

PUIO Whitepaper — The Convergence of Green Energy and Decentralized Ecosystem

Abstract

Renewable energy, represented by solar and wind power, has ushered in the global energy transition. Breakthroughs in distributed energy and smart grid technologies are enabling deep integration and collaborative optimization across generation, storage, and consumption, driving the energy system to evolve from "centralized fossil fuels" to a more advanced green and low-carbon stage. PUIO (Power Utility & Infrastructure Optimizer), as a decentralized cryptocurrency empowering the global green energy ecosystem, leverages blockchain trust mechanisms, distributed energy scheduling capabilities, and smart contract features to address core pain points in the green energy industry — including energy trading efficiency, carbon credit verification, investment and financing barriers, and cross-entity collaboration. PUIO builds a new ecosystem driven by both "green energy technology and decentralized economy." This whitepaper details PUIOs technical architecture, economic model, application scenarios, and development roadmap. It aims to break the bottlenecks in large-scale deployment of green energy technologies, enable every ecosystem participant to share the value dividends of the energy transition, and accelerate the global achievement of carbon neutrality.

1. Project Background and Vision

1.1 Opportunities and Bottlenecks in the Green Energy Industry

In recent years, the global green energy industry has achieved leapfrog development, evolving from early single solar and wind technologies to a comprehensive energy system with distributed generation, intelligent energy storage, and microgrid coordination. This enables end-to-end collaborative management across "generation — storage — distribution — consumption." Currently, green energy has demonstrated tremendous potential in power supply, transportation, industrial production, and building heating. According to the International Energy Agency (IEA), global renewable energy installed capacity will exceed 8,000 GW by 2030, becoming a core component of the global energy system. Especially with the continuous decline in photovoltaic module costs and rapid iteration of energy storage

technologies, green energy is gradually shifting from policy subsidy-driven to market-driven, restructuring the global energy production and consumption landscape.

However, the commercialization process of the green energy industry still faces four core bottlenecks that constrain the large-scale expansion of the energy ecosystem: First, low energy trading efficiency — traditional electricity markets are dominated by centralized grids, making it difficult for distributed energy producers to directly participate in market transactions, with numerous intermediaries leading to high transaction costs. Second, imperfect carbon credit systems — inconsistent carbon emission reduction accounting standards, difficult verification, and opaque trading prevent enterprises and individuals from effectively monetizing their green contributions. Third, high green energy investment thresholds — large-scale solar and wind projects have single financing channels, and small and medium-sized investors struggle to participate in energy transition investments, leading to insufficient capital supply. Fourth, low cross-entity collaboration efficiency — there is a lack of a fair value distribution system among power generation enterprises, grid operators, energy storage service providers, and end-users, preventing optimal allocation of energy resources. The decentralization, traceability, and smart contract features of blockchain technology provide the optimal solution to these bottlenecks, and PUIO is the core carrier connecting green energy technology with the decentralized ecosystem.

1.2 Core Vision of PUIO

PUIOs core vision is "Empowering the Green Energy Revolution, Building a Decentralized Energy Ecosystem." Relying on distributed energy technology routes and blockchain trust infrastructure, PUIO achieves three core objectives:

- Build the worlds first green energy ecosystem value circulation network, enabling safe, efficient, and fair trading and distribution of assets such as electric energy, carbon credits, green assets, and energy services;
- Incentivize global energy producers, energy storage service providers, investors, and end-users to participate in ecosystem construction through crypto-economic models, lowering the investment and application barriers of green energy technologies and accelerating the transformation from technological breakthroughs to scenario implementation;
- Build a dual guarantee system of "energy sovereignty + ESG compliance," enabling users to truly control their energy data and carbon assets, and achieving balanced development of technological innovation, commercial value, and environmental benefits.

2. Core Technical Architecture

2.1 Blockchain Foundation: Efficient and Secure

Ecosystem Base

PUIO is custom-developed based on the Ethereum 2.0 ecosystem, adopting the PoS (Proof of Stake) consensus mechanism to balance transaction efficiency and energy consumption. It also introduces sharding technology to optimize network throughput, achieving block confirmation speed of 3 seconds per block and TPS (transactions per second) of 1,000+, meeting the demands of large-scale energy trading and carbon credit settlement. For the high sensitivity and privacy requirements of energy data, PUIO introduces Zero-Knowledge Proofs (ZK-SNARKs) and end-to-end encryption technology, enabling "data availability without visibility" — users can complete data authorization, trading, and value monetization without disclosing original energy data, ensuring data privacy security at the technical level. In addition, the underlying network supports flexible deployment and iteration of smart contracts, providing technical support for the implementation of diverse scenarios within the ecosystem.

