

Water Credits Bulletin

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In collaboration with

hypercube 

The hypercube logo is a white, stylized cube with a hexagonal shape in the center, set against a dark background.



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EXECUTIVE SUMMARY

What does water bankruptcy really mean?

In recent years the language used to describe the water crisis has changed substantially.

We no longer just talk about scarcity, drought or water stress: an increasingly radical term is gaining ground – water bankruptcy. This expression, adopted by international organizations, research centers and development agencies, marks a **turning point**. It describes a condition in which natural and infrastructural water systems are no longer able to regenerate the water consumed by human activities.

Water bankruptcy is not a sudden event, but a cumulative process. It occurs when withdrawals and pollution permanently exceed the recharge capacity of rivers, lakes and aquifers. In this scenario, **water ceases to be a renewable resource** and becomes eroded natural capital over time. The same logic applies as in economic balance sheets under deficit conditions: more is consumed than can be restored.

According to global analyses, **over half of the world's population already lives in areas subject to significant water stress**. In many regions – from South and East Asia to the Mediterranean, from California to the Middle East – the crisis is no longer episodic but structural. Climate change accelerates this imbalance, but it is not the sole cause: urbanization, intensive agriculture, poor management and obsolete infrastructure play an equally decisive role.

Talking about water bankruptcy therefore means recognizing a systemic failure. Traditional water management models, based on the idea of abundance and symbolic tariffs, no longer work. In a world of water bankruptcy, water is not only an environmental or social asset, but also a critical economic factor. It becomes a risk for food security, industrial stability and urban resilience. It is in this context that new instruments and new concepts emerge, such as "Water Credit".

"They are not miraculous solutions", underlines Carlo Luison, BDO Partner Sustainable Innovation, "but concrete tools to assign measurable economic value to something that until recently was barely visible, and at the same time, to activate investments and virtuous improvement cycles. Improving is possible, even by starting from today".

The water bankruptcy, even before being a water crisis, is a crisis of governance and vision. Understanding its deeper meaning is the first step in tackling one of the most concrete and urgent challenges of our time.





WHY WATER CREDITS MATTER

WATER BANKRUPTCY 2026

By 2026, the global water crisis takes on a structural nature. Climate change, growing demand and overexploitation of resources are pushing many systems beyond the limits of natural regeneration. In this scenario, the concept of **water bankruptcy** becomes established, which describes the progressive collapse of the sustainability of water resources.

The most recent estimates indicate a significantly more serious situation than forecasts from a few years ago:

- Approximately **75% of the world's population** today lives in areas characterized by **water insecurity**
- **4 billion people** face **severe water scarcity** conditions for at least **one month per year**
- Over **70% of aquifers** show a trend of **depletion**
- More than half of the **world's large lakes** are progressively reducing in volume

Added to this is a structural fact:

- approximately **70% of the fresh water withdrawn** is intended for agriculture
- Over **170 million irrigated hectares** operate under conditions of high water stress

Beyond the crisis: a paradigm shift

The most recent scientific evidence indicates that water scarcity can no longer be considered a temporary crisis, but a structural and persistent transformation. In many areas of the world, the demand for water steadily exceeds the natural regeneration capacity, compromising ecosystems resilience and communities water security ([UNESCO & UN-Water, World Water Development Report](#); [WRI, Aqueduct Water Risk Atlas](#)). In this context, the concept of "water bankruptcy" is established, which describes water systems exploited beyond sustainable limits and incapable of regenerating themselves in the long term. The term was formalized internationally by the **United Nations University - Institute for Water, Environment and Health (UNU-INWEH)**, which highlights how global consumption is exceeding the planet's hydrological capacity ([UNU-INWEH, 2026](#); [UN-Water, 2024-2026](#)).

It is no longer a question of managing an emergency, but of addressing a structural condition that requires new governance models, economic tools and long-term adaptation strategies.

Bancarotta idrica, l'Italia perde quasi 4 litri su 10 immessi nella rete. E le promesse restano al palo

Il Blue Book 2026 certifica: dispersione idrica al 37,9%, obiettivi Pnrr mancati, il Sud senz'acqua paga tariffe crescenti

Crisi idrica, l'Italia paga un conto da 13 miliardi l'anno

Il Libro Bianco 2026 della Community Valori un'emergenza crescente: perdite economiche poco consapevoli. Dopo il Pnrr, il nodo è con

25 Countries, Housing One-Quarter of the Population, Face Extremely High Water Stress

New data on WRI's Aqueduct platform ranks the world's most water-stressed countries. One-quarter of the global population regularly use up their entire water supply.

