$

i = time-bounded revenue assets (e.g. PBC)
 j = perpetual revenue assets (e.g. Naturaproof)
 k = all other RWA listings (art, real estate, gold, etc.)
 FeeRate = 1.5% of NPV (default)

3.2.1 Pacific Blue Carbon — Time-Bounded Revenue Model

Item	Value
Type	Environmental Carbon Credit / Blue Carbon RWA
Annual revenue (CF)	€6,500,000 / year
Minimum duration (n)	10 years (conservative)
Discount rate (r)	8%
Tokenization fee rate	1.5% of NPV

$$NPV_PBC = 6,500,000 \times [(1 - (1.08)^{-10}) / 0.08] = 6,500,000 \times 6.710 \approx €43,615,000$$

DC FAT fee demand from PBC (10-year): €43,615,000 × 1.5% = €654,225

Scenario	Duration	NPV (EUR)	DC FAT fee demand (EUR)
Conservative	10 years	43,615,000	654,225
Base case	15 years	55,620,000	834,300
Optimistic	20 years	63,760,000	956,400
Extension	30 years	73,200,000	1,098,000

3.2.2 Naturaproof — Perpetual Revenue & Green Fund Anchor

Item	Value
Type	Environmental platform / recurring revenue (SaaS) + Green Fund anchor
Revenue model	Perpetual recurring (subscription-based)
Startup valuation	To be set at Series A / Green Fund integration
Green Fund role	Primary beneficiary of €100M Green Fund; World Bank-equivalent guarantee structures
Tokenization fee	1.5% of NPV + 0.5% of startup valuation (annual contribution)

$$NPV_{NP^\infty} = CF_{\text{annual}} / (r - g)$$

$r = 8\%$ (risk-adjusted)

$g = \text{long-term revenue growth rate (e.g. 3-5\% for green SaaS)}$

At $g = 3\%$: $NPV_{NP^\infty} = CF_{\text{annual}} / 0.05$

At $g = 4\%$: $NPV_{NP^\infty} = CF_{\text{annual}} / 0.04$

As Naturaproof's annual revenue is confirmed and scales, this component contributes materially to P_TAI. Perpetuity assets structurally outperform time-bounded assets in the formula.

3.2.3 Aggregate Asset Index Formula

$$P_{TAI} = (1 / M_{\text{circ}}) \times [\Sigma_i 1.5\% \times NPV_{PBC,i} + \Sigma_j (1.5\% \times NPV_{NP,j^\infty} + 0.5\% \times V_{N,j}) + \Sigma_k Fee_k \times NPV_k]$$

3.3 Pillar III — Revenue-Backed Floor Price (P_RBF)

Weight: $w_3 = 0.25$ | Source: Private Pool monthly distributions

The Private Pool architecture links DC FAT's price floor to actual platform revenue: the minimum token value consistent with sustaining the target APY from real cash flows, without token inflation.

$$P_{RBF} = (R_{annual} \times \eta) / (M_{staked} \times APY_{target})$$

R_{annual} = Total annual platform revenue (EUR equivalent)
 η = Revenue allocation to Private Pools (default 60%)
 M_{staked} = DC FAT staked in active Private Pools
 APY_{target} = Target yield for pool participants (15–25%)

Phase	Annual revenue	Staked tokens	APY target	P_RBF (floor)
Bootstrap (Yr 1)	€5,000,000	1.5B FAT	20%	€0.010
Growth (Yr 2–3)	€15,000,000	2.5B FAT	20%	€0.018
Scale (Yr 3–5)	€40,000,000	4.0B FAT	20%	€0.030
Maturity (Yr 5+)	€100,000,000	6.0B FAT	18%	€0.056

P_{RBF} is updated monthly after each Private Pool distribution and is intended to be published on-chain via the Datachain Rope oracle network when that infrastructure is operational.

3.4 Pillar IV — Green Liquidity Premium (P_GLP)

Weight: $w_4 = 0.15$ | Source: €100M Green Fund + NGO guarantee framework

The Green Fund provides a structural liquidity anchor in fiat-equivalent assets, creating a minimum floor per circulating token.

$$P_{GLP} = (GF_{AUM} + GF_{deployed} \times \mu_{guarantee}) / M_{circ}$$

GF_{AUM} = Total Green Fund AUM (€100M target)
 $GF_{deployed}$ = Capital deployed as project guarantees
 $\mu_{guarantee}$ = Multiplier from NGO / institutional endorsement (1.2–2.0×)
 M_{circ} = Circulating DC FAT supply

Parameter	Value
Green Fund AUM	€100,000,000
Circulating supply	10,000,000,000 FAT
Base floor (GF_{AUM} / M_{circ})	€0.010 per DC FAT
With World Bank multiplier ($\mu = 1.5\times$)	€0.015 per DC FAT
With adjusted $M_{circ} = 7B$ (3B staked)	€0.021 per DC FAT

The Green Fund both supports a hard price floor and enables PBC and Naturaproof to access institutional capital at concessional rates, increasing their NPV and thus P_{TAI} .