Particularly noteworthy is that the PUIO blockchain network itself is powered by 100% renewable energy, with all verification nodes deployed in regions rich in green energy such as solar and wind power, ensuring zero carbon footprint for the blockchain network and truly practicing the green energy concept. The network also innovatively introduces a "Green Proof of Work" mechanism, where the computing power contribution of nodes is linked to the proportion of green energy they use — nodes using higher proportions of green energy receive greater weight in block rewards, incentivizing the entire network to evolve toward low-carbon directions at the consensus mechanism level.

2.2 Green Energy Adaptation Layer: Core Hub for Technology Integration

As the core bridge of the PUIO ecosystem, the adaptation layer undertakes three core functions: energy data standardization, energy resource collaborative scheduling, and smart contract template development. It enables seamless integration between green energy systems and blockchain networks, lowering the barriers to ecosystem participation:

1. **Energy Data Standardization Module:** Establishes unified energy data on-chain standards. For different types of data such as power generation, energy storage, consumption, and carbon emissions, it performs encryption, structured processing, and format adaptation, balancing data precision, storage efficiency, and privacy security. It also embeds green energy identification information to enable full-lifecycle traceability of energy data.
2. **Energy Resource Collaboration Module:** Builds a decentralized energy scheduling platform that integrates global distributed energy resources (residential solar, commercial energy storage, microgrids, charging stations). Through smart contracts, it achieves precise matching of energy supply and demand and automatic settlement. It also introduces an energy quality verification mechanism to ensure the authenticity and traceability of green energy.

3. **Smart Contract Template Library:** Develops standardized smart contract templates for core scenarios such as energy trading, carbon credit trading, green project financing, and energy management services. It supports rapid implementation and flexible iteration of scenarios, while embedding ESG compliance and carbon accounting clauses to avoid risks such as false carbon credits and greenwashing.

2.3 Application Scenario Layer: Implementation Carrier of Ecosystem Value

As the core carrier for value monetization in the PUIO ecosystem, the scenario layer closely aligns with the commercialization route of green energy technology. With "distributed energy trading as the breakthrough, carbon credit trading as the support, and green investment as the extension," it builds a multi-dimensional closed-loop application system. All scenarios achieve value circulation, equity settlement, and incentive empowerment through PUIO. The specific implementation directions are as follows:

- **Distributed Energy Trading Scenario:** Residential and enterprise users upload distributed power generation data such as solar and wind power through the ecosystem, and directly conduct peer-to-peer energy trading with nearby users. Transactions are automatically settled through smart contracts. Users pay PUIO to purchase green electricity, and revenues are automatically distributed according to the contribution proportions of power generators, energy storage service providers, and grid operators, building a "generation — trading — consumption" closed loop.
- **Carbon Credit Trading Scenario:** Carbon emission reductions of enterprises and individuals are calculated and verified through the ecosystem, generating tradable carbon credit NFTs. Buyers pay PUIO to purchase carbon credits for carbon neutrality goals. Carbon credit transactions are fully traceable on-chain, ensuring the authenticity of carbon credits and enabling emission reducers to benefit from carbon asset value.
- **Green Energy Investment Scenario:** Green energy projects such as solar, wind, and energy storage conduct tokenized financing through the ecosystem. Investors pay PUIO to subscribe to project shares, and project revenues are automatically distributed to investors through smart contracts according to investment proportions. This lowers green energy investment thresholds, enabling small and medium-sized investors to participate in the energy transition.
- **Microgrid Energy Management Scenario:** Provides customized energy management solutions for microgrid scenarios such as industrial parks, commercial complexes, and communities. Service payments and revenue distribution are completed through PUIO, promoting large-scale application of distributed energy in vertical scenarios.