Era of 'global water bankruptcy' is here, UN report says

Overuse and pollution must end urgently as no one knows when whole system might collapse, says expert

Concept	Operational meaning
<i>Water stress</i>	High pressure on water resource, but with potential for recovery
<i>Water crisis</i>	Systemic crisis that is still potentially reversible, requiring urgent action
Water bankruptcy	Degraded or collapsed water systems that are no longer recoverable in the short to medium term





WHY WATER CREDITS MATTER

THE MAIN BENEFITS RESULTING FROM THE ADOPTION OF WATER CREDIT

The adoption of Water Credits generates widespread benefits, allowing stakeholders to collaboratively strengthen sustainable water systems and transform water-related challenges into shared opportunities of environmental and social value.



For Companies:

- Strengthen competitiveness and ESG performance through efficient water resources management.
- Provide tools to offset water consumption in water-intensive sectors.
- Encourage investments in local projects with high environmental and social impact.
- Improve regulatory compliance and strengthen corporate reputation.



For Institutions:

- Promote public-private partnerships for the protection of river basins.
- Support the implementation of water security and climate adaptation policies.
- Direct capital towards sustainable interventions through transparent and verifiable mechanisms.
- Incentivize innovation at no additional cost to the public sector.



For Territories and Local Communities:

- Contribute to the safety and quality of water resources.
- Generate socio-economic value, employment and health benefits.
- Strengthen resilience to climate change and extreme events.
- Encourage stakeholder participation in water governance.



For Financial Operators:

- Expand investment opportunities in sustainable finance.
- Enable integration into ESG portfolios and innovative tools.
- Diversify revenues with assets related to water security.
- Reduce systemic and insurance risks associated with water stress.

WATER BECOMES A FINANCIAL ASSET

Water Credits are becoming increasingly relevant to banks because they transform water from an “external” environmental variable into a measurable economic and financial factor. [According to CDP](#), more than 275 financial institutions, representing over \$20 trillion in assets under management, are already integrating water risk into their investment, lending, and governance strategies.

The reason is structural: water scarcity directly affects corporate profitability, operational continuity, and creditworthiness, especially in the energy, agri-food, manufacturing and real estate sectors. Water Credits offer banks a concrete tool to quantify, mitigate and allocate this risk. The Hypercube Protocol makes the mechanism particularly bankable by linking each credit to verified physical flows, independent audits, and blockchain traceability, thereby reducing the risk of greenwashing.

For financial institutions, Water Credits therefore become usable ESG assets: as underlying instruments for financial products, as leverage for water-linked financing, and as a tool to support water-intensive clients. Looking ahead, water is poised to assume the same strategic role that carbon has played over the past decade: evolving from an environmental constraint into a new frontier of sustainable finance.





WHAT ARE WATER CREDITS?

WATER CREDIT TOKENIZATION REQUIREMENTS

Hypercube has developed an enhanced new version of the tokenization protocol - the **Global Water Credit Standard (GWCS)** - which formalizes the transition from a predominantly procedural framework to a comprehensive, system-wide standard. In fact, the GWCS is structured as an integrated framework that defines principles, methodological criteria, integrity requirements, and governance mechanisms across the entire lifecycle of Water Credits - from their generation, verification, and issuance as Water Credit Tokens (WTR) to their conversion into Water Credits (WCR). establishes a structured, data-driven system based on measured physical data, independent verifiability, and end-to-end traceability, ensuring the integrity, non-duplication, and consistency of the credits generated.

1 WCR = 1 m3

of water reused or not withdrawn from natural sources through a verified process. Each WCR is digitized in the form of a WTR— a digital asset classified by FINMA as a utility token – issued on the Algorand public blockchain.



Eligibility Requirements

- Derived from a real and operational physical process;
- Quantifiable through direct measurement of water flows;
- Verifiable through data and technical documentation;
- can be associated with a clearly identified Source;
- Aimed at a reduction, or net replacement, of primary water withdrawal.

