Green Earth

Green Earth Blockchain Token (GEBT)

Abstract

Green Earth blockchain project aims to authenticate and promote all producers of natural food products that are carefully produced without adulteration, or harmful chemicals like pesticides, dyes, etc. We will support all natural products worldwide.

Every transaction will be visible on the blockchain to build the trust of both producers and consumers. No need for separate organic or bio certifications. "Green Earth" blockchain itself will be the certification, and it will significantly reduce the costs of natural/organic foods, and make them more affordable for more consumers.

Green Earth Blockchain Token (GEBT) is the only way to participate in the blockchain project, and the tokens will be used to reward all our Clients, Partners, and Users.

Our goal is to make Green Earth the benchmark for authenticity based on transparency, and bring at least 1% of the global food industry onto the Green Earth blockchain, or about $100 billion USD of transactions per annum by 2032 on Green Earth blockchain.

Green Earth blockchain aims to bring transparency in all natural products and natural resources. Therefore, we will also cover other Use Cases that can benefit from the transparency and quality control offered by Green Earth blockchain.

1. Introduction

Green Earth will bring transparency of blockchain to the food supply chain and natural products. In doing so, Green Earth will also build the credibility of natural products and sustainable earth practices, without the need for opaque certifications, due to which the market for natural products has grown much slower than its value proposition. The reason is that due to low transparency, consumers pay higher costs and the producers get lower payoffs than required to increase supply.

Hence, Green Earth will also help in bringing the natural consumption and production to the main activity bracket. It will incentivise the participants to build the next generation world, combining natural products, commerce, blockchain, and sustainability.

Green Earth blockchain token (GEBT) denotes the value of earth conserving lifestyle. Hence, it is representative of natural products including natural foods and natural products, sustainable farming practices, natural healthcare, ecology and local economy, assets that promote carbon balance, and their commerce and trading activities.

Green Earth token release will be directly dependent on production, consumption of natural products and services. This in turn will lead to preservation and promotion of underlying assets from natural habitats to skills.

Green Earth blockchain shall also expose the alarming scarcity of natural resources, the demand for which is being met artificially by claiming products to be natural but without providing blockchain-like transparency of their source and supply chain. For example, boxed syrup honey is being sold as natural forest honey in many parts of the world, or milk products are being adulterated with chemicals and detergents. The global food supply chain has an urgent need for transparency, which Green Earth blockchain aims to deliver.

2. Vision

Green Earth project aims to use blockchain technology to authenticate and reward all honest participants in the global food industry, and other products and services related to nature and ecology. Every participant from Food Producer/Farmer to Customer will be rewarded for their participation in the Green Earth blockchain.

Green Earth aims to fight the widespread corruption in the global food supply chain, because harmful substances and banned chemicals are regularly being added to the foods and natural products. This is a lifelong battle, but the availability of suitable technology can be leveraged to make an im. Because Green Earth is taking up such a bold and

ambitious project, it will need resources to execute the plan, and make an impact on the prevailing global setup.

Green Earth Blockchain Token (GEBT) is the instrument of this change that we want to bring. The token will support the food producers working honestly and promote them on national and international level, and the token will also oppose the food producers involved in corrupt practices and using harmful chemicals and banned substances. If we are standing up for what is right, it means that we are also standing up against what is wrong – and that's what Green Earth project aims to do.

3. Why Green Earth? What problem are we solving?

The global food industry and food supply chain lacks transparency, which is the root cause for a wide range of food adulteration, causing both economic and healthcare impact on people. That's the problem we aim to solve with the Green Earth blockchain.

Depending on which survey and which country we select, **about 10-30 % of the food products available in the markets for consumers are non-conforming** to the necessary standards setup by the food quality regulators like US FDA, UK FSA, CFIA in Canada, or FSSAI in India. For example, in a major survey by FSSAI in India in 2019, about 28% of food samples did not conform to the standards.

The non-conformance to standards is high in developing and underdeveloped countries, especially in Asia and Africa. India ranks first in a list by Food Sentry of the countries in the world with the most food safety violations. India and China are the countries with the highest number of offenses. The EU (Eurozone) has the least non-conformance.

Urban areas (with high population density, transaction oriented society, and lack of transparency) have higher non-conformance than rural areas (with lower population density and ease of source tracking).

Worldwide, this non-conformance of food products can be divided into three main groups.

1. **Adulteration** - adding foreign substances including chemicals which are not on the product's label to lower costs or fake a higher quality. This has a major health impact on consumers, because some food adulterants can cause cancers, organ failures, and chronic diseases.

2. **Substitution** - replacing a food or ingredient with another substance that is similar but inferior. This may not cause health damage for every consumer, but the nutrition scores of the food products are reduced, and such substitution can hide allergy causing substances, which can cause severe reactions in some consumers.

3. **Misrepresentation** - marketing or labeling a product to wrongly portray its quality, safety, origin or freshness. This is a major segment and many large companies are also involved in such practices.

Food adulteration with harmful chemicals is one of the very serious problems worldwide, and it's the cause for many long term chronic diseases and organ failures in both children and adults. This problem is not limited to under-developed or developing countries. It's also present in developed countries, though to a lesser degree.

Despite various measures and penalties, the problem of food adulteration continues to remain a big challenge worldwide. Therefore, Consumers around the world are increasingly demanding more information on the source and processing involved in foods.

Rampant use of chemicals, pesticides, and hormones in the food supply chain are the root cause behind many long term health issues in people today and in the future. The lack of transparency in food production has been leading to all kinds of tampering, adulteration, and misrepresentation of ingredients and food products – all of which impact the health of people/consumers. The impact is highest in children because their vital development suffers, and their long term health is badly impacted.

The US FDA covers all forms of adulteration under "Economically Motivated Adulteration" (EMA), which occurs when someone intentionally leaves out, takes out, or substitutes a valuable ingredient or part of a food. EMA also occurs when someone adds a substance to a food to make it appear better or of greater value. For example, when manufacturers add a cheaper vegetable oil to an expensive olive oil but sell the product as 100% olive oil, they are cheating their customers. We refer to this type of EMA as food fraud.

Food fraud is a common type of EMA that the US FDA deals with in the US, and FSSAI in India, but EMA also occurs with other products, including animal food and cosmetics. Some types of EMA are also misbranding violations.

Estimating how frequently food fraud occurs or its exact economic impact can be hard because food fraud is designed to avoid detection. Outside estimates by experts have found that food fraud affects 1% of the global food industry at a cost of about $10-$15 billion a

year, although some more recent expert estimates put the cost as high as $40 billion a year.

EMA isn't just an economic issue. Depending on what is added, substituted, or left out, food fraud can lead to health issues, and even death. Some examples include lead poisoning from adulterated spices and allergic reactions to a hidden, substituted ingredient that contains even just one food allergen.

Food Adulteration is an act of adding or mixing of poor quality, inferior, harmful, substandard, useless or unnecessary substances to food products. It spoils the nature and quality of food products. Thus, food adulteration is an act of intentionally debasing the quality of food offered for sale either by the substitution of inferior substances or by the removal of some valuable ingredient. Food Adulteration takes into account not only the intentional addition or substitution or abstraction of substances which adversely affect nature, substances and quality of foods, but also their incidental contamination during the period of growth, harvesting, storage, processing, transport and distribution.

Top Three Most Common Adulterations:
Based on the results of multiple surveys worldwide, the top three foods for adulteration are: Milk/Milk Products, Cooking Oils, and Honey.

1. Milk and Milk Products: Milk is among the most common food adulterations worldwide. Milk is most commonly diluted with water, which leads to loss in its nutritional value, and water contaminates milk ensuring health problems. Apart from water, many kinds of liquid such as soya milk, starch, groundnut milk, wheat flour, detergents, and urea are added to milk, to mimic the external properties of healthy milk. Such adulteration makes the milk less nutritious, and also creates long term health damage.

 Infant Milk Formula Adulteration: One way that scientists can estimate how much protein is in a food is by looking at how much nitrogen is present. In 2008, manufacturers in China added melamine (a synthetic chemical often used in plastics that has a high nitrogen content) to infant formula to make it seem like their products had enough protein. This led to kidney failure in babies, and news reports indicated the fraud caused over 300,000 illnesses, 50,000 hospitalizations, and at least 6 deaths.

2. Cooking Oils: Vegetable oils and fats have a big contribution in our diet as cooking or frying oil, salad oil or in food product formulation. But these are adulterated with cheap oil. One of the common practices adopted by unscrupulous traders and middlemen is mixing palm oil or cheap edible oils with cooking oils such as easily available rice bran oil or waste vegetable oil. There have been numerous instances of packets of sunflower, soybean and groundnut oil containing cheaper cotton seed oil. With the increase in use of

olive oil for its health benefits mainly for salad dressing, the most common adulteration in olive oil is mixing extra-virgin olive oil with low-grade oils. Apart from this, canola oil is mixed with olive oil and then the mixture is chemically deodorized, coloured and flavored to make it appear as "extra-virgin" oil.

Cooking Oils is a high value product group, and therefore, it is very vulnerable to adulteration worldwide. The high value per unit of cooking oils offers big economic motivation for fraud, and severe health impact can happen with cooking oil adulteration. Here are examples of adulteration within cooking oils.
- **Olive Oil:** Similar to honey and maple syrup, some companies have previously diluted more expensive extra-virgin olive oil with less expensive vegetable oil but sold the mix as pure olive oil at a higher price.
- **Palm Oil:** In 2016 and 2017, the US FDA sampled imported palm oil for the presence of Sudan dyes, which are red industrial dyes that can cause cancer and are illegal to use in food. The US FDA found these dyes in about 16% of the tested oil samples and refused to allow these products into the United States. But such sampling approaches can often miss the adulterated batches. Therefore, a more rigorous and comprehensive approach is needed.