The above scenarios will be implemented in phases (see Chapter 4 Core Application Scenarios for details). Meanwhile, the ecosystem will continuously expand industrial and consumer-level innovative scenarios, connecting the "energy — carbon assets —

investment — services" ecological chain through PUIO, achieving both energy inclusiveness and commercial value enhancement.

3. Economic Model Design

3.1 Token Basic Information

- Token Name: Power Utility & Infrastructure Optimizer
- Token Symbol: PUIO
- Total Supply: 1 billion tokens (fixed total supply, no additional issuance)
- Issuance Mechanism: Private placement + ecosystem incentives + public sale + team reserve + reserve fund. Specific allocation is as follows:

Allocation	Purpose	Vesting Period
30%	Ecosystem Incentive Fund (energy contribution rewards, carbon reduction incentives, green project subsidies, community building)	Vested over 4 years, 25% released annually, distributed on-demand
35%	Private Placement (strategic investments, institutional partnerships, energy enterprise partners)	Vested over 2 years, monthly equal release after lock-up period (Note: institutional user lock-up period not exceeding 7 days)
12%	Public Sale (community users, retail investors, ecosystem participants)	Lock-up period not exceeding 7 days, tradable upon unlocking
10%	Team and Core Advisors	Vested over 2 years, monthly equal release after lock-up period, tied to performance assessment
8%	Reserve Fund (market volatility adjustment, emergency R&D, ESG compliance construction)	Release schedule determined by DAO governance, dedicated for specific purposes
5%	Rewards (Airdrops, market liquidity bonuses)	Lock-up period not exceeding 7 days, tradable upon unlocking

3.2 Core Token Functions

1. **Value Circulation Medium:** PUIO is the sole value carrier within the ecosystem, used for all scenarios including energy trading, carbon credit purchases, green project investments, and energy service settlements, enabling efficient cross-entity and cross-scenario value circulation.
2. **Ecosystem Governance Credential:** PUIO holders can participate in major ecosystem decisions, including technical route adjustments, incentive rule optimization, scenario expansion directions, and ESG policy formulation. Voting power is positively correlated with token holdings and lock-up duration, achieving ecosystem autonomy.
3. **Incentive and Staking Tool:** Energy producers, carbon reduction contributors, energy storage service providers, and developers can receive PUIO rewards by providing value to the ecosystem. Users staking PUIO can improve energy trading priority, gain priority access to green project investment shares, and receive staking yields.
4. **Carbon Offset Reserve:** A dedicated carbon offset fund is established within the ecosystem, composed of part of the transaction fees and reserve fund. It is used to purchase carbon credits for ecosystem carbon neutrality, respond to emergencies such as carbon market fluctuations and compliance disputes, and ensure stable ecosystem operation.

3.3 Deflationary and Adjustment Mechanisms

To ensure the long-term value stability of PUIO and build a sustainable economic ecosystem, dual adjustment mechanisms are established: First, the **deflationary mechanism** — a 2% fee is charged for all transactions within the ecosystem, of which 1% is used for PUIO burning, 0.5% is injected into the ecosystem incentive fund, and 0.5% is injected into the carbon offset fund. As ecosystem transaction activity increases, the burning volume increases synchronously, achieving a gradual decrease in total token supply and strengthening value anchoring capabilities. Second, the **dynamic adjustment mechanism** — through DAO governance, the ecosystem development status is regularly evaluated, and fee ratios and incentive distribution rules can be fine-tuned to ensure the economic model matches the ecosystem development rhythm and balances the interests of all parties.

In addition, the ecosystem innovatively establishes a "green value anchoring" mechanism — the value of PUIO is linked to the certified green energy power generation and carbon credit reserves within the ecosystem. As the scale of green assets in the ecosystem grows, the intrinsic value of PUIO increases synchronously, achieving deep binding between token value and the real economy and avoiding purely speculative fluctuations.

4. Core Application Scenarios

4.1 Distributed Energy Trading Scenario

This scenario targets residential solar users, small and medium-sized power generation enterprises, commercial energy storage operators, and end-users, building a full-chain energy trading ecosystem of "on-chain generation — intelligent matching — peer-to-peer trading — automatic settlement." Distributed energy producers encrypt and upload data from photovoltaic power generation, wind power, and energy storage discharge in real time through smart meters and IoT devices. The system performs intelligent matching based on geographic location, electricity prices, and supply-demand conditions, enabling direct peer-to-peer green electricity trading. Transactions are automatically settled through smart contracts, eliminating the need for traditional power companies as intermediaries and significantly reducing transaction costs.

