KAIA

White paper

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Contents

1.
Overview

1) The uncertain future of agriculture

Currently, the agricultural industry is facing a crisis of sustainability due to population cliffs and disappearance of rural areas, such as hollowing out of villages due to continuous population outflow, aging of rural populations, and decline in rural vitality due to lack of human resources.

The important causes of the agricultural industry facing a crisis can be broadly summarized into four: labor shortage, imbalance in the quality and yield of agricultural products due to climate warming, weakening global competitiveness, and reduced farm income.

① Labor shortage: The aging and decline of the agricultural population poses a serious threat to the sustainability of agriculture. As rural areas undergo demographic changes, labor shortages are becoming more severe, resulting in delayed harvests, poor crop management, and increased operating costs.

② Inconsistent quality and yield: Climate warming is bringing about unprecedented environmental changes, causing irregular weather patterns and causing inconsistent growth and quality of crops, affecting the quality and yield of agricultural products.

③ Lack of ICT agricultural technology for global competitiveness: In the era of free trade agreements (FTA), securing cutting-edge information and communication technology (ICT) for agriculture is of utmost importance. In order for personalized rural areas to survive global competition, it is necessary to introduce smart farms to increase productivity and simplify processes.

④ Decrease in farm income: Decrease in farm income is an urgent problem with far-reaching consequences. Various factors affect it, including rising production costs, fluctuations in raw material prices, and market uncertainty.

2) Necessity of blockchain-based smart farm

Smart farms are currently emerging as a new alternative to future agriculture. Technology-intensive cultivation using smart farms can achieve maximum results with a small amount of manpower, but forgery and falsification of smart farm data is one of the important security issues that must be resolved in smart farming systems.

Tampering with data can have serious impacts on crop production, agricultural management, and decision-making due to the following risk factors:.

① Information distortion: Data falsification can distort agricultural data transmitted through sensors, IoT devices, databases, or transmission protocols, resulting in incorrect crop information and harvest predictions.

② Incorrect decision making: When falsified data is used, farm managers may make incorrect decisions on important issues such as harvest timing and water supply.

③ Safety and quality issues: Falsification of data related to the safety and quality of agricultural products can affect consumer health.

④ Financial loss: Loss may occur due to improper management of crop production, or difficulties may arise in claiming compensation or insurance due to falsified data.

These data management problems can be solved with blockchain. Blockchain is a distributed ledger technology that safely stores and manages data, and has a distributed ledger that is shared among all participants in the network.

Blockchain, with its distributed ledger, ensures data integrity by storing information across multiple network nodes rather than a central server. In a smart farm environment, real-time data from field sensors (temperature, humidity, illumination) are automatically recorded on the blockchain to prevent oracle problems, and since the stored data cannot be tampered with, information such as the production location and date of agricultural products Ensures high reliability.

A smart farm control system that combines the advantages of blockchain, data integrity and transparency, is expected to eliminate the vulnerabilities of the existing smart farm control system and solve many problems currently present in agriculture.

3) The need for a blockchain-based AI buyer matching program

Despite the fact that the primary and secondary industries are effectively organized in the current distribution structure, many difficulties and inefficiencies occur in the inter-industry connection and export process at the stage of converting products to sales. In particular, in order for domestic companies to export products overseas, a significant amount of time and money is spent in the process of finding appropriate buyers, which causes difficulties due to insufficient human resources and networking.

Accordingly, KAIA has developed an AI buyer matching program that uses blockchain technology to find stable and verified buyers. This program finds and matches necessary companies, personnel, and institutions around the world, and through this, We support you in finding reliable buyers.
This is expected to help companies minimize difficulties arising in the export process and reduce inefficient manpower and costs.

The goal of the KAIA is to increase the efficiency of the distribution structure by connecting stable and verified buyers in the global market using blockchain and AI technology and to help companies overcome various difficulties that arise during the export process.

① Safe transaction guarantee: Blockchain provides a decentralized distributed ledger, so it can improve the reliability and safety of transactions. Smart contracts can be used to program transaction terms and design them to be recorded on the blockchain once the transaction is fulfilled.

② Enhancing identity verification and reliability: Blockchain makes it easy to build a distributed identity verification system. A blockchain-based identity management system can be introduced to verify and verify identities in transactions between buyers and sellers.