3. Honey: The global market size of honey is estimated to be around $8.5 billion USD. Honey is considered a superfood in almost all countries (and rightly so), but honey is among the most adulterated foods in the world. Although honey is recognized as high-quality food, it is vulnerable to adulteration, mislabeling, and unethical mixing with sugar syrups, and other substances. Moreover, due to its limited availability, proven therapeutic and healing properties, and the increased population concerns regarding their health, there is a rising demand for this natural superfood, which makes honey a vulnerable target for adulteration. When consumers use adulterated honey, they don't get the health benefits, and their trust and interest in this valuable product goes down.

Adulteration of honey is commonly performed by the direct addition of sucrose syrup into the honey. The source of sucrose syrup could be sugar beet, HFCS, maltose syrup, or industrial sugar syrups (glucose and fructose) obtained from heat, enzyme, or acid treatment of starch.

Honey adulteration increases the consumer's blood sugar, which can cause diabetes, abdominal weight gain, and obesity, raise the level of blood lipids and can cause high blood pressure. The most common organ affected by honey adulterants is the liver followed by the kidney, heart, and brain, as shown in several in vivo research designs.

Following are more examples of Food Adulteration

4. Fruit Juice: When manufacturers sell a mixture of citric acid, sweetener, and water as "100%" lemon juice or mix grape juice into their "100%" pomegranate juice, the consumer harm is mostly economic. However, when a company mixes expired, contaminated juice stored in dirty conditions with fresh juice in order to hide the low quality of the expired filthy juice, the resulting juice can possibly harm the person drinking it.

5. Fish & Seafood: Fish and Seafood is a very high value product group, and their adulteration is common problem worldwide, and it happens significantly in fish products, when the seller substitutes a less expensive species of fish for a more expensive species, such as including less expensive snappers or carp fish instead of more expensive red snapper or salmon into fish based food products.

A recent study on fish sold to consumers in the United States, found that 20% samples tested were mislabelled. The study, by Oceana, a US non-profit dedicated to protecting the world's oceans, sampled 449 fish purchased from shops and restaurants in 24 US states and the District of Columbia. DNA testing was used to establish the true identity of the samples. One-third (33%) of all shops and restaurants checked sold mislabelled seafood. Fish was most often mislabelled on restaurant menus (26%) and at smaller markets (24%). An eighth (12%) of samples from supermarkets was found to be mislabelled.

6. Spices: One type of spice adulteration occurs when an expensive spice (such as saffron) is bulked up with other non-spice plant material (such as plant stems). Another type of adulteration is using dyes to give spices a certain color, especially when the color strongly impacts the perception of quality. Lead-based dyes and other industrial dyes that can cause adverse health problems such as cancer have been found in spices such as chili powder, turmeric, and cumin.

7. Maple Syrup: Even though their labels represent their food as a pure product, some unscrupulous companies mix maple syrup with cheaper sweeteners such as corn syrup, rice syrup, sugar beet syrups, or cane sugar. This lowers the cost of production, but consumers still pay the full price of a pure maple syrup product with unfair profit going to such dishonest companies.

8. Pine Nuts: During 2008 to 2012, some people reported a bitter metallic taste that sometimes lasted for weeks after they ate pine nuts. After an international investigation by the US FDA, it was revealed that some manufacturers substituted a non-food species of pine nuts in place of more expensive edible pine nut species. This may have caused major allergies and health problems in consumers.

Problem summary:
Food Adulteration is a major global problem with 10-30% food samples non-conforming to the necessary food standards in different countries. Food Adulteration is also dangerous because it can severely damage the health of consumers, especially in children, while also depriving nutrients that are essential for proper biological growth and development.

The total healthcare impact of food adulteration, on adults and children, will run into trillions of dollars worldwide.

While food adulteration is illegal in most countries, there are many wrong or borderline practices followed by food companies including the use of chemicals that are banned in other parts of the world but not in their country (hence profiting from lagging laws of their country). If we include misrepresentation of ingredients in food products (for example, food labels not matching the actual contents), then we are looking at a problem that is over $500 billion USD per annum in size, or about 5-10% of the global food industry.

4. Green Earth solution

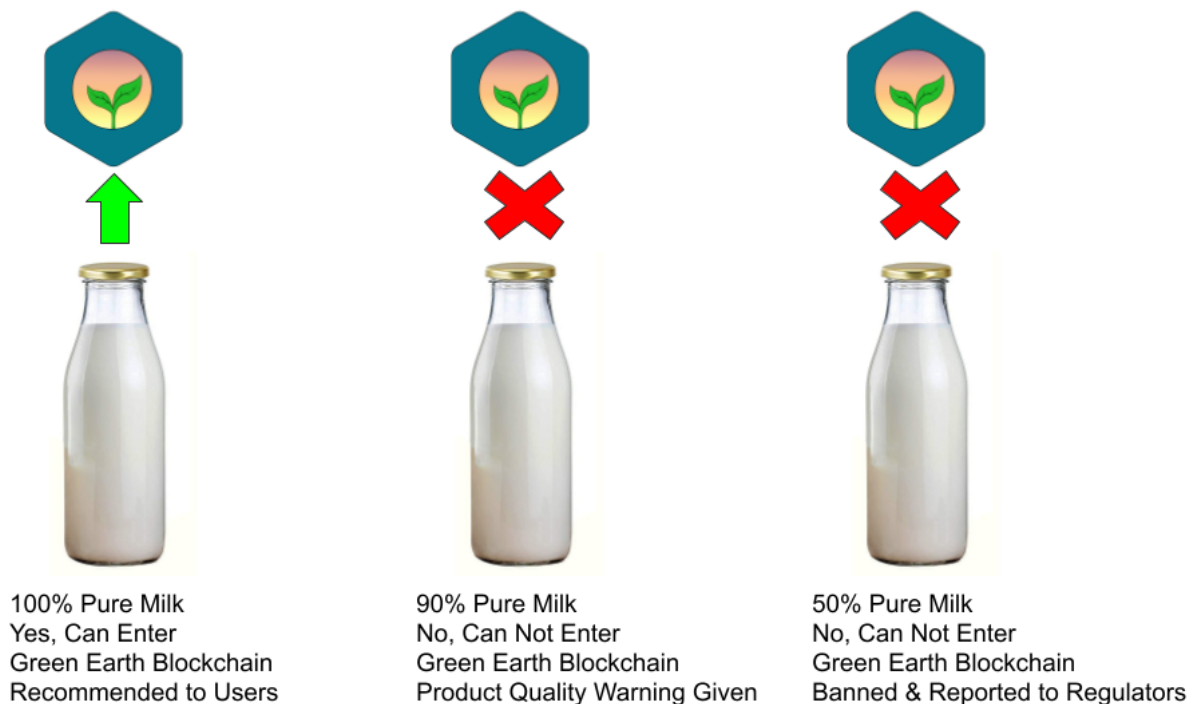The surveys of food samples by regulatory authorities gave valuable insight.
"Urban areas (with high population density, transaction oriented society, and lack of transparency) have higher non-conformance than rural areas (with lower population density and ease of source tracking)."

Wherever we can ensure source tracking, we can bring down the non-conformance or adulteration, and make the food supply chain more secure, and anyone who can't show source tracking for their food products can't be trusted for authenticity.

Green Earth will leverage the transparency enabled by blockchain technology to authenticate and empower the honest and genuine Participants (Producers of Natural Foods and Natural Products) who are regularly getting pushed to the background and fringes, while they struggle against capital intensive commercial and industrial setups (due to their smaller size, and difference in production methods vs the larger industrialized companies with sophisticated marketing models).

Green Earth Blockchain Token (GEBT) will be used to reward all the deserving Participants and Users in the food supply chain, natural products and services, worldwide from Alaska to Australia. The token will seek to reward authentic natural products and services, many of which are in the developing countries in Asia, Africa and South America. Our blockchain project and tokens will provide support and resources for them.

Following is an indicative example of how Green Earth blockchain will defend authenticity in foods using transparency of the blockchain.

100% Pure Milk	90% Pure Milk	50% Pure Milk
Yes, Can Enter	No, Can Not Enter	No, Can Not Enter
Green Earth Blockchain	Green Earth Blockchain	Green Earth Blockchain
Recommended to Users	Product Quality Warning Given	Banned & Reported to Regulators

Adulterated foods can not enter Green Earth blockchain because they can not show the full supply chain tracking starting from the food source onwards without hiding any step, and this source-tracking is a mandatory requirement for Green Earth blockchain.

Every transaction will be visible on the blockchain to build the trust of both producers and consumers. No need for separate organic or bio certifications.

"Green Earth" blockchain itself will be the certification (with global visibility), and it will significantly reduce the costs of natural/organic foods, and make them more affordable for more consumers.
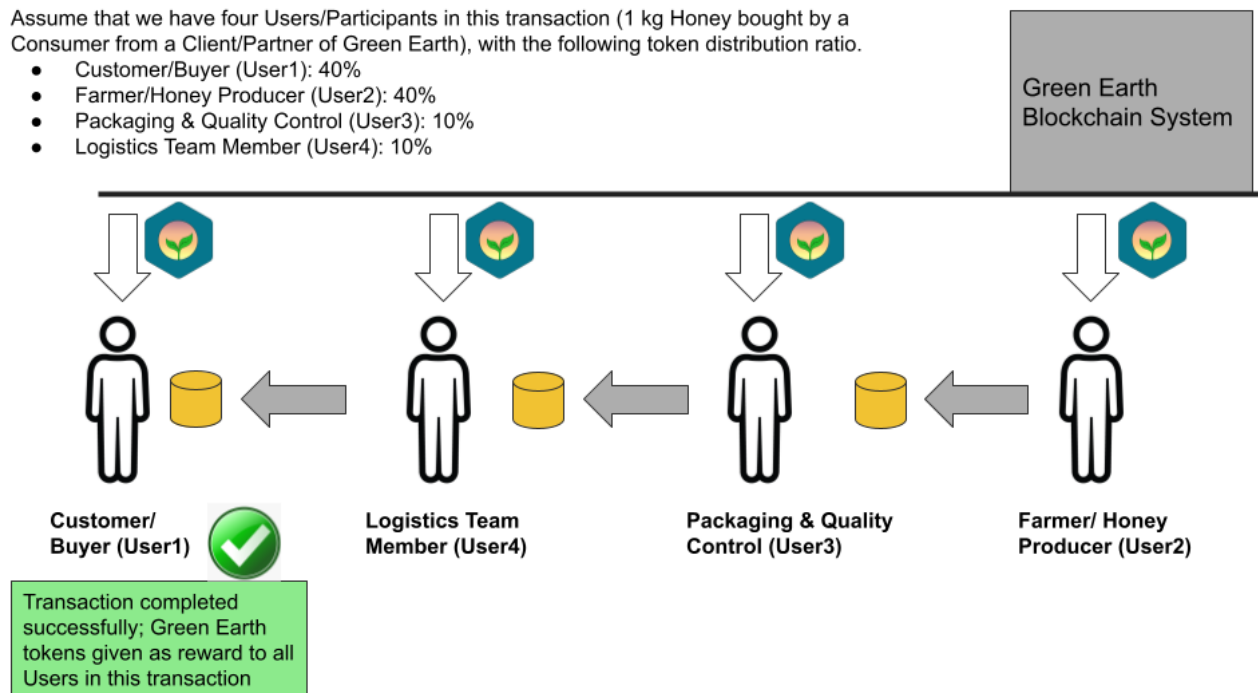
Transparency and Authenticity are the two critical parts of Green Earth blockchain. Our team has significant experience in food supply chain, natural farming, natural products, and ecosystems, and all this experience will be applied to deliver a system that is carefully tracking all food producers in the Green Earth blockchain. We will also use AI based systems to track all transactions on an ongoing basis. More details are in section 7.6, which describes the Quality Control measures that will be adopted.