4. Consolidated Price Scenarios

All figures in EUR. Market price may exceed P_ref; P_ref is the analytically derived fundamental value.

4.1 Scenario A — Bootstrap (Year 1)

Assumptions: Tanastok 100 assets, PBC onboarded, Naturaproof integration started; 5 Federations, 50k tx/month; R_annual €5M; M_staked 1.5B; Green Fund €100M committed, not yet deployed.

Pillar	Component	Value (EUR)
P_NUV (w=0.25)	€8M GDP / (8B × 3)	0.0003
P_TAI (w=0.35)	PBC €43.6M × 1.5% / 8B	0.0082
P_RBF (w=0.25)	€5M × 60% / (1.5B × 20%)	0.010
P_GLP (w=0.15)	€100M / 10B	0.010
P_ref	Weighted sum	≈ 0.008–0.010
P_floor	max(P_RBF, P_GLP)	0.010

4.2 Scenario B — Growth (Year 2–3)

Assumptions: Tanastok 500 assets, PBC full + Naturaproof €3M/yr recurring; 25 Federations, 500k tx/month, 3 enterprise subscriptions; R_annual €20M; M_staked 3B; Green Fund €60M deployed; World Bank MOU.

Pillar	Component	Value (EUR)
P_NUV	€30M / (9B × 4)	0.0008
P_TAI	PBC €43.6M + NP €60M perpetuity × 1.5% / 9B	0.0173
P_RBF	€20M × 60% / (3B × 20%)	0.020
P_GLP	€100M × 1.5 / 9B	0.017
P_ref	Weighted sum	≈ 0.016–0.020
P_floor	max(P_RBF, P_GLP)	0.020

4.3 Scenario C — Maturity (Year 5+)

Assumptions: Tanastok 5,000+ assets, multiple blue carbon projects, Naturaproof €15M/yr; 5 major multinationals + 20 SMEs, CBDC integration; R_annual €100M+; M_staked 6B; Green Fund €200M+; World Bank guarantees active.

Pillar	Component	Value (EUR)
P_NUV	€200M / (10B × 5)	0.004
P_TAI	PBC €73M + NP perpetuity €300M+ × 1.5% / 10B	0.055
P_RBF	€100M × 60% / (6B × 18%)	0.056
P_GLP	€200M × 2 / 10B	0.040
P_ref	Weighted sum	≈ 0.035–0.060
P_floor	max(P_RBF, P_GLP)	0.056

These figures are minimum defensible valuations for communication and governance, not price targets or investment projections.

5. Price Governance & Update Protocol

5.1 Oracle Infrastructure (Target Design)

The DC FAT Reference Price is intended to be computed and published **on-chain** via Datachain Rope's oracle network so that **any project** — including those that do not integrate with DCSwap or Tanastok — can read P_ref and P_floor by calling a standard contract or RPC endpoint.

Current production: the DCSwap channel (dcswap.net AMM + indexer API) is live and provides observable price for trading and integrated apps. On-chain publication of P_ref and P_floor is part of the roadmap.

Component	Frequency	Source	On-chain publication
P_NUV	Weekly	DCScan on-chain metrics	Datachain Rope Oracle
P_TAI	Monthly (or new listing)	Tanastok registry	Datachain Rope Oracle
P_RBF	Monthly (post-distribution)	Private Pool settlements	Datachain Rope Oracle
P_GLP	Quarterly (or fund event)	Green Fund custodian attestation	Datachain Rope Oracle
P_ref	Weekly	Weighted aggregate	Datachain Rope Oracle

5.2 Governance of Weights

Weights (w1–w4) are governed by the Datachain Foundation DAO. Any change requires:

- Minimum 67% approval from active validator masternodes
- Minimum 14-day public comment period
- Impact assessment published on-chain before the vote
- Transition period of at least 30 days before new weights take effect