③ Transaction history tracking: Blockchain can immutably store transaction history, allowing all information related to production, transportation, and certification of products to be transparently recorded.
This allows you to accurately track the origin and progress of the product.

④ Cryptocurrency payment: Blockchain provides a payment system through cryptocurrency. To increase the safety and efficiency of transactions, a blockchain-based payment system can be built by combining it with smart contracts.

⑤ Utilization of distributed networks: By utilizing the distributed network of blockchain, efficient and stable connections can be achieved between buyers and sellers distributed around the world.

⑥ Utilization of smart contracts: By utilizing smart contracts that automatically execute transaction conditions and contract terms, the transaction process can be streamlined and transactions can be made quickly without intermediaries.

The application of such blockchain technology can dramatically improve the international export and transaction process by improving the transparency, safety, and efficiency of the program.

Agriculture plays an important role in our lives and food security. In order to protect the future of agriculture and the welfare of farmers, it is necessary to solve various problems at the same time, such as solving the labor shortage problem, mitigating the impact of climate change, securing cutting-edge technology, and strengthening farm income. The 'EcoPuri Smart Dome', which combines smart farm and two cutting-edge farming methods, is necessary. 'This could be an alternative.

KAIA supports the production, manufacturing, operation, and distribution of agricultural and fishery products based on the "RES Agro-Arban Hub" consisting of Eco-Puri Smart Dome and CONNECT AI to increase profitability and support the management and transaction of transparent production data based on blockchain.

In addition, through the introduction of the latest agricultural and fishing technology, we will build an eco-friendly, disaster-free, and automated system, and build an agricultural complex that can accommodate the environment and culture at the same time to lead the change from leaving rural to returning rural areas.

2.
Vision and goals

KAIA is leading the change in the landscape of food production through sustainability, transparency, and technological innovation, and aims for a changed future of agriculture and revitalization of renewable energy. This vision is rooted in the promise to transform traditional agricultural practices to usher in a new era characterized by increased production efficiency, response to climate change, and increased economic viability.

① Blockchain-based agriculture and fisheries data management

• KAIA dreams of a paradigm shift in smart agriculture by utilizing blockchain technology. The key is to seamlessly integrate decentralized ledgers to secure trust in smart farm production data and ensure safe transactions.

• A transparent production data trading ecosystem eliminates information gaps and enables safe data flow, enabling optimized agriculture for anyone. It also allows consumers to trace product origins, cultivation methods and supply chains to ensure integrity.

② Combination of cutting-edge technologies – "RES Agro Urban Hub"

• KAIA has implemented EcoPuri Smart Dome technology by combining aquaponics and chlorella farming methods, and builds a circular agricultural ecosystem with 'RES Agro Urban Hub' to which this technology is applied.

• This not only ensures consistent high-quality agricultural and marine products and secondary products, but also minimizes the impact of external climate factors, thereby reducing dependence on unpredictable weather conditions.

③ Creation of a sustainable agricultural complex

• KAIA is building an eco-friendly and automated agricultural system with the goal of building a model that not only improves productivity by embracing the latest agricultural and fishing technologies, but also respects the environment.

• We aim to reverse the trend of rural population decline by creating a sustainable agricultural complex that goes beyond simple production efficiency and serves as more than a production hub.

KAIA is not just a technical solution
It is a holistic vision for the future of agriculture that is sustainable, transparent,
and deeply connected to our roots.

3.
Core technology
'RES Agro Urban Hub'

1) EcoPuri Smart Dome

It is a semi-cylindrical (dome) structure in which compressed air is injected between a double structure covered with special vinyl under the net. It prevents typhoons and snow damage by controlling air pressure and improves ground strength by forcibly injecting air deep into the ground.

The heated air at the top is circulated to an external drying facility to save energy, prevent pests and diseases through clean air inflow through the air conditioning system and ventilation devices, and the size and height of the structure can be scaled and automated to suit the purpose.

The normal internal air pressure of the dome is 15mmHg and can be up to 25mmHg. Additionally, the air pressure inside the dome is 0.8% to 2.5% higher than the outside air pressure, and is automatically adjusted depending on the external environment.