Green Earth Blockchain Token (GEBT) is the only way to participate in the blockchain project, and the tokens will be used to reward all our Clients, Partners, and Users.

Following is a sample transaction that shows how Green Earth blockchain system will work, and reward all Users.

We want to reward all Users/Participants in the food supply chain, because that is the only way to ensure authenticity on an ongoing basis, where everyone's contribution is recognized and rewarded. The farmer/food producer is often hidden in the background in the current system of things, but Green Earth will give the due recognition to the farmer/food producer, who is the source for producing or procuring all authentic food and natural products.

If we take the analogy of Bitcoin, it was created by Satoshi Nakamoto in 2009 to start a decentralized financial system, which is independent of the world's Central Banks and Banking System. Green Earth Blockchain Token (GEBT) aims to create a decentralized system using the transparency of blockchain technology for the physical food supply chain (covering natural foods and natural products), which is independent of the large FMCG and Food companies in the near term, and also some pharma companies in the future as we expand Green Earth blockchain to cover natural products related to natural medicine, like rare Himalayan herbs and their applications, etc.

5. Market Size

(1) Global Food Industry: The "global food & grocery retail market size" was about $11.3 trillion USD in 2021 and expected to grow at 3% CAGR from 2022 to 2030, or about $15 trillion USD by 2030. If we can get even 1% of the global food industry to adopt Green Earth blockchain for tracking food authenticity, then $150 billion worth transactions can come on Green Earth blockchain annually by 2030.

(2) Organic Foods: Within the global food market, the "global organic food market size" was about $227 billion USD in 2021, and it can grow to $700 billion by 2030. The organic food market will be very receptive to the concept of Green Earth blockchain to showcase product authenticity, and we can get early adoption from them. Even 1% of this market will be $7 billion worth transactions on Green Earth blockchain annually by 2030.

Based on the data from different countries, organic foods have 2-3x higher market price compared to non-organic food in retail stores and supermarkets, and most of this high premium is pocketed by the middlemen and retailers.

Interesting Demand-Supply dynamics should come into play here:
By using Green Earth blockchain to show authenticity of food products in a transparent manner on the blockchain, we can significantly reduce the high premiums of organic foods by 50%, and bring their prices closer to non-organic food prices, which in turn will significantly increase the adoption, demand and sales of all natural food products supported by the blockchain. In other words, Green Earth blockchain will increase the global market size of the organic food industry by reducing its premium prices.

So depending on how much of the global food industry we can bring on Green Earth blockchain, we can aim to get $15-150 billion worth transactions per annum on our blockchain, which can create a $10-100 billion marketcap. That's the potential for this project if we diligently executive the project vision, over the next 5-10 years.

The problem we are trying to solve is large and widespread, and it impacts the health of people worldwide. Therefore, somebody will surely try to solve it; and we can do it too, using our combined learning and experience in natural farming, forest ecosystems, food industry, software industry, and blockchain technology.

6. Use Cases

6.1 Food Supply Chain Authenticity

This is our primary and major use case, and we will develop this in full detail. All types of food adulteration and food fraud globally, are a direct result of lack of transparency in the food supply chain, and Green Earth blockchain aims to address this problem at its core, by tracking the food products right from the point of production and processing, through the logistics, till the food products are delivered to customers. The entire food supply chain with individual transactions will be visible on Green Earth blockchain.

We will explain this Use Case regarding transparency using two examples:
(a) Natural Forest Honey (globally used high value natural product)
(b) A2 Cow Ghee (second largest value milk product in India)

Case Study 1
Natural Forest Honey

Honey production in India has increased from 10K tonnes (2000-01) to 120K tonnes (2019-20), 12 fold increase. On the other hand, from 2001 to 2021, India lost 2.07 million hectares of tree cover, equivalent to a 5.3% decrease in tree cover since 2000. A logical conclusion is that a significant part of the honey producing tree cover, which was mostly in the peripheral forests, has been lost.

Source: India Deforestation Rates & Statistics | GFW (https://globalforestwatch.org)

In addition to the above, the river streams have also been lost, along with a large-scale conversion of flowering plants to grain fields. In such a scenario, the Natural Forest Honey has dwindled from its 2000 levels, hence forming now a miniscule percentage of the overall Honey being produced and sold.

Globally, the conditions have been similar or worse. It takes almost a decade to establish a sustainable Honey bee ecosystem in the forest. In fact, researchers in the US have been grappling with a honey yield fall from a phenomenon named Colony Collapse Disorder (CCD) in which worker honey bees disappear, resulting in a dead colony.

Yet, the Organic/Natural Forest Honey market share is almost now 8%. The organic honey market was valued at $605 million in 2020, and is estimated to reach $1,060 million by 2030, registering a CAGR of 5.50% from 2021 to 2030.

Now, the majority of the honey sold in the market (organic or otherwise), is bought by the consumer assuming that it's natural forest honey. The branding and marketing is totally silent by omission on its source status because a disclosure that the honey is box produced, or made from jaggery, will immediately cause loss of value.

Therefore, a source-tracking blockchain that incentivizes transparency, will not only lead to higher value transfer to those nurturing honey ecologies, but also move more demand towards Natural/Organic honey from the uncategorized/adulterated segment. It will also pose an existential threat to suppliers of bulk/manufactured honey, and adulterated honey-based products, once a tipping point is achieved in consumer awareness.

Case Study 2
Indian Cow Ghee (A2 Cow Ghee)

Ghee, which is widely used in Indian cooking, is the pure butter fat left over after the milk solids and water are removed from butter. It is fragrant with a rich nutty taste and represents the second largest consumed dairy product in India, after liquid milk.

The Indian ghee market reached a value of INR 2,273 billion in 2019 and is expected to reach a value of INR 4,653 billion by 2024. While there is no data available on the market size for certified A2 cow ghee, as a general rule, the Ghee is marketed and sold as a Cow milk product by everyone, including by established brands (because buffalo milk ghee is not preferred).

The price of authentic A2 Cow ghee varies from INR 1500 to 3000 per kg while the price of unknown-source ghee (but marketed as Cow Ghee) is around INR 500 to 800 per kg. So the adulterated versions of A2 Ghee are selling for one-third of the authentic product rates.

In volume terms, Ghee production has grown from 70 tonnes to 170 tonnes from 2015 to 2021. But the female Cattle population has remained stable at around 80 million, and female buffalo population has remained stable around 50 million during 2015 to 2021. (Source: https://www.nddb.coop/information/stats/pop)

The import of Ghee also has been miniscule. So the Ghee production has grown 2.5X while the underlying cattle population has remained the same! This is a strong indicator of adulteration, sustained by the lack of transparency and by substituting cheaper vegetable oil based substitutes.

Such large-scale adulteration leads to loss of consumer confidence, and they are unwilling to pay more per kg, even for an authentic product. It also leads to destruction of Cow grazing grounds, and minimal payout to villagers who actually keep cows. This has a further destructive effect on ecology as biological fertilizers are no longer available in the local ecology.

Interestingly, our immediate beneficiary group, the tribals who have indigenous cows and supporting forests, provide the highest grade of A2 Cow ghee but it doesn't find a market due to cheaper non-transparent A2 ghee (adulterations) backed by slick advertisements. Thus, Green Earth Blockchain has a huge meaning for remote tribals and farmers in hilly regions, as their products can reach high value once their authenticity is clearly established.

6.2 Carbon Credit Trade

This is a Use Case that we will develop in the coming years, because it can leverage the transparency of Green Earth blockchain for natural products and natural resources.

The value of the voluntary carbon market (VCM) has quadrupled since 2020, reaching nearly $2 billion USD in 2021, and for the year 2022, the market has already crossed $2 billion USD by August 2022. This growth has been driven by both higher prices and stronger demand for carbon credits, with nearly 500 million credits traded in 2021, at an average price of US$4 per ton – up 60% year on year.

Currently, the informal or voluntary segment of Carbon Credit Trade, is nascent. The regulated segment has large scale units requiring Carbon credits, and large scale suppliers like Forest departments, or large plantations. This trade is facilitated by Vetting and Assessment agencies. Compared to that, the scale of informal segment supply is much large. E.g. Small Farmers owning trees. And the potential to use small scale carbon credits to facilitate eco friendly consumption is also huge, e.g. a consumer buying Air Conditioner, and her cost getting reduced due to Carbon credit.

Hence, transparency and vetting of assets with Individuals and their Carbon credit supply, will lead to this segment opening up. And consumers who buy the carbon credit, preferring to buy products from Brands that respect and reward that carbon credit.