Users pay PUIO to purchase green electricity, and revenues are automatically distributed through smart contracts according to the proportions of power generators (55%), energy storage service providers (20%), grid operators (15%), and ecosystem operations (10%). In addition, users can mint excess green electricity into "Green Electricity Certificate NFTs" and trade them through PUIO, achieving secondary monetization of energy value. This effectively solves problems in traditional electricity markets such as difficult grid connection for distributed energy, low returns, and opaque transactions.

Taking a community distributed solar project as an example: 200 households in the community have installed residential solar systems. After connecting to the PUIO ecosystem, residents can directly sell excess electricity to nearby electric vehicle users who need charging. Electricity prices are determined by market supply and demand, with average selling prices 40% higher than grid buyback prices, significantly increasing residents solar power generation revenue. Meanwhile, electric vehicle users obtain cheaper green electricity, with charging costs reduced by 25%, achieving a win-win situation.

4.2 Carbon Credit Trading and Carbon Footprint Tracking Scenario

Carbon credits are core assets of the green energy ecosystem. PUIO builds a decentralized carbon credit trading platform to solve industry pain points such as inconsistent carbon credit accounting standards, difficult verification, opaque trading, and greenwashing. Carbon emission reductions of enterprises and individuals are verified and validated by third-party certification bodies within the ecosystem. Data is collected and uploaded in real time through IoT devices, ensuring the authenticity and traceability of carbon emission reduction data. Verified carbon emission reductions generate standardized carbon credit NFTs, each corresponding to 1 ton of CO₂ equivalent emission reductions, with complete emission reduction project information and verification records attached.

Buyers such as enterprises and individuals purchase carbon credits by paying PUIO

for their own carbon neutrality goals or compliance needs. Carbon credit transaction records are permanently traceable on-chain, and buyers can view complete information such as project background, emission reduction data, and verification institutions of purchased carbon credits in real time, thoroughly solving problems in traditional carbon markets such as unknown carbon credit sources, double counting, and false emission reductions. In addition, the ecosystem also provides carbon footprint tracking services. Enterprises can upload supply chain carbon emission data on-chain to generate complete carbon footprint reports, providing credible data support for enterprise ESG disclosure.

Taking a manufacturing enterprises carbon neutrality project as an example: the enterprise has annual carbon emissions of approximately 50,000 tons. After connecting to the PUIO ecosystem, it first conducts accurate accounting of carbon emissions throughout the entire process of production, transportation, and office work, generating a carbon footprint report. Then it purchases 40,000 tons of certified carbon credits from solar and wind projects within the ecosystem, while achieving 10,000 tons of emission reductions through factory solar retrofits, ultimately achieving carbon neutrality goals. All carbon credit purchase records, emission reduction data, and verification reports are fully traceable on-chain. Enterprises can directly use them for ESG report disclosure and regulatory compliance declarations, with carbon credit procurement costs reduced by 30% compared to traditional carbon markets, and transparency greatly improved.

4.3 Green Energy Investment and Financing Scenario

Green energy projects typically have large investment scales and long return cycles. Traditional financing channels are single and have high thresholds, restricting the rapid development of the industry. PUIO builds a decentralized green energy investment and financing platform. Through the asset tokenization model, large-scale green energy projects such as solar, wind, and energy storage are split into standardized digital asset shares, lowering investment thresholds and enabling global investors to participate in green energy investments.

Green energy project parties conduct project review and asset evaluation through the ecosystem. After projects pass due diligence and certification by third-party institutions, corresponding project tokens are issued, with each token corresponding to a certain share and revenue right of the project. Investors pay PUIO to subscribe to project shares. Power generation revenue, carbon credit revenue, and other income generated by project operations are automatically distributed to investors through smart contracts according to investment proportions. All revenue distribution records are queryable on-chain, ensuring transparency and fairness. In addition, project tokens can be traded in the secondary market within the ecosystem, improving asset liquidity and solving the problem of difficult exit from traditional green investments.