In the case of 500 pyeong (1,652m²), mechanical cultivation is possible at 27m width x 61.2m length x 13m height. It has the advantage of being easy to expand the facility area up to 2,000 pyeong (6611 m²) or more as there are no iron pillars.

It is a facility combined with a smart farm and includes a self-developed system that can save more than 70% of energy, solves cooling/heating problems, blocks pests and pests at the source with an AIR antibacterial filter and ultrasonic room temperature atomization technology, and supplies water and Eco-friendly products can be produced by sterilizing hydroponic culture media and production products with ozone (O3).

In addition, the state-of-the-art ICT remote control and facility management system prevents theft, fire, and storm and flood damage, and allows automatic control of the farm through external computers and smartphones.

Complex culture aquaponics

Aquaponics is a compound word of Aquaculture and Hydroponic, and is an eco-friendly farming method in which crops are grown hydroponically using organic matter generated while raising fish, and the returned clear water is returned to the fish.

The principle is that fish excrement is decomposed by natural microorganisms into nitrates and various minerals, which plants absorb and grow, and the fish receive back clear water purified by plants and are provided with a healthy growth environment.

The aquaculture water used in existing urban aquaculture contains excrement from aquaculture organisms and must be treated as wastewater, which costs a lot of money and space is limited.

There is a technology for recycling breeding water without wastewater treatment, which uses microorganisms to stabilize water quality without exchanging the breeding water during the fish breeding period.

2) Blockchain-based AI buyer matching program "CONNECT AI"

CONNECT AI is an innovative platform that utilizes blockchain technology to more efficiently manage the connection between companies and global genuine buyers. This allows companies to find new business opportunities for overseas expansion. Below are the main features of integration with blockchain technology:

① Cost reduction and transparency

• By utilizing the distributed ledger of blockchain, the cost of participating in existing overseas fairs or exhibitions can be dramatically reduced.

• All transactions and contacts are recorded on the blockchain and managed transparently, which not only reduces costs but also enables reliable transactions.

② Strengthening AI for target buyer matching

• Securely store and manage buyer and company data collected through blockchain.

• Utilizing the immutability of blockchain, it provides reliable data to AI algorithms, helping to connect thousands or tens of thousands of contexts in real time.

③ Real-time response and smart contracts

• Utilizes blockchain smart contracts to automate responses to companies experiencing difficulties due to the absence of dedicated export and marketing personnel.

• When transaction conditions are met, the smart contract is automatically executed, enabling real-time transactions with buyers.

• Connect AI combined with blockchain helps companies reduce costs and conduct transactions efficiently in overseas markets, and helps secure global competitiveness.

CONNECT AI technology

The blockchain-based AI buyer matching program is a system built by combining blockchain technology and artificial intelligence to improve and streamline interactions between buyers and sellers. These systems include various technical elements, the important aspects of which are:

① Blockchain technology

• Distributed ledger: Transaction records are distributed and stored in the blockchain network, thereby overcoming the shortcomings of centralized systems.

• Immutability: Information recorded in the blockchain is difficult and impossible to change, which ensures transparency and safety of transactions.

② Smart contract

• Auto-execution rules: Utilize programmable smart contracts to automatically execute contracts when transaction conditions are met.

• Reliability: Utilizes the immutability of blockchain to make smart contracts into trustworthy and executable contracts.

③ Distributed artificial intelligence

• Machine learning algorithm: Implements a machine learning algorithm that understands the behavior and tendencies of buyers and sellers and suggests customized transactions based on this.

• Data analysis: Analyze transaction data and user information to identify market trends and recommend optimal transactions.

④ Tokenization and cryptocurrency

• Token-based transaction: Payment is made using blockchain tokens during transactions, which enables direct transactions without middlemen.

• Secure payment: Combined with the security features of blockchain, it provides a safe and transparent payment system.

⑤ Privacy protection

• Encryption technology: We introduce strong encryption technology to safely protect user data and transaction information.

• Authorization and access control: Appropriately protect privacy by setting data access permissions based on user consent.

A blockchain-based AI buyer matching program that integrates these technological elements helps ensure safe and efficient transactions, increases trust among market participants, and minimizes the role of intermediaries.