Green Earth blockchain will be used to register and vet the Carbon credit suppliers e.g. farmers, and facilitate its purchase online, with both buyers and sellers being rewarded with tokens. The carbon credit can thus be further sold to Product companies.

6.3 Natural Healthcare

This is another Use Case that we will develop in the coming years, because it can also leverage the transparency of Green Earth blockchain for natural products and natural resources.

There are many high quality natural herbs and natural products on the land, and in the sea, which can effectively solve many of the human illnesses. However, their awareness is very limited, and known mostly to rural communities or to tribals who have been living with these natural resources for many centuries.

Green Earth blockchain will be used to register Natural Healthcare products and service providers, in a transparent way, and the feedback of their work or treatment results, will also be available transparently on the blockchain. This will increase awareness of such natural treatments, many more people worldwide may benefit from them.

6.4 Local Economy

Wherever the Customer and all other Participants/Nodes (collectively called Users) are local in a transaction, all Users will get additional reward tokens, thus incentivizing local trade and local economy. For example, when a farmer on the outskirts of a city sells their products to people in the city, it can be considered a Local trade, and Green Earth will give some extra reward tokens to all Users in that transaction.

Summary: Over the next 2-3 years, we will focus on the major use case (food authenticity tracking), which can establish the foundation of the Green Earth project with Customers and Users worldwide, and take the market cap to beyond $1 billion, and bring global visibility to Green Earth project and GEBT tokens, with a top 100 marketcap ranking. Along the way, we will analyze and pilot new use cases, and will try to cover them too. Green Earth blockchain aims to showcase transparency in all natural resources.

7. Operating Model

This section describes how Green Earth blockchain will operate in real life, and how we will move towards achieving our project goals.

In this section, we will describe how Green Earth blockchain will rate each transaction on multiple factors, and arrive at a transaction rating score to give token rewards to Users involved in a given transaction.

7.1 Green Earth Income Share (GEIS)

This is the percentage of the transaction value that the Clients/Partners will pay to Green Earth for using our blockchain service, because they will benefit from the transparency, authentication, and certification process using Green Earth blockchain, and they will be paying a small fraction (1 to 10%) of the transaction value to enable the operations and growth of Green Earth blockchain.

Thus, Green Earth Income Share (GEIS) will be a percentage between 1-10%.
This number will be finalized for each Client/Partner, at the time of their onboarding.

We expect most of the initial Customers to pay 3-5% of the transaction value to Green Earth in return for our blockchain services. This payment to Green Earth will depend on the type of product or service. For example, higher end natural products (like honey, spices, saffron, salmon, olive oil, coffee, etc), which can absorb a higher blockchain fee, while they benefit from the global visibility created by Green Earth for their products. In our vision, product listing on Green Earth blockchain will become an essential marketing strategy for many organic food companies.

7.2 Green Earth Product Rating Score (GEPRS)

The following table has 40 product groups that will be covered by Green Earth blockchain in the first version of the system. New product groups will be added as we onboard new Clients/Partners worldwide. Every product group on Green Earth blockchain will start with a rating score, which may evolve with time based on the supply/demand factors.

Product Group	Product Rating Score
Rare Honeys	100
Rare Herbs	100
Traditional Milk products from native Cows	100
Common Tree Honeys	85
Rare/Exotic variety Berries	80
Forest Leafies	80

Rare/Exotic variety fruits	70
Berries	65
Bio diverse vegetables	65
Fresh Fruits from Plateau/Plains	60
Millets naturally processed	60
Common Herbs	60
Exotic food products from exotic/rare flora	60
Traditional/complex recipe based products	55
Exotic Oils	55
Exotic Natural Cosmetics/Personal Care	55
Natural Health products from Endangered Plants	55
Exotic Home products	50
Exotic food products from common flora	50
Common Healthy Food products	50
Natural Health products - Powders from Trees/Plants	50
Traditional food products from exotic/rare flora	45
Handmade Natural Cosmetics/ Personal Care	45
Food products from Millets	45
Traditional Products	40
Common Utility products	40
Common Oils from trees	35
Handmade Home décor products from Trees/plants	35
Common/modern food products from Common flora	35
Food products from Grains/ pulses	35
Native pulses traditionally processed	35
Native variety grains	35
Traditional food products	30
Common Powders	30
Common oils from lower Common flora	25
Native Pulses/Lentils	20
Grains traditionally processed	15
Candies from common fruits	10
Common Grains	5
Common Vegetables	5

The above table covers 40 food products groups that are common in India, Middle East, and South-East Asia, which will be covered by Green Earth blockchain, to meet the requirements of our initial Clients/Partners in India. As we add new Clients/Partners in Asia, Europe, Africa, North America and South America, we may have 100+ product

groups. In every case, a product group will always start with a rating score, which is based on the natural and ecological sensitivity of that product group. Please refer to Appendix D for examples of each product group listed above.

7.3 Green Earth Processing and Packaging Score (GEPPS)

This score will range from 0 to 1, with 1 being the highest quality score.
It will depend on the quality of food processing (whether done manually in an eco-friendly way, or by small machines, or by large machines and their ecological impact). The rating for quality of packaging will be decided based on how eco-friendly the packaging is. Overall, the Processing and Packaging Score will reflect what happens to a natural product in order to make it ready for the consumer.

7.4 Green Earth Farm Rating Score (GEFRS)

This score will range from 0 to 1, with 1 being the highest quality score.
It will depend on the quality of the farm or forest from which food is being produced.
In the case of aquatic or marine food products, we will evaluate the quality of that particular ecosystem. Farms having more tree coverage will be considered high quality. Natural farming methods are required. Green Earth system will track the food production volume from each farm to check that it's within normal range. This will ensure that a food producer doesn't allocate unusually large food production to one farm, which would be naturally impossible, but it could get hidden in the systems, without necessary checks and alerts. Food producers involved in any type of adulteration or mislabelling will not be able to provide such source level details. Farms which use pesticides, hormones, or other chemicals will not be able to enter the Green Earth blockchain. Overall, the Farm rating Score will reflect the quality of the source from where the food is getting produced.

7.5 Green Earth Local Economy Score (GELS)

This score will range from 0 to 1, with 1 being the highest quality score.
It will depend on the location aspects of a particular transaction, and it's a function of the location of the food producer and the consumer. When they are both in the same location/region (as determined by postcodes), the score will be 1, otherwise the score will be lower than 1. International shipping orders with large distances will get a lower score. This score also aligns with reduction of carbon emissions and natural conservation theme. Overall, the Local Economy Score will reflect how local the product is for the consumer.

7.6 Green Earth Transaction Rating Score (GETRS)

The final rating score for each physical/retail/e-commerce transaction coming on Green Earth blockchain will be called Green Earth Transaction Rating Score (GETRS)
GETRS is a function of the following:
(a) Green Earth Product Rating Score (GEPRS)

(b) Green Earth Processing and Packaging Score (GEPPS)
(c) Green Earth Farm Rating Score (GEFRS)
(d) Green Earth Local Economy Score (GELS)

Green Earth Transaction Rating Score (GETRS)
= function (Product Rating, Packaging & Processing,
Source/Farm Quality, Local Economy factor)

The exact formulas that we will use are as follows:

GETRS= (GEPRS x GEPPS x GEFRS x GELS)/100

Number of GEBT tokens that maybe given out as rewards for a transaction
= (Transaction value in USD x GEIS x GETRS)/GEBTM

GEBTM = GEBT/USDT token market rate

Here's a working example:
A customer buys 1 kg "Natural Forest Honey" for $30 USD with a Partner . Let's see how this transaction results in GEBT token distribution to all Users involved in this transaction.

The various parameter scores of this transaction are as follows (they will be available for each transaction based on the details we will have on file for each Client/Partner).
- Green Earth Income Share (GEIS) for this Client/Partner = 5% (or 0.05)
- Green Earth Product Rating Score (GEPRS) = 85 (out of 100)
- Green Earth Processing and Packaging score (GEPPS) = 0.8
- Green Earth Farm Rating Score (GEFRS) = 0.95
- Green Earth Local Economy score (GELS) = 0.75
- GEBT token market rate (GEBTM) = 1.00 USDT

First, we will calculate the Green Earth Transaction Rating Score (GETRS)
GETRS= (85 x 0.8 x 0.95 x 0.75)/100 = 0.4845

Number of GEBT tokens that maybe given out as reward for this transaction
= (Transaction value in USD x GEIS x GETRS)/GEBTM
= (30 x 0.05 x 0.4845)/1.00
= 0.72675 tokens

The above tokens will be given out as rewards to all the Users participating in the above transaction. If User details are not available, then their share of tokens will be deposited into a Community Account created for each Client/Partner, so that the tokens can be given to the User once their details are available.

The ratio of token distribution among the Users will be different for each product group, and it will be decided with inputs from the Client/Partner at the time of their onboarding on Green Earth blockchain.

Coming back to our sample transaction, assume that we have four Users in this transaction, with the following distribution ratio.

- Customer/Buyer (User1): 40%
- Farmer/Honey producer (User2): 40%
- Packaging & Quality Control (User3): 10%
- Logistics Team Member (User4): 10%

The token distribution for this transaction will be as follows:

- Customer/Buyer (User1): 0.29106
- Farmer/Honey producer (User2): 0.29106
- Packaging & Quality Control (User3): 0.072765
- Logistics Team Member (User4): 0.072765
  —--
  Total: 0.72675 tokens
  —--

The above token distribution to Users will be done automatically by Green Earth blockchain system using the smart contracts for GEBT token wallet creation and token distribution into the necessary wallets. An email will be sent to each User after tokens have been deposited in their wallet. We will be using MyAlgo wallets, which are popular in the Algorand blockchain.

Indicative usage of the Income from the above sample transaction.