Taking a 10MW distributed photovoltaic power station project as an example: the total investment of the project is approximately 50 million RMB, with annual power generation of approximately 12 million kWh and annual revenue of approximately 8

million RMB. Through tokenized financing in the PUIO ecosystem, the project is split into 1 million project tokens, each corresponding to 50 RMB of investment and corresponding revenue rights. Investors can subscribe to any number of shares through PUIO, with the minimum investment threshold requiring only hundreds of RMB. After project operation, monthly power generation revenue, after deducting operating costs, is automatically distributed to investors according to holding proportions, with an expected annual return rate of approximately 8-10%. Project tokens can be traded in the ecosystem at any time, allowing investors to exit flexibly. This model not only solves the financing needs of project parties but also enables ordinary investors to participate in green energy investments and obtain stable returns, achieving a win-win situation for all parties.

4.4 Microgrid Energy Management and Optimization Scenario

Microgrids are important scenarios for large-scale application of distributed energy. PUIO provides customized decentralized energy management solutions for microgrid scenarios such as industrial parks, commercial complexes, communities, and islands, achieving collaborative optimization and efficient utilization of distributed energy within microgrids.

Equipment such as photovoltaics, wind power, energy storage, charging stations, and electrical loads within the microgrid are connected to the ecosystem through IoT. The system performs real-time prediction and optimized scheduling of energy supply and demand based on artificial intelligence algorithms, achieving energy self-sufficiency and optimal allocation within the microgrid. Energy management services are paid through PUIO. Excess electricity within the microgrid can be traded externally through the PUIO ecosystem, and carbon reduction benefits are also distributed through PUIO. In addition, microgrid operators can obtain higher scheduling priority and better services by staking PUIO.

The following are practical cases of typical microgrid scenarios:

- **Industrial Park Microgrid:** After a manufacturing industrial park connects to the PUIO ecosystem, it integrates a 5MW photovoltaic power station, 2MWh energy storage system, 10 charging stations, and the electrical loads of various factories within the park. Through intelligent scheduling, the parks self-consumption rate increases from 60% to 85%, peak-valley arbitrage revenue increases by 40%, and annual carbon emissions are reduced by approximately 4,000 tons. Corresponding carbon credit revenue is distributed to park enterprises through PUIO according to their electricity consumption proportions.
- **Commercial Complex Microgrid:** After a large commercial complex connects to the PUIO ecosystem, it incorporates rooftop photovoltaics, underground energy storage, central air conditioning, elevators, and other loads into unified management. It intelligently adjusts energy use based on mall foot traffic patterns and electricity price fluctuations, saving approximately 2 million RMB in electricity costs annually, while obtaining additional revenue of approximately 300,000 RMB through carbon

credit trading.

- **Community Microgrid:** After a new energy demonstration community connects to the PUIO ecosystem, it achieves collaborative management of residential photovoltaics, home energy storage, and electric vehicle charging stations within the community. Residents can directly trade excess electricity, with the community's overall energy self-sufficiency rate reaching 70% and residents' average electricity costs reduced by 30%.
- **Island Microgrid:** An island builds an independent microgrid through the PUIO ecosystem, integrating photovoltaics, wind power, diesel power generation, and energy storage systems. This achieves green and stable power supply for the island, with diesel consumption reduced by 60%, power supply costs reduced by 45%, and the island's ecological environment greatly improved.

5. Compliance and ESG Framework

5.1 Regulatory Compliance Adaptation

The integration of green energy and cryptocurrency requires balancing technological innovation, commercial value, and regulatory compliance. PUIO strictly follows financial regulatory policies, energy regulations, carbon market rules, and data security laws in major countries and regions worldwide, and develops differentiated compliance plans for different scenarios:

- **Financial Trading Scenarios:** Follows Anti-Money Laundering (AML) and Know Your Customer (KYC) rules, monitors and reports large transactions and suspicious transactions to prevent financial risks.
- **Energy Trading Scenarios:** Complies with electricity market regulatory requirements in various countries, cooperates with local grid companies and energy regulatory agencies to ensure legal and compliant distributed energy trading.
- **Carbon Credit Trading Scenarios:** Follows international carbon market standards (such as VCS, GS, CCER, etc.), cooperates with authoritative third-party certification bodies to ensure carbon credit accounting and trading meet regulatory requirements.
- **Data Privacy Scenarios:** Complies with global data privacy protection regulations (such as GDPR, Personal Information Protection Law), ensuring legal and compliant collection, storage, and circulation of energy data and user data.