New Eligible Water Flows

- Reuse of treated wastewater
- Internal recirculation and reuse in industrial processes
- Advanced recovery and treatment systems (including Zero Liquid Discharge)
- Collection and use of rainwater
- Recovery of condensation water
- Use of alternative water sources (e.g. air-to-water systems, use of treated brackish water, low energy impact desalination systems)





THE VALUE OF WCR: FROM IMPLEMENTATION TO MARKET PERFORMANCE

United Kingdom: first Water Credits system implementation

Through YTL Enterprises, [Wessex Waters Avonmouth](#) Water Recycling Facility has initiated the first application of Hypercubes Water Credits system in the United Kingdom.

The project centres on the reuse of treated wastewater, where recycled water is supplied for industrial cooling purposes at a local power station, replacing the need for freshwater abstraction. The Avonmouth facility carries out approximately 4 million cubic meters of water reuse annually, directly displacing equivalent volumes of freshwater demand. These volumes are measured through certified systems and integrated into the Hypercube platform, enabling the generation of Water Credit Tokens (WTR), with each token corresponding to 1 cubic meter of verified reused water.

The Avonmouth site has been qualified as a water credit ‘source’, with reuse data recorded via digital systems in line with the platform’s verification and audit framework.

This implementation demonstrates how existing water recycling infrastructure can be integrated into a market-based mechanism without requiring new asset development. The resulting credits can be made available to organisations seeking to support water reuse initiatives or address their own water footprint through verifiable instruments.

The Avonmouth project represents an early-stage application of the water credits model in the UK context and provides a reference case for adoption across utilities and industrial users.

Richard McCluskey - Head of Commercial & Customer, YTL Enterprises:

“The UK is often perceived as a water-abundant region; however, increasing pressure on water resources, including regional drought risk, is driving greater focus on water resilience and reuse.”

Avonmouth demonstrates that water reuse can move from being an operational outcome to a properly measured and valued environmental outcome. That shift creates a clearer foundation for wider adoption and more targeted investment in water reuse and resilience.”

Richard McCluskey, Head of Commercial & Customer - YTL Enterprises

Over the past year, given the international geopolitical landscape and the energy shocks affecting the markets, the WTR has consistently remained above USD 3, demonstrating a significant lack of correlation.

- April 2024: WTR listed on an unregulated market
- From July 2025: WTR entered the regulated markets.

WTR PRICE TREND (USD) – from April 2025 to April 2026



Figure – Quotation of the Water Token “Wateract” (WTR) from the [FORBES](#) website.