Income earned by Green Earth
= Transaction value in USD x Green Earth Income Share (GEIS)
= $30 x 5% = $1.50 USDT

Market Value of GEBT tokens given as rewards to Users for this transaction
= 0.72675 USDT

Green Earth can use a part of the above Income to buy GEBT tokens from the exchange. For example, Green Earth may buy 1.00 USDT worth of GEBT tokens from the 1.5 USDT income, which can buy back the tokens given out as rewards in this transaction, plus buy some more tokens too. This will create a net buying effect from each transaction.

Important Note:
Green Earth blockchain system does not promise or assure any fixed or variable number of GEBT tokens as rewards to blockchain Users. The number of GEBT tokens given out as rewards in a particular transaction is a function of multiple factors that are determined in real-time based on the specifics of the transaction. Users can not demand GEBT tokens for any transaction. The issuance of GEBT tokens to Users as reward for a particular transaction is entirely the decision of the Green Earth blockchain system.

7.6 Quality Control

Strict quality control is critical to establish and maintain the reputation of the Green Earth blockchain project, because the entire project is based on the foundation of authenticity and corruption-free products. Therefore Quality Control will be a top focus area.

(a) Ongoing Monitoring using AI: Green Earth will use AI technology to scan and analyze all transactions on the Green Earth blockchain. The AI system will also be fed with global market prices of various food products, so that it can actively analyze the food products value based on the stated composition of the food. For example, if a food producer is selling Himalayan Berries juice at a price that looks lower than market rates, then our AI system may raise a red flag. The AI system will detect even small deviations, which humans can't see. The AI system will be like our 24x7 security force.

(b) Random Sample Tests: The proof of the pudding is in eating it, and that's true. All Clients and Partners of Green Earth will have random product inspections, directly and indirectly (buying orders placed as regular Customers). Green Earth will give these samples to food scientists and food testing labs to check the quality of the foods being delivered through Green Earth blockchain. The reports of such tests will be shared with the Clients and Partners. Those who consistently deliver authentic products will be rewarded with Green Earth tokens given as performance bonus. Those who fail random sample tests will face penalties and comprehensive testing, and they may be banned from Green Earth in case of multiple failures.

(c) Advanced DNA Testing: Green Earth will partner with food testing labs to conduct advanced DNA testing of high value food products, like fish and seafood. Green Earth will work with fisheries departments of different countries to ensure that illegal fishing is not flowing into Green Earth blockchain. The efforts we make to build authenticity and trust among Consumers, will be rewarded with significant sales volume flowing into Green Earth, which can be over a $1 billion USD just from fish and seafood.

Food analytical chemistry, which looks at everything from the basic chemical composition of foods to the chemical identity of added components, will play a significant role in quality control. Biological tests, such as DNA sequencing, will also play a key role. Green Earth will partner with advanced labs in different countries for food sample testing.

(d) Collaborating with Regulators: To help identify new instances of food adulteration and new ways to detect it, we will work with regulatory agencies in all our major markets, including India, USA, Canada, UK, EU, Australia, and the Middle East. For example, the US FDA has built a DNA library that has the DNA barcode for fish species or a similar one for plants, which has greatly helped when species substitution is happening.

Note: Quality control checks require constant adaptation because adulteration techniques change in response to past regulatory actions and available detection techniques. To spot trends and instances of food adulteration, we will gather information from a variety of sources such as consumer or industry complaints, news articles, science publications and presentations, databases, other governments, academia, and subject matter experts.

8. Project Goals

Following are the goals for the Green Earth project over the next 10 years, from Jan 2023 to Dec 2032. These goals will be funded by sale of Green Earth blockchain tokens (GEBT), and with the income earned by Green Earth from Clients/Partners based worldwide.

1. User base:
- 100K Users by Dec 2023.
- 250K Users by Dec 2024.
- 500K Users by Dec 2025.
- 1 million Users by Dec 2026.
- 2 million Users by Dec 2027.
- 20 million Users by Dec 2032.

2. Transaction Volume on Green Earth blockchain:
- $1 billion USD by Dec 2027.
- $10 billion USD by Dec 2030.
- $100 billion USD by Dec 2032.

3. Geo coverage:
- Clients/Partners in 10 major countries of the world by Dec 2027. Top focus will be on: India, USA, Canada, UK, Australia, Singapore, France, Germany, Spain, UAE.

- Clients/Partners in top 25 major countries of the world by Dec 2032. In this 5 year period from Jan 2028 to Dec 2032, we will aim to include many other countries such as: Japan, South Korea, Malaysia, Indonesia, New Zealand, Mexico, Brazil, Argentina, Chile, Egypt, Turkey, Saudi Arabia, South Africa, Kenya, Qatar, etc. The learnings and operating model of Green Earth will be well established by Dec 2027, and we can have Green Earth team members in all these countries.

9. Technology & System Architecture

We will use Algorand blockchain protocol for creating the Green Earth blockchain system.

Algorand blockchain is best suited for high throughput ecommerce systems, and can process upto 6000 transactions per second, and with one of the lowest cost per transaction in the entire blockchain industry. Transactions are completed within seconds and the Algorand network has maintained highest levels of uptime, making it ideal for any transaction oriented blockchain project like Green Earth.

We will use a hybrid stack: Algorand blockchain for smart contracts related to tokens, wallet creation, payments, and governance; and SQL database with a Node.js application server providing the API for transactional operations between the Clients/Partners and the Green Earth blockchain system.

IPFS will be used for file storage, in the form of NFTs (non-fungible tokens), which is the current best practice for storing and sharing media on the blockchain. This approach will be applicable for images and videos related to food products, farming, food processing, etc. The images and videos taken during ongoing quality control measures will also be uploaded on the blockchain in the form of NFTs.
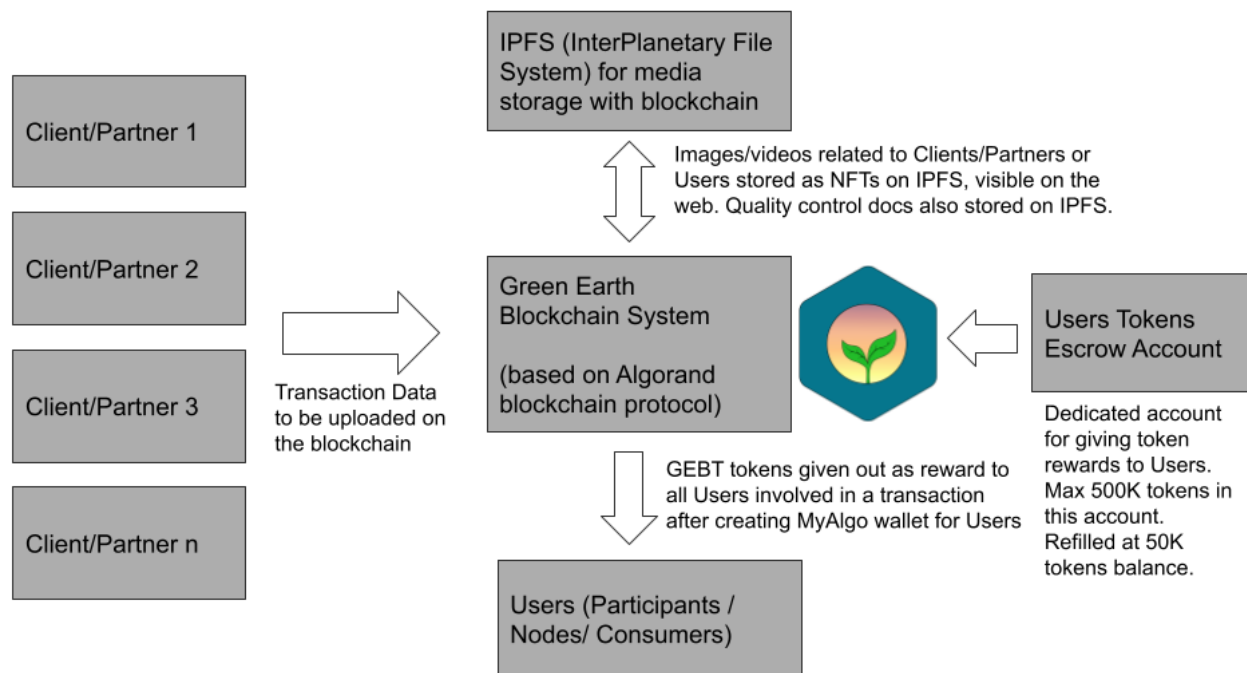
9.1 Benefits of using Algorand Blockchain

(a) Decentralization: The Algorand blockchain is entirely decentralized, which means there is no powerful central authority or single point of control. A unique committee of users is randomly and secretly selected to approve every block. Nodes are run by entities representing diverse backgrounds across many different countries.
- Fair & Transparent: Control is distributed among all individual network participants
- Accurate: No risk of data being manipulated, lost or destroyed
- Secure: Fault tolerant with no special group of users for an attacker to target

(b) Permissionless:
- Public & Open to All: Users do not need the approval of a trusted authority to use the Algorand blockchain. There is a single class of users and no gatekeepers. Every participant can read every block and have the opportunity to write a transaction in a future block.
- Low Cost to Participate : The Algorand platform requires minimal processing power and modest IT resources to join. All online users who possess algos are automatically eligible to participate in block consensus.

(c) Open Source: The Algorand node repository is open sourced and publicly available for anyone to audit, use, and build upon. The platform is founded on principles of transparency, inclusivity, and collaboration and maintained by a dedicated community with a shared vision of a decentralized, borderless future.

(d) Network Level Security: Partition Resilience
Algorand protocol is secure against an adversary who may achieve complete control over the network and dictate which users receive which messages and when. Even when the network is partitioned into multiple non-connected networks, Algorand's blockchain does not fork and users' balances remain secure. An adversary is never able to convince two honest users to accept two different blocks for the same round. All transactions that appear on the blockchain are always final. Algorand is able to recover after a partition is resolved and guarantees that new blocks will be generated at the same speed as before the partition.

(e) Scalability:
- No computation resources wasted solving cryptographic puzzles.
- Only a small subset of users are selected to participate each time a new block is generated, and users do not need to communicate with others to determine whether they are selected.
- Number of selected users doesn't change as the total number of network users increases.