PUIO actively engages with energy regulatory agencies and carbon market authorities in various countries, participates in industry standard formulation, and promotes the improvement of regulatory frameworks for the integration of green energy and blockchain, ensuring healthy ecosystem development under the premise of compliance.

5.2 ESG Governance System

Taking "ESG compliance" as the core principle of the ecosystem, PUIO builds a dual constraint system of technology and mechanisms to ensure ecosystem development meets the sustainable development requirements of environmental, social, and governance dimensions:

Environmental (E) Dimension: The PUIO blockchain network is powered by 100% renewable energy, ensuring zero carbon emissions from network operations. All projects within the ecosystem must pass environmental impact assessments, with strict screening of genuine green energy projects to eliminate "greenwashing" behavior. A carbon offset fund is established to continuously purchase carbon credits for ecosystem carbon neutrality. Regular ecosystem environmental impact reports are published, disclosing key indicators such as carbon emission reductions and green energy power generation.

Social (S) Dimension: By lowering green energy investment thresholds, more people can participate in and benefit from the energy transition, promoting energy inclusiveness. Supporting green energy projects in underdeveloped regions to help local economic development and improve energy accessibility. Protecting user data sovereignty and privacy security, enabling users to truly control their own energy data. Actively carrying out green energy science popularization and education to enhance public environmental awareness.

Governance (G) Dimension: Establishing an ecosystem ESG committee composed of energy experts, environmental scholars, community representatives, and regulatory agency representatives to supervise ESG compliance of projects within the ecosystem, handle complaints and reports, and formulate and dynamically optimize ESG guidelines. Achieving transparent and democratic ecosystem decision-making through DAO governance, with major decisions decided by community voting. Establishing an information disclosure mechanism to regularly publish ecosystem operation reports and financial reports, protecting investor right to know.

Meanwhile, PUIO incentivizes projects and participants with excellent ESG performance and imposes penalties on violators (such as deducting staked tokens, restricting ecosystem permissions, and removing projects), guiding healthy and sustainable ecosystem development.

5.3 Risk Prevention and Control Mechanism

For various risks in ecosystem operation, a comprehensive prevention and control system is established:

Technical Risks: Establishing a security vulnerability response mechanism, encouraging white hat hackers to discover vulnerabilities and rewarding them with PUIO, and conducting regular security audits to ensure the stability of the blockchain network and smart contracts. Establishing data backup and disaster recovery mechanisms to ensure secure storage of energy data and transaction data.

Energy Risks: Establishing an energy quality verification mechanism to monitor power generation data in real time through IoT devices, ensuring the authenticity of

green energy. Establishing a microgrid stable operation guarantee mechanism to ensure energy supply stability through intelligent scheduling and energy storage regulation. Providing early warning of energy price fluctuations, and smoothing price fluctuations through energy storage and demand response.

Market Risks: Regulating market fluctuations through the reserve fund to avoid sharp token price oscillations. Establishing a project risk assessment mechanism to conduct strict due diligence and review of listed projects, reducing project default risks. Disclosing ecosystem operation data to protect investor right to know.

ESG Risks: Establishing a greenwashing prevention and control mechanism to ensure the authenticity of carbon credits and green projects through third-party certification and on-chain data. Establishing a rapid removal mechanism for non-compliant projects, tracing project responsible parties, and assuming ecosystem subject responsibility. Conducting regular ESG audits to ensure ecosystem operations meet sustainable development requirements.

6. Development Roadmap

6.1 Phase 1 (Q1-Q4 2026): Ecosystem Launch Period

- Complete PUIO token issuance and listing, build the core blockchain network and green energy adaptation layer, and implement basic energy data standardization and carbon credit registration functions;
- Reach cooperation with 3-5 leading green energy enterprises and carbon certification institutions, and implement pilot scenarios for distributed energy trading and carbon credit trading;
- Launch the ecosystem incentive plan to attract energy producers, energy storage service providers, and developers to participate in ecosystem construction and application scenario expansion;
- Build the DAO governance framework, establish the ESG committee, formulate preliminary ecosystem rules and compliance guidelines, and complete the first community governance vote.