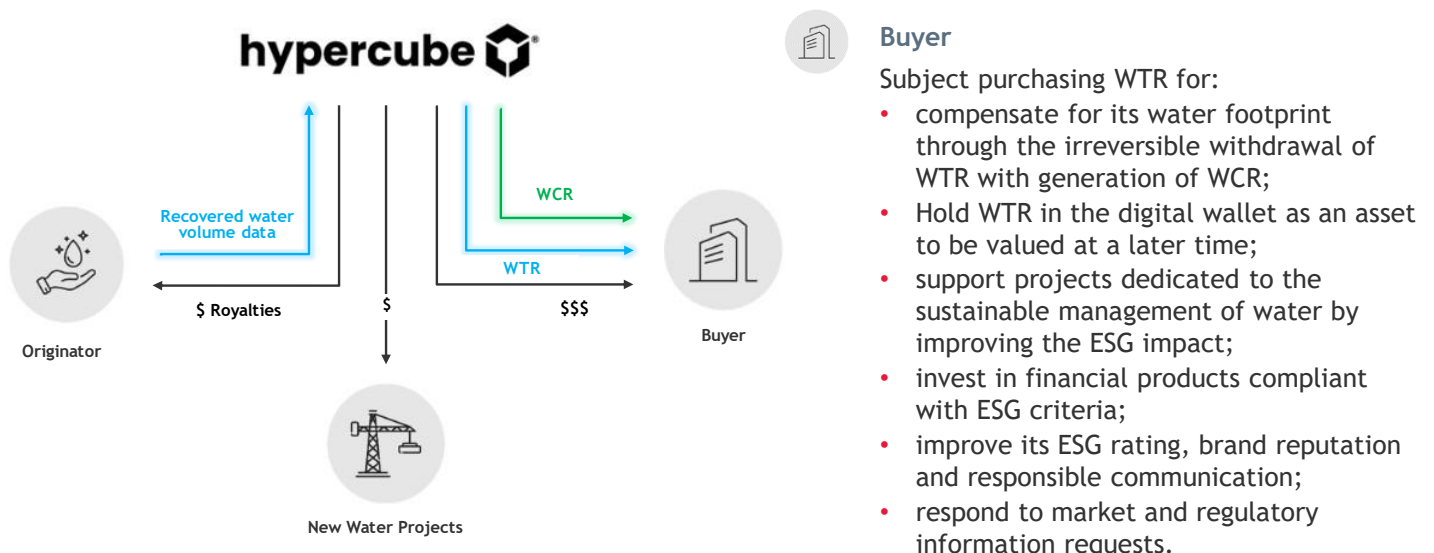


HOW DO WATER CREDITS WORK?

THE GENERATION PROCESS THROUGH THE HYPERCUBE PLATFORM

The process through which water benefits generated by a Source are measured, verified, and first converted into Water Credit Tokens (WTR) and subsequently into Water Credits (WCR) is governed by the Global Water Credit Standard Protocol, which defines an approach based on **MRV (Monitoring, Reporting, Verification)**. This approach relies on the direct measurement of water flows (*Monitoring*), the structured collection and transmission of data (*Reporting*), and the independent verification of data and process compliance (*Verification*).

1	Identification and qualification of the Originator	in terms of existence and type of potentially eligible physical underlying.
2	Source Registration and Onboarding	Compilation of information and uploading of technical documentation to the platform.
3	Audits by Independent Verification Bodies	Verification of compliance with GWCS principles and requirements, and validation of the declared information.
4	Issuance of WTR	Conversion of verified water benefits into digital Water Tokens on blockchain.
5	Use, transfer and retirement with WCR generation	Based on specific requirements and objectives relating to offsetting or enhancement.



Buyer

Subject purchasing WTR for:

- compensate for its water footprint through the irreversible withdrawal of WTR with generation of WCR;
- Hold WTR in the digital wallet as an asset to be valued at a later time;
- support projects dedicated to the sustainable management of water by improving the ESG impact;
- invest in financial products compliant with ESG criteria;
- improve its ESG rating, brand reputation and responsible communication;
- respond to market and regulatory information requests.



Originator

Company or organization that generates WTR through the qualification of a water reuse, collection or recycling system (defined as Source).



New water projects

The WCR system generates systemic additionality through the reinvestment of a portion of the proceeds in new water resilience projects.





HOW DO WATER CREDITS WORK?

AN EXEMPLARY PROJECT - OXFAM IN TIGRAY

From conflict to water resilience: Water Credits as a tool for food security and international cooperation.

[Hypercube supports Oxfam](#) by financing solar-powered pumps needed to restore irrigation for over 1,000 small farmers in the Tigray region (Ethiopia).

This is a 36-month initiative (RESILIENT), designed to address food and nutrition security needs in Tigray following the end of the conflict in November 2022.

In a context deeply affected by the destruction of agricultural and water infrastructure, the RESILIENT project aims to strengthen the productive capacity of impacted rural communities, enabling a stable and sustainable return to agricultural activities. Reliable access to water is a key condition for this recovery path.

Hypercube's contribution enables the purchase and installation of 150 solar-powered irrigation pumps, accompanied by training activities for the efficient and responsible use of water resources. Through these interventions, smallholder farmers can reduce their dependence on rainfall, stabilize agricultural yields, and improve food availability and household income.

The project focuses in particular on value chains with higher nutritional and economic impact - such as horticultural production - and promotes sustainable agriculture and climate adaptation practices. Special attention is also given to the inclusion of women and the most vulnerable groups, strengthening their role in productive and decision-making processes.

This initiative represents a concrete example of how reinvesting proceeds from Water Credits can generate tangible benefits for local territories, contributing to the restoration of water infrastructure, community resilience, and sustainable water management in fragile contexts. In this sense, the RESILIENT project demonstrates how Water Credits can support long-term local development pathways, linking global markets with positive impacts at the community level.

THE THREE AXES OF THE PROJECT

Technology

Off-grid solar pumps for sustainable small-scale irrigation.

Food Security

Restoration of agricultural production and nutrition in conflict-affected areas.

Cooperation

Partnership between Hypercube, Oxfam, and the Water Credit value chain to finance resilience.