- Total communication cost of the network scales linearly.
- Blocks typically finalize within seconds, to achieve significant scalability that is similar to global payment systems like Mastercard and Visa.

9.2 System Security

The Algorand blockchain provides a decentralized, scalable and secure protocol making it an excellent medium to share information, however the current maximum note size for an Algorand transaction is 1KB limiting the amount of transferred data. Large files cannot be efficiently stored on blockchains. On one hand, the blockchain becomes bloated with data that has to be propagated within the blockchain network, and on the other hand, since the blockchain is replicated on many nodes, a lot of storage space is required without serving an immediate purpose.

IPFS is a peer-to-peer file sharing system that can be used to efficiently store and share large files. It relies on cryptographic hashes that can easily be stored on a blockchain. Nonetheless, IPFS does not permit users to share files with selected parties. This is necessary, if sensitive or personal data needs to be shared. File-content encryption before uploading to IPFS protects sensitive data from unauthorized access. Algorand blockchain technology is then utilized for keeping track of the file hashes and file names, guaranteeing transparency and speed. Thus, Algorand-IPFS integration allows us to create decentralized applications with secure digital content.

Measures to improve system security.
- Periodic system audits will be done by external blockchain experts.
- Ongoing system testing of smart contracts will be done by the Security team.
- System passwords will be stored with double backup within the core team.
- Regular blockchain system snapshots will be taken for rapid recovery in case of any major breakdown in Algorand blockchain.

10. Tokenomics

Name: Green Earth Blockchain Token
Ticker Symbol: GEBT
Total Supply: 1 billion (max total supply, pre-defined)
Token Creation Date: 03 Sep 2022
Token Price (starting): 1.00 USDT
Token Type/Role: Utility Token
Development Status: Beta version (ready for Users and transactions)
Organization Structure: Decentralized
Open Source: No
Consensus Mechanism: Not Mineable
Algorithm: Pure PoS (Algorand Blockchain)
Smart Contracts: User Transactions, Wallet Creation, Token Allocation to Users

10.1 Token Distribution Plan

Token Release Mechanism:
- Total 1 billion tokens (max total supply, premined on 03 Sep 2022)
- 800 million tokens are available for release –to be distributed gradually among various stakeholders between Oct 2022 to Dec 2028. The tokens are available for release, but the actual distribution to Investors, Community and Users will be based on project progress.
- 800 million tokens are available for release –to be distributed gradually among various stakeholders between Oct 2022 to Dec 2028. The tokens are available for release, but the actual distribution to Investors, Community and Users will be based on project progress.

Green Earth Blockchain Token (GEBT) - Distribution Plan	
Users	50.00%
Community	10.00%
Investors	20.00%
Founders	20.00%
Total	**100.00%**

Please Note: Some of the tokens earned by Users, Community, and Team Members may become available to Investors for buying through the exchanges, when Users, Community, and Team Members put their tokens for sale on exchanges. Investors can buy these tokens. It will help liquidity and price stability for tokens, and benefit all stakeholders.

10.2 Token Release Schedule

The total token supply is finite and predefined right at the start as 1 billion tokens.
The tokens for Founders, Investors, and Community will be released at the project start.
They represent 50% of the total supply, or 500 million tokens.

The remaining 50% tokens are for Users.
As seen in the case of Bitcoin, a finite token supply combined with a gradual release schedule has demonstrated clear benefits of limited and controlled supply of tokens over a long period of time. Green Earth token (GEBT) aims to take a similar path.
Tokens for Users will be released gradually over a 10 year period as per the following table.

Tokens Release Schedule for Users	Cumulative Total
10% (100 million tokens) released in Sep 2022	10%
5% (50 million tokens) released in Jan 2025	15%
5% (50 million tokens) released in Jan 2026	20%
5% (50 million tokens) released in Jan 2027	25%
5% (50 million tokens) released in Jan 2028	30%
5% (50 million tokens) released in Jan 2029	35%
5% (50 million tokens) released in Jan 2030	40%
5% (50 million tokens) released in Jan 2031	45%
5% (50 million tokens) released in Jan 2032	50%
50% (500 million tokens) released by Jan 2032	**50%**

Please Note: The 200 million tokens for Users from Jan 2029 to Jan 2032 will be released from the Reserve Account, in which exactly 200 million tokens are locked till Jan 2029.

10.3 Governance Policies

1. All token sale transactions involving the Founders' tokens, will be published on the Green Earth website on Reports page, which will be visible online to everyone.

2. Founders can sell a maximum 1% of total token supply (10 million tokens) in a given quarter. Therefore, even if the Founders decide to sell their tokens every quarter, it

will take a minimum of 20 quarters (5 years) for the Founders to exhaust their token holding. This policy aims to ensure that Founders don't sell a large number of tokens within a short span of time, which can put significant selling pressure on the token prices. This policy also eliminates the risk of token dumping by the founders.

3. Any transaction that involves more than 1% of total token supply (10 million tokens) will be executed only after approval of all four founders.

4. Tokens meant for Investors (20% of total supply) may be sold on an ongoing basis to create capital for Green Earth project work.

5. Maximum 5% of total token supply (50 million tokens) can be sold from the Investors account in a calendar year. This policy aims to ensure that tokens meant for Investors are used judiciously by the Green Earth project, and it will take at least 4 calendar years before all tokens meant for Investors are sold, thereby providing a regular flow of capital for Green project growth over the next 4-5 years, which is enough to build a strong foundation, and establish a global presence.

6. Tokens meant for Community (10% of total supply; 100 million tokens) may be released on an ongoing basis to reward the efforts by Green Earth community members. The message of transparency being created by Green Earth blockchain will travel worldwide through our Community members and we will reward them for their efforts.

7. **Green Earth Users Council:** For ongoing improvement and growth of the Green Earth project, we will create a Users Council having 100 Users of Green Earth token, based worldwide. Every GEBT token holder will be eligible for getting selected into this Users Council, regardless of his/her token holding, but based on the merit of their application to be a member of the Users Council. The founders will also be a part of this 100 member group. Membership will be for 1 year and all Users will be encouraged to apply and participate. The Users Council will enable us to innovate faster, and stay in sync with evolving market trends. The members will receive some bonus tokens from the Community account for their contribution.

Disclaimer: Green Earth Blockchain Token (GEBT) is a utility token meant for the working of the Green Earth Blockchain project. The GEBT token does not represent any asset or security, and there are no guarantees of any type regarding the token price appreciation over any timeframe.

10. Project Economics

Green Earth blockchain project will have two types of paying Customers.
- **Clients** (Farmers and Food producers who will use Green Earth blockchain for delivering their products directly to their customers/consumers)
- **Partners** (Ecommerce platforms with a focus on natural food products)

Clients and Partners worldwide will benefit from the authentication and certification process using Green Earth blockchain, and will be paying a small fraction (1 to 10%) of the transaction value to enable the operations and growth of Green Earth blockchain.

We expect most of the initial Customers to pay 3-5% of the transaction value to Green Earth in return for our blockchain services. This payment to Green Earth will depend on the type of product or service. For example, higher end natural products (like honey, spices, saffron, salmon, olive oil, coffee, etc), which can absorb a higher blockchain fee, while they benefit from the global visibility created by Green Earth for their products. In our vision, product listing on Green Earth blockchain will become an essential marketing strategy for many organic food companies.

It's a win-win, because our Clients/Partners will earn more trust and sales from their participation in Green Earth blockchain, and their sales growth will power Green Earth to become bigger, helping us increase the geographical coverage, and have better infrastructure and teams on the ground to further improve authentication, quality control, and certification process.

Partner#1: Due to the strong value proposition of Green Earth blockchain, we have an immediate adoption by the Ganga Project in India, which will be our strategic Partner. Ganga is a new ecommerce platform supported by many organizations like Aranyaani, Avani, Sahjivan, UBA-IITK, and their affiliates, having experience in all facets of farming and food production in India, and experience in food exports to Middle East, Europe and North America. Ganga Project has a combined network of farmers and food producers with farming on over 500K acres, in 500+ villages in India, with loyal customers who will become the first Users of Green Earth blockchain and our tokens.

There are many potential Clients and Partners globally, who would be interested in adopting Green Earth blockchain, because its utility in supporting natural and sustainable consumption is unique. We will onboard them one by one over the next 3-4 years.

Project income may be in the following: GEBT, ALGO, BTC, LTC, DOGE, BNB, USDT.
Project expenses may be in the following: GEBT, ALGO, DOGE, LTC, USDT.

Notes of Token price growth: Green Earth project will be giving GEBT tokens as rewards to all Users of the Green Earth blockchain. And using the project income earned from Clients/Partners, Green Earth will aim to buy GEBT tokens from the crypto exchanges on an ongoing basis. This will absorb the token supply coming on the crypto exchanges, and provide valuable buying support for the tokens. As the Green Earth project grows in size and income, the buying power will also increase.

The number of tokens given as rewards will constantly decrease with time as the natural product prices increase. For example, the number of tokens given as reward for buying 1 kg of Forest Honey will remain the same, even if that honey price doubles in the coming years. So the income to Green Earth is based on the product sale price, while token rewards are based on per unit quantity of the natural product.
Thus, GEBT token will also grow with food price inflation.