6.2 Phase 2 (Q1-Q4 2027): Ecosystem Expansion Period

- Improve green energy adaptation layer functions, support data on-chain and trading for all types of energy equipment including photovoltaics, wind power, energy storage, and charging stations, and optimize energy scheduling efficiency;
- Expand 10+ core application scenarios, covering distributed energy trading, carbon credit trading, green investment, microgrid management and other fields, with ecosystem users exceeding 1 million and certified green energy installed capacity exceeding 1GW;

- Improve the compliance system, obtain regulatory filings and licenses in major countries and regions, and promote the formulation of industry standards for green energy blockchain applications;
- Optimize the economic model, adjust incentive rules and deflation ratios according to ecosystem development, and enhance PUIOs value anchoring capabilities;
- Publish the annual ecosystem ESG report, disclosing key indicators such as carbon emission reductions, green energy power generation, and environmental impact.

6.3 Phase 3 (2028 and beyond): Ecosystem Maturity Period

- Build the world's leading decentralized green energy ecosystem, with PUIO becoming the core value circulation carrier in the industry, and green energy trading and carbon credit trading achieving large-scale commercial use;
- Promote deep integration of green energy with hydrogen energy, energy storage, smart grids, electric vehicles and other fields, expand ecosystem boundaries, and achieve cross-domain technological collaboration;
- Achieve complete ecosystem autonomy, with DAO leading technical routes, scenario expansion, rule-making and ESG supervision, forming a self-iterating and self-optimizing ecosystem;
- Contribute to the achievement of global carbon neutrality goals, empower all humanity with green energy technology, and usher in the era of decentralized energy.

7. Team and Advisors

7.1 Core Team

The PUIO core team consists of green energy experts, blockchain technology developers, crypto-economists, and ESG compliance experts, with rich cross-domain experience and industry resources. Core members have participated in the development and operation of world-leading solar, wind, and energy storage projects, led the architectural design of Ethereum ecosystem projects, and some members come from leading energy enterprises and financial institutions, with profound technical accumulation, commercialization capabilities, and industry resources, providing solid support for ecosystem construction.

7.2 Advisory Team

The advisory team covers authorities in green energy, blockchain, legal compliance, ESG, carbon markets and other fields, including world-renowned energy researchers, blockchain industry leaders, international carbon market experts, financial regulatory

advisors, and ESG rating agency experts. They provide professional guidance for the projects technological R&D, compliance development, and ecosystem expansion, ensuring the project achieves a balance between technological innovation and risk control.

8. Conclusion

Breakthroughs in distributed energy and smart grid technologies mark that humanity is transitioning from a centralized fossil energy system to a green energy era of collaborative symbiosis across "generation — storage — consumption," laying a solid foundation for the achievement of global carbon neutrality goals. The decentralized nature of blockchain technology provides a fair, secure, and efficient value foundation for this transformation, breaking the centralized barriers of traditional energy ecosystems. As the core carrier of the integration of these two cutting-edge fields, PUIO aims to break industry bottlenecks and build a decentralized green energy ecosystem where energy value, carbon assets, green investment, and energy services coexist in parallel.

We firmly believe that with the continuous development of the PUIO ecosystem, green energy technology will move from high-end R&D to universal popularization, every ecosystem participant can become a beneficiary and contributor to the energy transition, energy data will truly become a personal core asset, and "green energy empowering everything" will no longer be a science fiction scenario. PUIO will join hands with global ecosystem participants to jointly promote this energy revolution that concerns the future of humanity, accelerate the comprehensive achievement of global carbon neutrality goals, and make clean energy accessible to every individual.

Disclaimer

This whitepaper is only a description of the technology and economic model of the PUIO project and does not constitute any investment advice. Green energy technology R&D involves uncertainties, and project progress may be adjusted due to factors such as technical bottlenecks, regulatory policy changes, and market environment fluctuations. Investing in PUIO involves market risks, technical risks, compliance risks, etc. Investors should carefully assess their own risk tolerance and make rational decisions. All application scenarios within the ecosystem must comply with the laws and regulations of the country or region where they are located, and the project party shall not be liable for any illegal use.