4.
KAIA

1) Business model
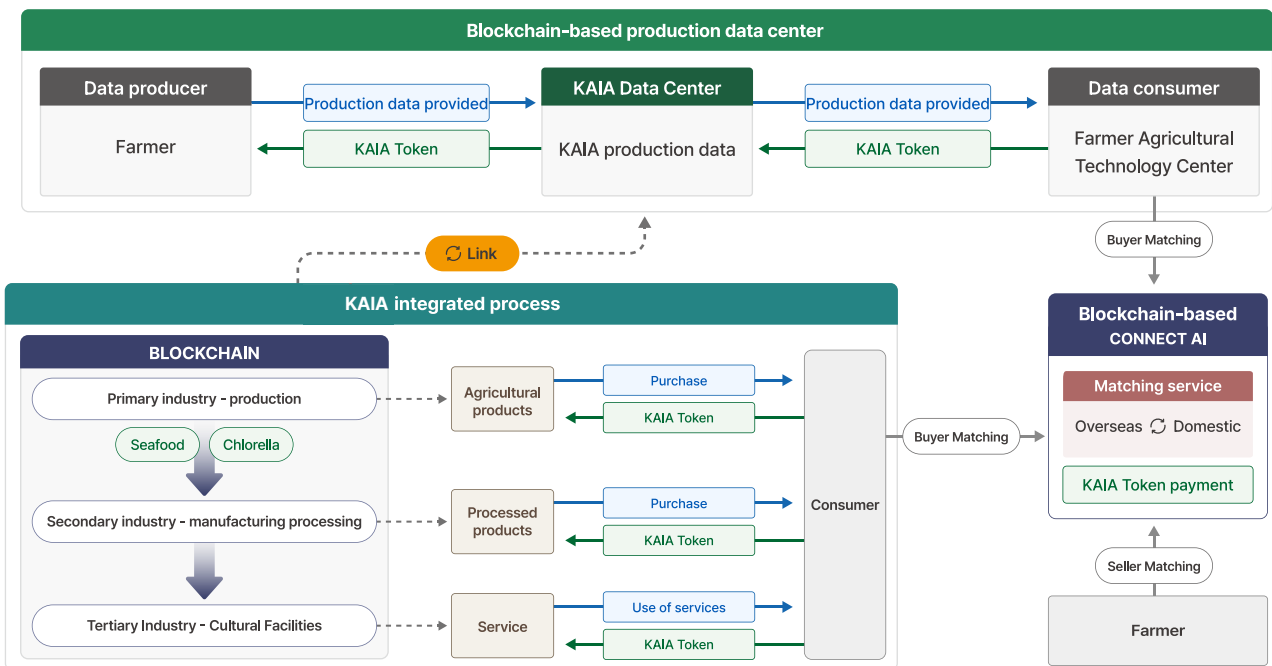
KAIA is a blockchain-based 6th industrial system that encompasses not only primary industries such as cultivation of agricultural and fishery products, but also secondary industries that directly manufacture and process products, but also experience and enjoy rural areas and products.

- In the production stage, high-quality agricultural and fishery products and chlorella are simultaneously produced through the EcoPuri Smart Dome, and agricultural products are sold through consumers.

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- EcoPuri Smart Dome can be used as an outdoor activity space that utilizes features that are not affected by the climate throughout the year, such as a production facility as well as a sports facility, fishing experience center, and pet farm-related facilities. KAIA is a farm stay linked to the production facility, and provides a variety of experiential tourism services such as local festivals.

The KAIA Data Center is a space where you can trade KAIA production data that collects and analyzes all the data collected in the agricultural and fishery product production stage, and it supports the exchange of cultivation technology information in the form of farm owners versus farm owners, farm owners versus agricultural technology centers or experts. It also supports smooth distribution through the buyer-seller matching service 'CONNECT AI', and all of this process is transparently carried out through the blockchain.

2) Primary industry – production

Agricultural and marine product production – EcoPuri Smart Dome

'EcoPuri Smart Dome', one of the core technologies, enables highly profitable agricultural activities with a small amount of labor.

By introducing aquaponics and chlorella farming methods in the EcoPuri smart dome, which automatically controls the internal environment without being affected by the climate environment, various advantages such as resource saving and double profits can be obtained.