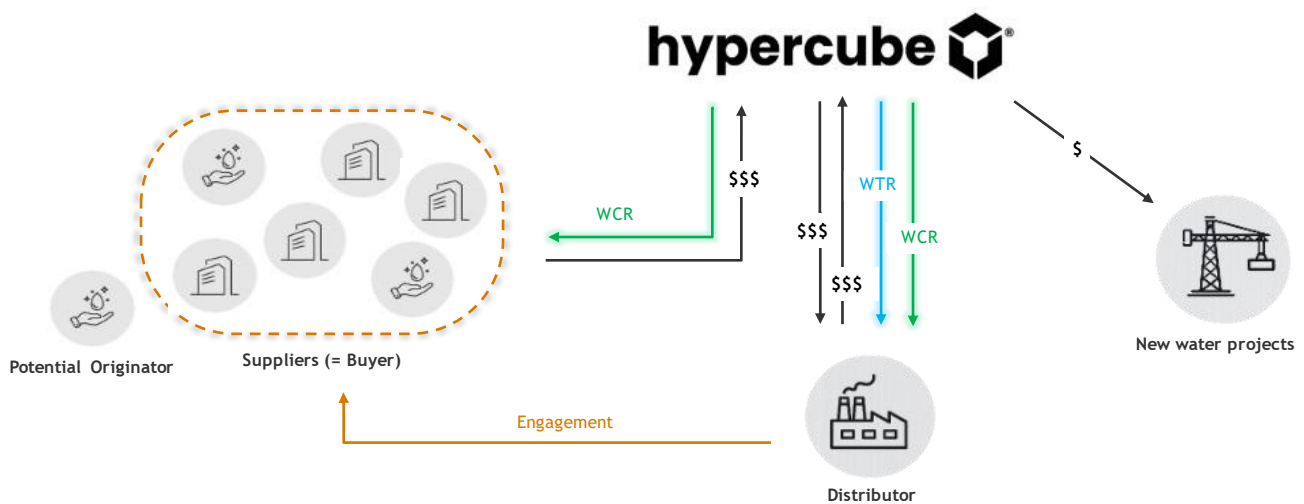


HOW DO WATER CREDITS WORK?

THE CREATION OF A CAPTIVE MARKET ALONG THE SUPPLY CHAIN

A company, acting as a lead firm, can take on the role of **Distributor** and engage its suppliers in a pathway aimed at improving water resource management, promoting water efficiency initiatives and the purchase of WTR as a mitigation instrument for the hard-to-abate share of its water footprint.

Specifically, the lead firm progressively engages its suppliers through procurement policies aimed at the purchase of WTR (including incentive mechanisms), obtaining remuneration from the platform and directing the 30% systemic additionality share of the volume generated by the WTR toward water resilience projects within the local territory.



Definition of a Captive Market

A structured market in which the lead firm (**Distributor**) gains privileged and stable access to the purchase of WTR generated from dedicated sources through an agreement with Hypercube. This ensures continuity on the supply side.

The market is defined as "captive" as the demand for WTR is activated and regulated internally within the supply chain, through the introduction of **Water Obligations** in contractual relationships with suppliers. This fosters the development of water management projects across the entire supply chain.

Definition of Water Obligations

Contractual clauses that oblige suppliers to:

- reduce all or a portion of its **water footprint** ("water used"), and/or
- offset the residual impact through the **purchase of WTR**.

The adoption of WTR by suppliers promotes stable and predictable demand for Water Credit.

Application example in a steel mill:

Assumptions:

- **Suppliers involved: 30**
- **Average volume of water consumed/supplier: 30,000 mc**
- **Average toilet price: €3/mc**

Total WTR volume purchased from suppliers: 900,000 m³

Total value generated by suppliers: €2,700,000

Value due to the Distributor: €270,000 (10%)

Allocation of total economic value in new water projects: 30%





HOW DO WATER CREDITS WORK?

THE IMPORTANCE OF CONTROL FOR THE QUALITY AND RELIABILITY OF WTR

The **Water Credit Token (WTR)** system is based on a rigorous independent verification process governed by the Global Water Credit Standard, which in its updated version has clearly defined and significantly strengthened the audit phases and the requirements applicable to Independent Verification Bodies (IVBs), ensuring greater transparency, credibility, and environmental integrity. Compliance with the Standard is ensured by **accredited Independent Verification Bodies**, responsible for assessing adherence to requirements and the accuracy of the information provided during the onboarding phase.