Following is the price chart of natural forest honey in the US market, over a 10 year period from 2006 to 2015.
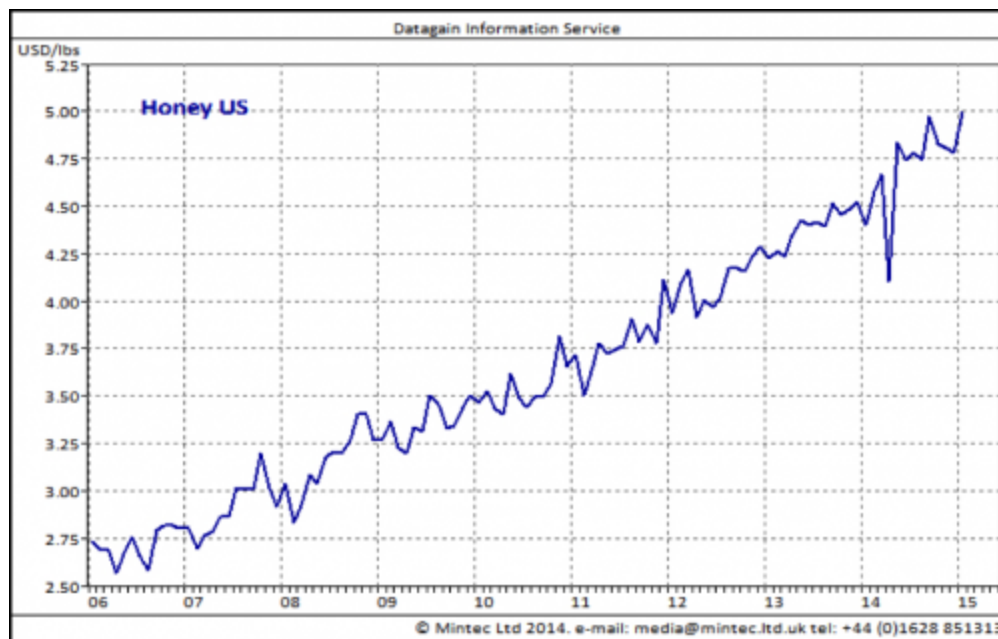
Here is an example of the above natural forest honey in the US market.
https://www.amazon.com/Breitsamer-Honig-Forest-Honey-Ounce/dp/B003825A8E/

The current price for such natural forest honey is about $13-16 per lb in the US market. So the price has nearly tripled in the last 7 years since 2015, and the price chart has continued in the same uptrend even till today in the year 2022.

If Green Earth blockchain was dealing only in this one product (natural forest honey), then the price chart of GEBT token would be similar to the above price chart.

However, Green Earth blockchain will support a wide range of natural products in 100+ product groups, so the price chart of GEBT tokens will reflect the combined price rise of a large basket of natural products. In addition, the global adoption of Green Earth blockchain will give income growth that can be used for buying GEBT tokens from the exchanges ongoing basis, which can enable higher token prices.

Users, Community, and Team Members can convert their GEBT tokens on exchanges. Therefore we want to have at least 2-3 such exchanges that can cover Users worldwide. GEBT token may also get listed on leading exchanges like Binance and Coinbase once the token marketcap enters top 100 marketcap rankings on CoinMarketCap.com

We will aim to maximize the adoption of Green Earth project and Green Earth tokens (GEBT), through useful blockchain apps for Users, Food Producers, and by promoting products and services related to nature and natural ecosystems.

12. Team Roles & Responsibilities

Green Earth will need multiple roles and team effort to achieve the project goals over the next 5-10 years. There are four groups in the Green Earth project team:
- Engineering
- Operations
- Business Development
- Trust & Safety

The team is currently developing the beta version, which can be used to onboard the initial 100K Users. The following Roles will be filled gradually along with the project's growth.

Engineering
================================
1. Director of Engineering
2. Blockchain Development Lead
3. Blockchain Development Engineer
4. System Architect
5. User Experience Lead
6. System Integration Lead
7. System Performance Lead
8. Cybersecurity Lead
9. System Data Manager

Operations
==================================
1. Director of Operations
2. Client/Partner Support Manager
3. User Support Manager
4. Blockchain Data Analyst
5. Quality Control Lead
6. Quality Control Analyst
7. Senior Food Scientist
8. Junior Food Scientist
9. System Availability Manager
10. Special Operations Lead

Business Development
=================================
1. Director of Business Development
2. Business Development Lead India

3. Business Development Lead USA
4. Business Development Lead Canada
5. Business Development Lead Europe
6. Business Development Lead Middle East
7. User Engagement Manager
8. Social Media Marketing Manager
9. Corporate Accounts Manager

Trust & Safety
================================
1. Director of Trust & Safety
2. User Safety Lead
3. Audit & Security Lead
4. Quality Control Lead
5. Quality Control Analyst
6. System Data Backup Lead
7. Media & Communications Manager
8. Social Causes Support Manager

For some of the above roles, we may have multiple people in a given role, based on the growth being experienced by the Green Earth project. To achieve the project goals, we may need more than 100 team members over the next 5 years.

To learn more, please visit our website: www.GreenEarth.ai
For any questions, comments or suggestions, please email: team@greenearth.ai
Thanks for your time and interest in our project.

Disclaimer: Green Earth Blockchain Token (GEBT) is a utility token meant for the working of the Green Earth Blockchain project. The GEBT token does not represent any asset or security, and there are no guarantees of any type regarding the token price appreciation over any timeframe.

Appendix A:
Global Food Industry will be nearly $15 trillion USD in 10 years.

(1) The "global food & grocery retail market size" was about $11.3 trillion USD in 2021 and expected to grow at 3% CAGR from 2022 to 2030, or about $15 trillion USD by 2030. If we can get even 1% of the global food industry to adopt Green Earth blockchain for tracking food authenticity, then $150 billion worth transactions can come on Green Earth blockchain annually by 2030.

(2) Within the global food market, the "global organic food market size" was about $227 billion USD in 2021, and it can grow to $700 billion by 2030. The organic food market should be more open to authenticity linked blockchain, and we can get early adoption from them. Even 1% of this market will be $7 billion worth transactions on Green Earth blockchain annually by 2030.

References:
https://www.grandviewresearch.com/industry-analysis/food-grocery-retail-market

https://www.statista.com/statistics/869052/global-organic-food-and-beverage-market-value/

Appendix B:
Nearly 70% of Milk in India is Adulterated or Contaminated.

The results of a first-of-its-kind survey on milk by the Food Safety and Standards Authority of India (FSSAI) in the year 2011 revealed very distressing data —most Indians are consuming detergents and other contaminants through milk.

70% milk samples collected across India by Food Safety and Standards Authority of India (FSSAI) did not meet the quality standards.

The National Survey on Milk Adulteration 2011, a snapshot survey, was conducted to check the contaminants in milk, especially liquid milk, throughout the country. The study found that due to lack of hygiene and sanitation in milk handling and packaging, detergents (used during cleaning operations) are not washed properly and find their way into the milk. Other contaminants like urea, starch, glucose, formalin along with detergent are used as adulterants. These adulterants are used to increase the thickness and viscosity of the milk as well as to preserve it for a longer period. The study notes that the consumption of milk with detergents is hazardous to health. About 8% of the samples had detergents.

Diverse Results across the States in India

Water is the most common adulterant in milk. It reduces the nutritional value of milk. If contaminated, water poses a health risk to consumers. Samples were collected from 28 states and five union territories. The worst performers were Bihar, Chhattisgarh, Odisha, West Bengal, Mizoram, Jharkhand and Daman & Diu, where non-conformity with food safety standards was 100%. The most common reason given for non-conformity is the difference between demand and supply of milk. In order to meet the demand, the suppliers adulterate the milk and increase the quantity. Samples from Goa and Puducherry were 100% compliant.

Nearly 70% samples failed to meet the standards set for milk. The problems were more pronounced in the milk sold loose as compared to the packaged milk. Samples collected from rural areas fared better with only 30% non-compliance as compared to urban areas.

Of the total non-compliant samples, the highest, nearly 46%, belonged to the category of low Solid Not Fat (SNF) and this was due to dilution of milk with water. The higher the SNF, the better the quality of milk. The other parameter for milk was the presence of skimmed milk powder, which was present in nearly 548 samples, out of which 477 samples contained glucose. A total of 1791 samples were tested.

Apart from fat, SNF, skimmed milk powder and glucose, the survey was also looking for the presence of neutralisers, acidity, hydrogen peroxide, sugar, starch, urea, salt, detergent, formalin and vegetable salt. Studies show that adulterants like salt, detergents and glucose add to the thickness and viscosity of the milk, while starch prevents curdling of milk.

These adulterants are hazardous and cause irreversible damage to the organs. The Indian Council of Medical Research in an earlier report had mentioned that detergents in milk caused food poisoning and gastrointestinal complications; The other synthetic compounds cause impairments, heart problems, cancer and even death. The immediate effect of drinking adulterated milk with urea, caustic soda and formalin is gastroenteritis but the long term effects are known to be far more serious.

FSSAI has asked all its state and union territories enforcement divisions to strengthen checks on milk producers to ensure they are complying with the Food Safety and Standards Act.

https://www.cseindia.org/adulterated-milk-is-what-indians-are-drinking-3691

Appendix C:
Food Adulterants and their Harmful Effects on Health

Food Products	Adulterants	Harmful Effects
Milk	Unclean Water, Starch, Detergents, Urea	Stomach disorders, Organ failure of liver and kidneys and Cancer
Tea	Used tea leaves processed and coloured	Liver Disorder
Coffee Powder	Tamarind seed, date seed powder, chicory powder	Diarrhea, Stomach disorder, Giddiness and Joint pains
Cheese	Starch & Less Fat content	Less - nutritive value
Wheat and Millets	Ergot (a poisonous fungus)	Organ failure of liver and kidneys
Sugar	Chalk powder	Stomach Disorders
Lentils (Pulses)	Kesari dal	NeuroLathyrism and Cancer
Black Pepper powder	Papaya Seeds and Wild Berries	Stomach and Liver problems
Mustard powder	Argemone seeds	Epidemic Dropsy and Glaucoma
Asafoetida	Foreign resins galbanum, colophony resin	Stomach problems, Dysentery
Turmeric powder	Yellow aniline dyes, Non-permitted colorants like metanil yellow, Tapioca starch	Stomach problems, Cancer
Chili powder	Brick powder, saw dust, artificial colors	Stomach problems, Cancer

Appendix D:
Green Earth Rating Score by Product Groups

The following table has 40 product groups that will be covered by Green Earth Blockchain in the first version of the system. New product groups will be added as we onboard new Clients/Partners worldwide. Every product group on Green Earth Blockchain will start with a rating score, which may evolve with time based on the supply/demand factors.