By monitoring all growth processes and post-harvest stages of agricultural and livestock products in real time, we realize eco-friendly precision agriculture in a ubiquitous environment that provides high-quality, safe food to consumers and creates a foundation for increased income for producers.

Production Data Management – KAIA Data Center

EcoPuri Smart Dome technology, which consists of stages such as computerization of growth process, data analysis technology, agriculture, etc., combines monitoring of the growth environment of all crops and fish in the dome, operation of facilities, and remote control monitoring technology with Internet solutions to maintain optimal production and quality.

Production data transmitted from IoT devices, such as environmental control, prescription of root rights, crop, and fish growth, are managed without worrying about loss based on blockchain, and the system is supported for use through the KAIA Data Center.

The KAIA Data Center is a service that analyzes and recipes production data, and it supports the exchange of information on various cultivation technologies within the KAIAI and closes the technology gap. It also supports direct transactions with overseas buyers through CONNECT AI.

3) Secondary industry – processing, manufacturing and distribution

KAIA combines manufacturing-based processing technologies for fish processing and chlorella processing to manufacture premium feed, eco-friendly fuel, cosmetics, pharmaceuticals, and health functional foods.

Products produced in this way are sold to domestic consumers, and we support them in developing overseas sales channels through 'CONNECT AI', a buyer-seller matching service.

Production of premium feed through fish processing and lecithin extraction.

KAIA uses aquafarm-based raised fish to manufacture premium mixed feed for companion animals or fish, and additional extraction methods can be used to obtain lecithin from discarded fish byproducts.
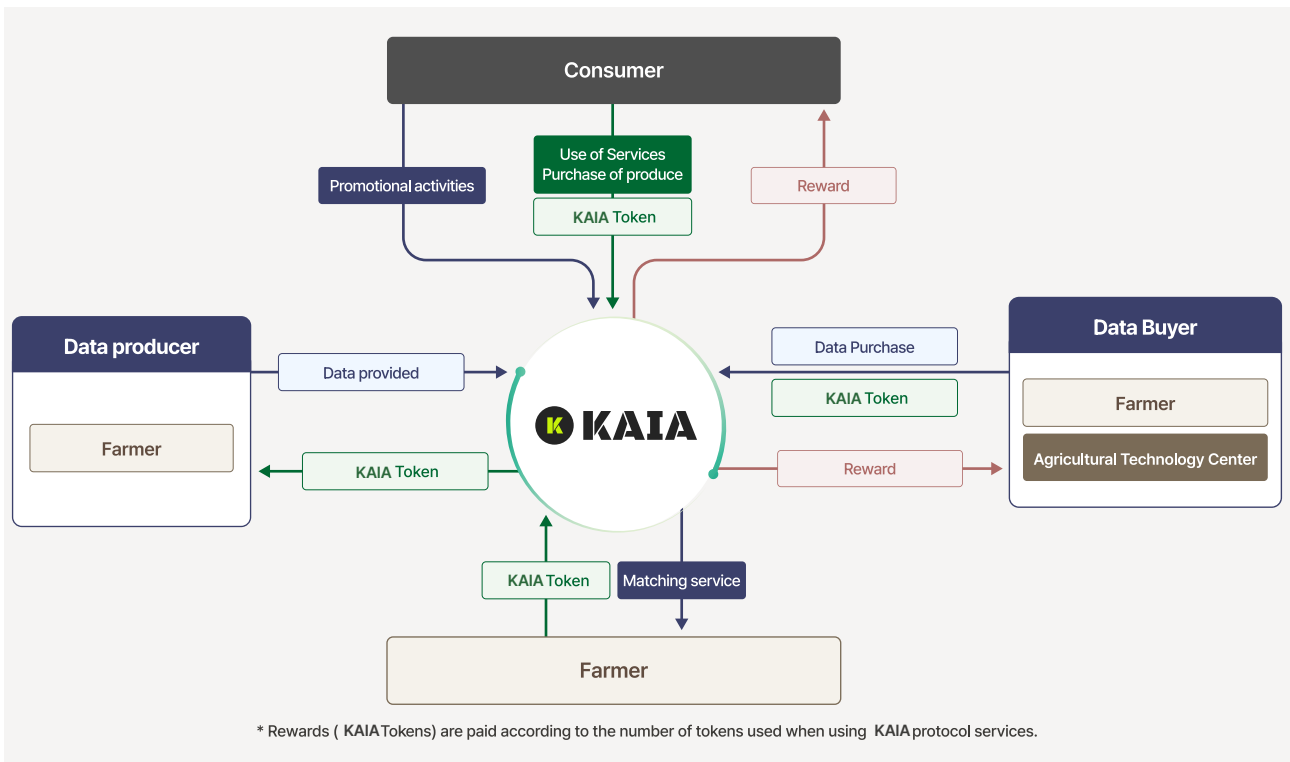
In addition, using a freeze-drying method in the fish by-product drying stage and a solvent extraction method using a 1:1 solution of hexane and acetone as a solvent in the lecithin extraction stage can produce higher extraction efficiency than conventional lecithin extraction methods.