01 - DOCUMENTARY AUDIT

Analysis of the completeness, consistency, and compliance of documentation. Ensures the suitability of the system to guarantee data traceability and the measurement of environmental performance.

02 - ON-SITE AUDIT

Interviews, direct observations, and collection of objective evidence at the Source. Verifies alignment between documentation and actual operations: permits, flows, monitoring systems, measurement instruments, and responsibilities.

AUDIT RESULT

At the end of the verification process, the IVB issues a **Verification Certificate** and an **Audit Report recorded on the blockchain**, ensuring traceability and transparency. Any non-conformities are classified by severity; in the most significant cases, the issuance of WTR is suspended until all identified issues are fully resolved.

THE SIX REQUIREMENTS OF IVB – INDEPENDENT VERIFICATION BODIES

Accreditation

With nationally or internationally recognized bodies.

Independence

Absence of conflicts of interest with the Originators.

Technical expertise

Specialization in the water, environmental, and certification sectors.

Confidentiality

Protection of data and sensitive information collected during audits.

Documented procedures

Traceable and repeatable operating protocols.

Grievance Management

Structured system for receiving and handling complaints.





WHERE DO WATER CREDITS APPLY?

BRAZIL: THE FIRST REGULATED WATER CREDITS MARKET IN THE WORLD

“The approval of the law establishing Ceará’s Water Credit System (SCH) is more than a public policy – this project represents the creation of a new model for managing environmental assets. Brazil’s Federal Constitution provides that states hold concurrent authority to legislate on environmental matters. This possibility is especially important and strategic, as it allows environmental management to be built in closer alignment with the particularities of each territory, taking into account its local challenges, vocations, and needs.

Traditionally, governments have focused more on regulated markets, precisely because these markets are tied to the fulfillment of legal obligations and direct government action. In them, it falls to the State to define rules, monitor outcomes, and ensure that environmental objectives are effectively achieved.

In voluntary markets, the logic is different. Companies participate on their own initiative, investors purchase assets without legal compulsion, organizations seek ESG reputation, and so on. Since there is no immediate legal obligation, these markets commonly develop in a freer manner initially, until their own growth reveals the need for greater institutional organization.

This is where standardization becomes relevant. When clear criteria exist, the market gains transparency, reduces risks, strengthens investor confidence, and offers greater protection to the communities involved. Beyond organizing transactions, standardization helps ensure that the environmental benefits associated with these assets are concrete and verifiable.

By advancing this agenda, Ceará positions itself as a pioneer in structuring a voluntary market with its own normative foundations, combining public management, environmental assets, and market mechanisms.”

Luiza Martins, President Director di CearaPar

FROM SUSTAINABILITY TO IMPACT: THE IMPLEMENTATION OF THE CREDIT SYSTEM FOR THE BENEFIT OF THE TERRITORY AND THE COMMUNITY

“Located in the semi-arid region of northeastern Brazil, Ceará’s history has been profoundly shaped by the impacts of successive drought cycles on its population. This scenario led the state to respond efficiently, transforming from a territory with limited water supply capacity that adopted a largely reactive and welfare-based approach into a model of reference.

Work begun in the 1970s made Ceará a national and international reference in water resource management. The state consolidated a participatory model, pioneering in monitoring, water use charging, and drought management – even in a context of high climatic vulnerability. For this reason, CearaPar’s decision to develop the Ceará Water Credit System (SCH) as the first state-level project in the area of environmental assets and green finance is not only strategic, but also consistent with the trajectory of a state that turned scarcity into institutional capacity and water management into a benchmark for public innovation.

Experience observed in other environmental asset markets shows that allowing companies to make their offsets freely does not always ensure the mitigation of impacts in the territory where they are generated. With the regulatory requirement to reinvest 30% of SCH-generated revenue into local water infrastructure, there is a direct contribution to strengthening the State Water Resources Policy, generating concrete benefits for the territory.

The benefits to the population are not limited to improved infrastructure – there is also the possibility of economic inclusion for local actors, who may act as originators of these credits and participate in the distribution of value generated by the System.

Ceará is already a reference in water resource management and will now also become a reference in managing water as an environmental asset. More than inaugurating a new economic instrument, the SCH represents the natural evolution of a governance model that comes to recognize water also as an asset – capable of generating value, attracting investment, and expanding the territory’s water resilience.”

Aline Xavier, Economist at CearaPar and technical lead for the project



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