Institutional Water Financing

Shifting from Guesswork to Real-World Value

Executive Summary

To unlock Tier-1 bank capital and institutional private debt for the water sector, we must provide lenders with the exact underwriting and tax-structuring tools they use for clean energy. Right now, large-scale water projects are bottlenecked because banks are forced to underwrite deals using unverified, self-reported spreadsheets and rigid, bespoke paper contracts.

Because project finance loans and tax-equity investments are underwritten strictly against cash flows and operational uptime, bank credit committees require verified certainty on water volume and quality. Kreneon provides this by embedding hardware-attested telemetry at the pump to verify production. In addition, historical data patterns and production records will help evaluate cash flow certainty. Furthermore, Kreneon provides a 3rd-party attestation model for split-allocation infrastructure. This model enables enterprises, data centers, and industrial facilities to fund regional water facilities, split allocations with local municipalities, and verify resource distribution with immutable data.

This neutral, 3rd-party data layer integrates directly into established bank mechanisms—including Tax-Equity Flip (T-FLIP) structures, Sustainability-Linked Loans (SLLs), and Blue Bonds. By combining at-source hardware attestation with standardized Master Agreements and **regional benchmark price indices**, Kreneon provides both the operational certainty and the price discovery required for institutional scale. Kreneon transforms water from a bespoke compliance headache into a liquid, high-velocity, and index-benchmarked asset class.

1. The Bottleneck: Bespoke Deals and Retrospective Audits

In project finance, bank risk committees take on the core operational risk: if the water does not flow at the required quality, the loan defaults. Today, bank credit committees are constrained by three systemic issues:

- **Bespoke Contract Friction:** Current water off-take agreements are locked into slow, 20-year physical paper deals. Every project requires an exhausting, line-by-line legal review because the financial terms are welded to local pipeline logistics. They have a trading velocity of exactly one.
- **Corporate Credit Dependency:** Because banks cannot independently verify data at the pump level, current Green and Blue Bonds depend entirely on the parent company's balance sheet rather than the intrinsic cash generation of the water asset.
- **The Estimation Trap & Recapture Risk:** Sustainable financing and tax-credit models currently rely on annual human self-audits and statistical guesswork. Because this data looks backward, bank risk committees protect themselves by demanding massive cash reserves, higher interest rates (WACC), and strict lending limits.

2. The Clean Energy & Tax-Equity Playbook

The renewable energy market solved this exact bottleneck by unbundling physical assets and standardizing financial instruments.

Unbundling the Asset (vPPAs and RECs)

Early wind and solar projects were trapped in bespoke, physical paper deals. The market achieved hyper-scale only when it separated physical electricity from its environmental attributes through Virtual Power Purchase Agreements (vPPAs) and Renewable Energy Certificates (RECs).

Kreneon applies this exact unbundling playbook to water from day one. By separating physical volume from the verified environmental attribute, we enable Virtual Water Purchase Agreements (vWPAs). The physical water stays local, while the standardized financial contract is cleared with the speed and liquidity of clean energy debt.

The Tax-Equity Flip (T-FLIP) Engine for Water

In clean energy, Investment Tax Credits (ITC) and Production Tax Credits (PTC) created a multi-billion-dollar tax-equity market through Tax-Equity Flip (T-FLIP) structures. Tier-1 commercial banks (e.g., JPMorgan, Bank of America) invest equity into energy projects in exchange for tax credits and accelerated depreciation, with equity ownership "flipping" back to the developer once targeted yields are met.

The proposed IRC Section 48F (Advancing Water Reuse Act)—backed by industrial leaders—mirrors Section 48 clean energy ITCs by establishing a 20%–30% tax credit for qualified water recycling, desalination, and produced water reclamation infrastructure. Combined with IRC Section 6418 tax credit transferability rules, this opens a massive tax equity transfer market.

The Kreneon T-FLIP Unlock: Tax-equity investors face severe tax credit recapture penalties if a facility fails to maintain operational uptime or volume thresholds. Kreneon's hardware-attested, at-source telemetry serves as the automated Tax-Equity Verification Rail. By cryptographically signing daily production and water quality data, Kreneon eliminates recapture risk, enabling Tier-1 tax equity desks to syndicate water deals with the same velocity as solar and wind. Kreneon's attested telemetry serves as an automated Tax-Equity Verification Rail. By cryptographically signing daily production and water quality data, Kreneon eliminates recapture risk, enabling Tier-1 tax equity desks to syndicate water deals with the same velocity as solar and wind. This verified data stream also simplifies the procurement of insurance products and third-party policies, providing a robust layer of protection against financial losses from tax credit clawbacks.

3. The Master Contract Architecture

To eliminate the friction of bespoke deal-making, Kreneon adopts the master agreement structure proven in global energy and maritime commodities (such as SO4 / Shelltime 4 charter agreements and KOGAS/TEPCO LNG Purchase Agreements). Our goal is to follow the renewable energy playbook as closely as possible, while tailoring to the uniquenesses of water and water infrastructure.