5.3 Discount Rate Review

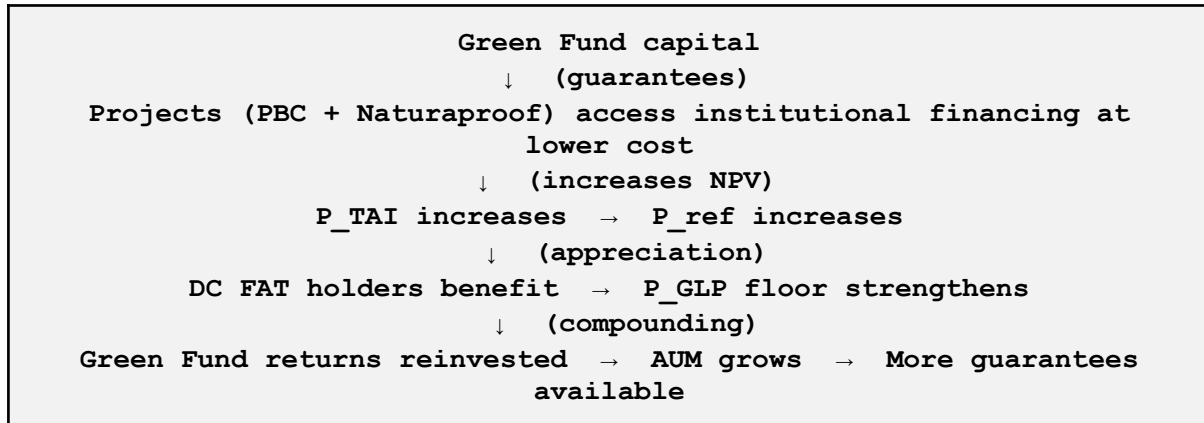
The discount rate $r = 8\%$ is appropriate for environmental and emerging-market RWAs. It is reviewed annually by the Foundation's Treasury Committee, considering:

- Sovereign risk-free rates (e.g. ECB)
- Maturation of the Green Fund guarantee framework
- Regulatory treatment of blue carbon assets
- Credit ratings from institutional partners (World Bank, EIB)

6. Strategic Integration — Green Fund & Institutional Guarantors

6.1 Green Fund Architecture

The €100M Green Fund acts as liquidity reserve, project guarantee mechanism, and price support:



6.2 World Bank & NGO Guarantee Multiplier

When an institution such as the World Bank or equivalent (EIB, IFC, AFD) provides a formal guarantee:

- $\mu_{\text{guarantee}} = 1.5\times$ (MOU) or $2.0\times$ (formal guarantee)
- Guaranteed project's discount rate r reduced by 1–2% → higher NPV
- P_{GLP} and the project's P_{TAI} contribution increase

Parameter	Without guarantee	With World Bank ($\mu=1.5$)
Discount rate (r)	8.0%	6.5%
NPV (10-year PBC)	€43,615,000	€48,290,000 (+10.7%)
Tokenization fee demand	€654,225	€724,350
P_{GLP} floor contribution	€0.010/FAT	€0.015/FAT

6.3 Naturaproof — Perpetuity Value

At $g = 5\%$ (post-guarantee), an extra €1M annual revenue implies:

$$\Delta NPV_{\text{NP}} = 1,000,000 / 0.05 = \text{€}20,000,000$$

At scale (€15M/yr, $g = 4\%$):

$$NPV_{\text{NP}\infty} = \text{€}375,000,000$$

P_{TAI} contribution from Naturaproof alone $\approx \text{€}0.0056 / \text{FAT}$

7. Summary & Investor Communication

7.1 DC FAT Price in One Paragraph

The DC FAT token's fundamental reference price is derived from four quantifiable, auditable components: (1) economic output of the Datachain Rope network (transactions, federations, storage); (2) Net Present Value of real-world assets tokenized on Tanastok — including Pacific Blue Carbon (€43–73M NPV over 10–30 years) and Naturaproof (€300M+ perpetuity NPV at scale); (3) a revenue-backed floor sustained by subscription and fee revenues distributed to Private Pool stakers (15–25% APY target); (4) a Green Liquidity Premium backed by the €100M Green Fund and World Bank-equivalent guarantors, providing a hard floor of €0.010–0.021/FAT. DC FAT is not priced by speculation alone; it is anchored in economic activity and defined floors.

7.2 Differentiators vs. Ethereum and XDC

Criterion	Ethereum (ETH)	XDC Network (XDC)	DC FAT
Price mechanism	Supply/demand VWAP	Supply/demand VWAP	Fundamental 4-pillar formula + floor
Price floor	None	None	max(P_RBF, P_GLP)
RWA linkage	Indirect (ERC-20)	Indirect	Direct NPV (P_TAI)
Revenue backing	No (gas burn)	Partial	Yes — Private Pool yields
Green finance anchor	None	None	€100M Green Fund + NGO guarantees
Perpetuity assets	None	None	Naturaproof (infinite NPV)
Institutional floor	None	None	World Bank guarantee multiplier
Supply discipline	EIP-1559 burn	Fixed cap	Halving + governed minting

Datachain Foundation SAS — RCS Paris 909 676 157

This document contains confidential and proprietary information. Do not distribute without authorisation.