Since the extracted fish lecithin can be used as an animal feed material to improve immune and antibacterial activity, the production efficiency is maximized by additionally manufacturing functional premium feed through technology that extracts animal lecithin contained in fish by-products generated during the manufacturing process of premium mixed feed.

5.
KAIA Token Ecosystem

The KAIA Foundation issues KAIA Token to achieve its vision and goals. KAIA Token is used to purchase products and services produced by blockchain and EcoPuri Smart Dome, as well as to purchase production data from the KAIA Data Center.

1) Token Economy

* Rewards (KAIA Tokens) are paid according to the number of tokens used when using KAIA protocol services.

Consumer

Consumers can purchase high-quality and reliable agricultural products and processed products at low prices, and can also use EcoPuri smart dome-based experiential tourism facilities at low prices. Additionally, you can receive rewards after participating in promotional activities such as experience groups.

Farmer and Agricultural Technology Center

KAIA Token can be used to purchase KAIA production data at the KAIA Data Center and to use matching services for market development.

The KAIA production data concentrates the know-how of the KAIA Foundation, including crop and fish growth processes, analysis and best operation practices, which helps farmers who feel technology gaps and agricultural technology centers looking for advanced production information.

Reward system

Farmers who provide high-quality farming techniques and farming data through smart domes are paid KAIA Token rewards in a similar concept to mining according to the amount of data provided. This reward system provides a reason for KAIA Token use to ecosystem participants within KAIA, contributing to the establishment of a stable ecosystem.

2) Token distribution plan

① Virtual asset symbol: KAIA
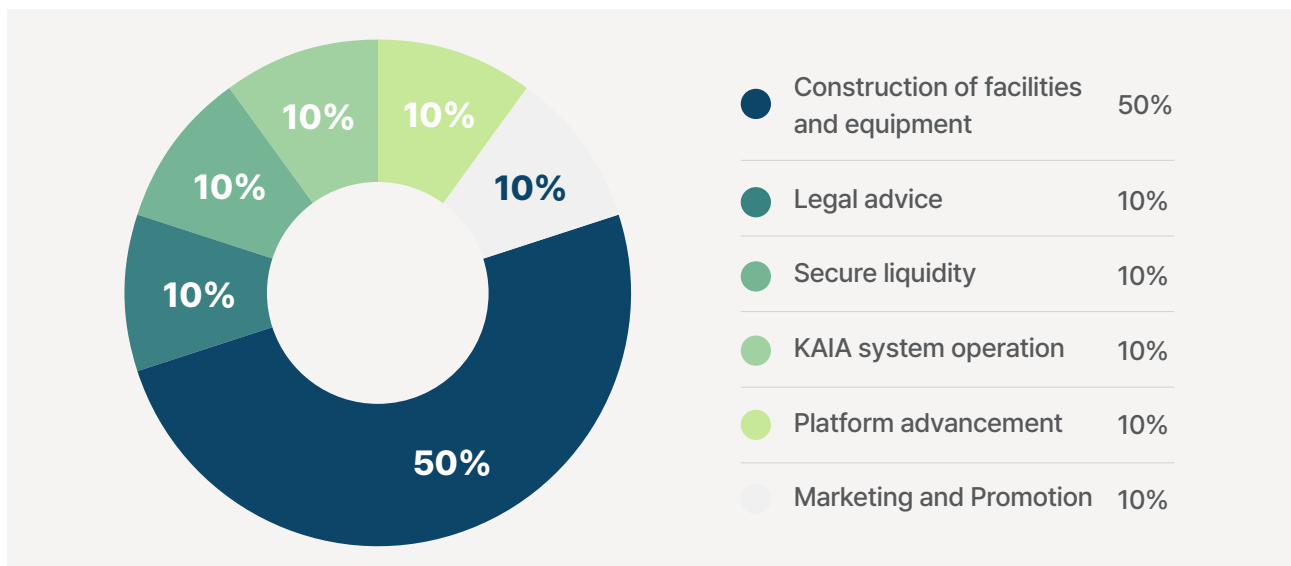
② Issuance amount: 3 billion