KRENEON MASTER WATER AGREEMENT ARCHITECTURE

PART I: Standardized General Terms & Conditions (~95% Bank-Vetted Core)

- Universal Lot Definitions (Standard Water Lots - SWLs)
- Hardware Attestation & Cryptographic At-Source Device Protocols
- Default, Netting, Settlement, and Clearing House Rules

PART II: Customizable Transaction Appendices (~5% Site/Asset Variables)

- Water Quality Tiers (Potable, Industrial Reuse, PFAS-Destroyed, Ag)
- Specific Basin / Pfafstetter Location ID & Delivery Point
- Local Pricing Index Formulas & Tax-Equity Flip (T-FLIP) Schedules

The Benchmark Price Index Engine ("The S&P for Water")

While Master Agreements standardize bilateral terms, institutional capital markets require price discovery to benchmark portfolios and hedge risk. By aggregating anonymized, hardware-verified registry data across regional basins (e.g., Texas Permian, UK South East, Thai EEC), Kreneon publishes standardized Water Price Indices.

Similar to S&P, Platts, or Markit indices, Kreneon's benchmark feeds allow banks, infrastructure funds, and corporate off-takers to mark-to-market their water assets, structure secondary derivatives, and license index data for fund creation.

Physical Supply Priority over Soft Conservation

Bank credit committees cannot underwrite speculative or unquantifiable "conservation" claims. Following institutional energy market mechanics, Kreneon prioritizes hard physical supply-side assets—including desalination, industrial wastewater treatment, atmospheric water generation (AWG), and produced water reclamation. This establishes a strict, enforceable obligation of physical delivery that satisfies bank risk committees.

Independent 3rd-Party "Data Oracle"

Rather than relying on plant operators to self-report, Kreneon acts as the unbiased, 3rd-party "Data Oracle." Embedded directly in the contract's technical schedules, Kreneon captures automated telemetry from smart meters, converting physical production into bankable digital assets without human intervention.

4. Upgrading Existing Bank Tools

Banks do not need to invent new financial products to adopt Kreneon; our protocol plugs directly into established lending desks or provides necessary reports that will

be useful for the following scenarios, either in originating new transactions or for servicing existing portfolios:

- **Tax-Equity Transferability Flip (T-FLIP) Syndication:** Provides tax-equity syndication desks with audit-proof, daily metered verification to qualify for the 30% Water Reuse Tax Credit while insulating investors from IRS recapture penalties.
- **Sustainability-Linked Loans (SLLs):** Replaces annual spreadsheet audits with live and mature data insights that can help with meter-driven rate adjustments. If a plant hits its verified production target, loan interest rates drop automatically; if it misses, rates step up.
- **Green and Blue Bonds:** Builds the environmental premium directly into the contract. Investors no longer buy a soft corporate ESG promise; they purchase a contractually guaranteed, metered outcome backed by hardware attestation.

5. Real-World Application: The Split-Allocation Model

The necessity of 3rd-party attestation is clearest in corporate water stewardship and industrial expansion (e.g., data centers, semiconductor fabs, beverage plants). Corporations often fund regional water treatment facilities to secure operating permits, negotiating "split-allocation" arrangements with local municipalities—e.g., routing three pumps to the commercial plant and two pumps to the public utility.

Today, these projects face public skepticism and greenwashing accusations because there is no independent way to verify the true resource split.

By embedding Kreneon’s verification directly at the physical split-delivery pumps, the enterprise establishes an unalterable data stream. This elevates water tracking out of the PR department and onto the CFO's desk, providing underwriting banks, Chief Sustainability Officers (CSOs), and corporate legal teams with defensible data that satisfies international standards (such as UK Green Taxonomy, SDR, and CSRD) while securing low-cost capital.

The necessity of 3rd-party attestation is clearest in AI data center development, semiconductor fabs, and industrial expansions. With over $250 billion in AI infrastructure currently delayed or canceled due to municipal water constraints, tech hyperscalers (Amazon, Google, Microsoft) must fund off-grid or recycled water infrastructure to secure operating permits. This frequently involves 'split-allocation'

deals with local municipalities—e.g., routing three pumps to the commercial plant and two pumps to the public grid.

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6. The Underwriting Forcing Function

By targeting the practical underwriting needs of Tier-1 banks and tax-equity desks, Kreneon creates a built-in, viral adoption mechanism. Rather than navigating slow municipal sales cycles, Kreneon serves as the lender's independent eyes on the ground.

Financial institutions drive developer deployment by incorporating Kreneon into technical covenants or by specifying Kreneon on approved vendor lists for project finance terms, rather than imposing entity-specific covenants that present conflict-of-interest risks.

This eliminates data risk for the bank, accelerates capital deployment for the developer, and establishes Kreneon as the mandatory digital registry and benchmark standard for the global water economy.

7. Conclusion: Unlocking Scale for the Global Water Economy

To bridge the $1 trillion annual water infrastructure gap, the water sector must adopt the institutional financing playbook that scaled renewable energy. Kreneon provides the foundational infrastructure to convert unbankable, bespoke water deals into liquid, high-velocity financial assets. By replacing retrospective self-audits with hardware-attested telemetry, Kreneon provides the operational certainty required by bank credit committees and tax-equity investors.

Through standardized Master Agreements, Virtual Water Purchase Agreements (vWPAs), automated Tax-Equity Flip (T-FLIP) verification rails, and regional benchmark price indices, Kreneon eliminates structural deal friction. This enables Tier-1 banks, institutional private debt, and sovereign entities to deploy private capital into water infrastructure at scale—establishing water as a transparent, index-benchmarked, and bankable asset class for the global economy.

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