③ Distribution policy

KAIA Token sales account for only 20% of the total, and 30% is allocated to teams, advisors, and partners who contributed to this project. Additionally, 20% is allocated for marketing and promotion to promote business, 10% is allocated for development, and the remaining 20% is reserved.

Token Sale	20%	
Marketing	20%	
Development	10%	
Team	15%	
Reserve	20%	
Partnership	10%	
Advisor	5%	
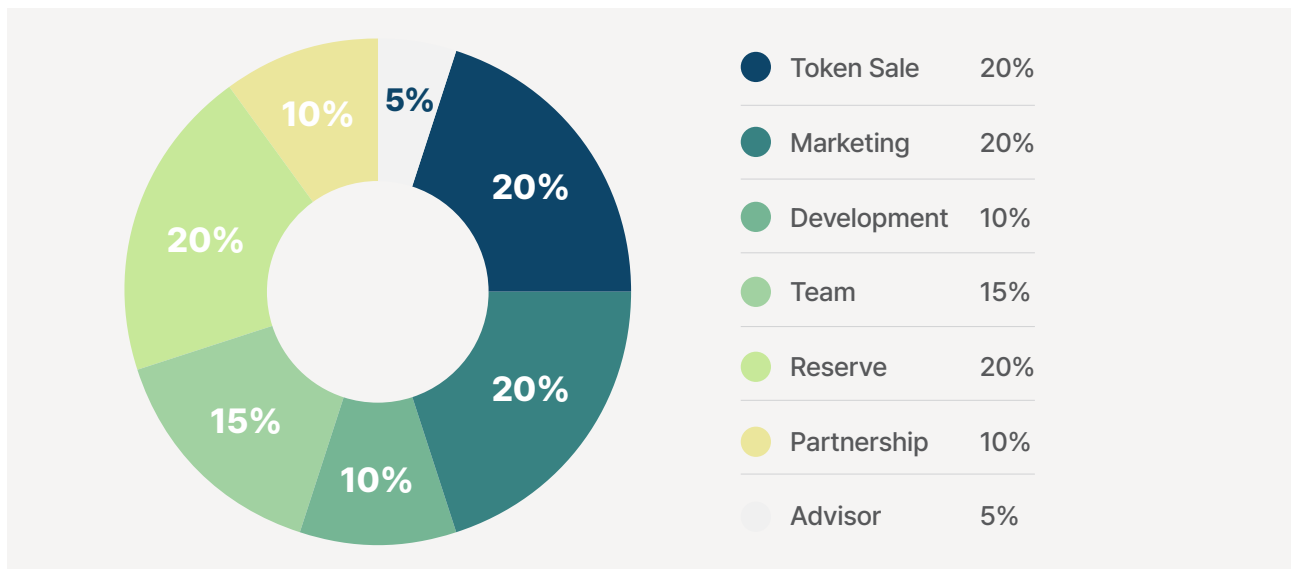
④ Usage plan

The amount sold will be used to build the Rapha protocol, including building the EcoPuri smart dome facility and processing facilities for products, and developing and operating a blockchain platform. It is also used for promotional and marketing costs to secure domestic and overseas sales outlets, and operating costs to activate the platform.

Construction of facilities and equipment	50%	
Legal advice	10%	
Secure liquidity	10%	
KAIA system operation	10%	
Platform advancement	10%	
Marketing and Promotion	10%	

6.
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