Score	Product Group	Examples of Products
100	Rare Honeys	Himalayan Honey, Small bee honey
100	Rare Herbs	Hathikand, Kali Haldi, Van Tulsi, Garlic chives, Lotus stems etc
100	Traditional Milk products from native cows	A2 Desi Ghee
85	Common Tree Honeys	Semal Honey, Mahua Honey, Forest honey
80	Rare/Exotic Variety berries	Achar, Mulberries
80	Forest Leafies	Hathpan, etc
70	Rare/Exotic Variety fruits	Gangetic Guavas, Himalayan Apples, Natural Papayas, Malta, Tendu, Gondhraj lemons, Mahua
65	Berries	Jamuns, Bers, Karonda, Cranberry, Gooseberry
65	Bio diverse vegetables	Sweet Potato, Wild tomatoes, etc
60	Fresh Fruits from Plateau/Plains	Mango, Jackfruits, Sitafal, Chikoo, Lemons , bael, etc
60	Millets naturally processed	Ragi Flour, Kodo, Kutki, Maize, Amaranth
60	Common Herbs	Giloy, Turmeric, Vetiver, Aloe Vera, etc
60	Exotic food products from exotic/rare flora	Malta Squash, Burhans Juice
55	Traditional/complex recipe based products	Buknu, Sunmade Pickles, Natural Vinegars
55	Exotic Oils	Mahavishgarbh Oil,Bringraj Oil,Malkangini Oil,Somraji Oil,Jyotishmati Oil, Vetiver Oil, Moringa Seed oil
55	Exotic Natural Cosmetics/ personal care	Multani mitti Soap, Rosewater, Dant Manjan
55	Natural Health products - Powders from Endangered Trees/Plants	Ashwamegh Churn, Kesh pal Churn,Madhumehnashak Churn,Tikhur Powder,Hingwashtak Churn,Behrda Churn,Vaishvanar Churn,Amlakyadi Churn,Punarnava Churn,Navayas Churn,Krimighra Churn,Pradrantak Churn
50	Exotic Home products	Vetiver Loohfahs

50	Exotic food products from common flora	Mahua Squash, Mahua Jam, Amla Murabba, Bael Murabba, Jamun Chips, Vetiver Bags
50	Common Healthy food products	Aloe vera Juice
50	Natural Health products - Powders from Trees/Plants	Aamlaki Churn, Ashwagandha Churn, Safed musli, Mehendi,Kauch Churn,Ritha Churn,Shikakai Churn,Sarwjwarhar Churn,Triphala Churn,Shatavri Churn, Mulethi Churn, Bael Churn,Brahmi Churn
45	Traditional food products from exotic/rare flora	Karonda Pickle, Haldi Pickle, Mahua Pickle, mahua Ladoo, Musali Ladoo, Roasted flax seeds
45	Handmade Natural Cosmetics/ Personal Care	Chandan soap, Potato soap, Goat Milk Soap, Aelovera Neem Soap, Tulsi soap
45	Food products from Millets	Ragi Cookies, Kodo Cookies,
40	Traditional Products	Mahua pattal
40	Common Utility products	Phul Jhadu
35	Common Oils from trees	Mahua oil
35	Handmade Home décor products from Trees/plants	Marigold, semal, etc Potpourri
35	Common/ modern food products from Common flora	Amla Kisni, Jamun Juice, Amla Juice, Fruit Juices
35	Food products from Grains/ pulses	Moong papad
35	Native pulses traditionally processed	Arhar, urad
35	Native variety grains	Kanki rice, Black Wheat, Katua Wheat
30	Traditional food products	Mango Pickles, Amla Pickles, Jaggery etc
30	Common Powders	Turmeric/Haldi powder, Amchur powder, Dhaniya powder etc.
25	Common oils from lower Common flora	Mustard Oil, Lemongrass oil
20	Native Pulses/Lentils	Arhar, Urad
15	Grains traditionally processed	Wheat flour ,etc
10	Candies from common fruits	Tamarind/Imli Candy, Amla candy, Mahua chickey
5	Common Grains	Organic Rice, Wheat
5	Common Vegetables	Tomatoes, Beans, Brinjal/Aubergine, Okra, etc

Appendix E:
28% of food samples tested in 2018-19 found to be adulterated or substandard: FSSAI Annual Report

Nearly 28 percent of the food samples tested for quality were found to be adulterated, according to the 2018-19 annual report of the Food Safety and Standards Authority of India (FSSAI).

The FSSAI data indicates a consistent rise in instances of food adulteration in the country. Out of the 1,06,459 food samples analysed by the National Accreditation Board for Testing & Calibration Laboratories (NABL) in 2018-19, 28.56% were found to be non-conforming. UP and Jharkhand continue to be among the top five states with the highest adulteration rates in samples tested in the last three years.

The proportion of adulterated or misbranded food sold in India has nearly doubled in the last 8 years. In the year 2012-13, 15 percent of the food samples tested were found to be non-conforming to prescribed standards. Over the years, this has gradually gone up and now stands at 28.56 percent for 2018-19, as per the latest data available.

The FSSAI splits these non-conforming samples into three categories - unsafe, sub-standard and those with labeling defects. A large chunk of the samples analyzed by the FSSAI public labs falls under the substandard category. It is imperative, however, to note that this data does not mean that 28 percent of all the food sold in India is adulterated. It indicates that almost one-third of the samples collected pan-India were found to be non-conforming.

The food safety officers in each state regularly collect random samples of milk, water, packaged food among other categories to check for quality. In 2017-18, about 25 percent of the food samples of the total 99,353 were found to be non-conforming. States like UP and Jharkhand have been reporting high adulteration rates based on samples collected for the last 2-3 years. An analysis of the latest annual report (2018-19) shows that 52.32 percent of the samples sourced in Uttar Pradesh have been found to be non-conforming. This is followed by Tamil Nadu and Jharkhand which have 45.39 percent and 41.68 percent adulteration rates based on samples obtained respectively. States with the lowest adulteration rates include Arunachal Pradesh, Goa and Uttarakhand.

https://www.cnbctv18.com/healthcare/28-food-samples-assessed-by-fssai-found-to-be-adulterated-7403851.htm

Appendix F:
Top 10 Most Adulterated Foods in USA - Michigan State University Study

Sometimes reading the list of ingredients or the nutrition facts label may not tell the real story. Food adulteration, or "food fraud," occurs when an ingredient is replaced partially or fully with something different - without the knowledge of the consumer. A research study by the Michigan State University published in the Journal of Food Science researches food adulteration to see how to better protect the food supply in the USA.

Why does food adulteration occur? "It's mostly technical and economical. However, there are some cases where there can be serious health consequences." according to Dr. John Spink, study author and assistant director of the anti-counterfeiting and product protection program at Michigan State University.

After reviewing more than 1,300 records and creating a database of information, researchers pinpointed the most frequently adulterated foods in the USA.

1. Olive Oil (by adding cheaper oils into high quality Italian Olive Oil)
2. Milk (milk adulteration is a global problem with highest occurence in developing countries. In fact, China has also experienced several incidents of milk tainted with the industrial chemical melamine, added to milk and infant formula to make them appear more rich in protein)
3. Honey
4. Saffron
5. Orange Juice
6. Coffee
7. Apple Juice
8. Grape wine (in some instances, a toxic sweet chemical called diethyleneglycol has been added to wine)
9. Maple syrup
10. Vanilla extract (tampering includes substituting naturally-derived vanilla with synthetically-produced vanilla)

https://www.cbsnews.com/media/food-frauds-10-most-adulterated-foods/

Appendix G:
Fish fraud/adulteration is a worldwide problem

The global fish and seafood market is valued at over $100 billion USD, and it's one of the most valuable food product groups, which makes it a prime target for fraud/adulteration.

A recent study on fish sold to consumers in the United States, which found that 20% of the samples tested were mislabelled/adulterated. The study, by Oceana, a US non-profit dedicated to protecting the world's oceans, sampled 449 fish purchased from shops and restaurants in 24 US states and the District of Columbia. DNA testing was used to establish the true identity of the samples.

One-third (33%) of all shops and restaurants checked sold mislabelled seafood. Fish was most often misdescribed on restaurant menus (26%) and at smaller markets (24%). An eighth (12%) of samples from supermarkets was found to be mislabelled. The most commonly mislabelled species were sea bass (55%) and snapper (42%).

Oceana says fish fraud is a worldwide problem, covering up illegal fishing and misleading customers trying to buy sustainable seafood. Illegal fishing refers to any fishing that takes place against national laws or international obligations, against conservation or other stock-management measures or without other authorization. It can deplete fish stocks, put those fishing illegally at an unfair advantage and damage marine habitats.

The World Economic Forum, in a White Paper published in 2019, called for renewed action to stamp out illegal fishing, which it said accounted for a third of the fish taken from the oceans at an annual cost to the global economy of up to $23.5 billion.

The Forum urged nations to work together regionally and to use digital data-sharing technology to trace the source of fish that comes into ports worldwide. In particular, it called for investment in digital catch-monitoring to replace the current largely paper-based systems.

https://www.weforum.org/agenda/2019/08/a-seafood-fraud-investigation-dna-tested-fish-sold-in-the-us-here-s-what-they-found/

Appendix H:
Message by US Food & Drug Administration (FDA)

Economically Motivated Adulteration (EMA) occurs when someone intentionally leaves out, takes out, or substitutes a valuable ingredient or part of a food. EMA also occurs when someone adds a substance to a food to make it appear better or of greater value. For example, when manufacturers add a cheaper vegetable oil to an expensive olive oil but sell the product as 100% olive oil, they are cheating their customers. We refer to this type of EMA as food fraud.

Food fraud is a common type of EMA that the FDA deals with, but EMA also occurs with other products, including animal food and cosmetics. Some types of EMA are also misbranding violations.

Estimating how frequently food fraud occurs or its exact economic impact can be hard because food fraud is designed to avoid detection. Outside estimates by experts have found that food fraud affects 1% of the global food industry at a cost of about $10-$15 billion a year, although some more recent expert estimates put the cost as high as $40 billion a year.

EMA isn't just an economic issue, though. Depending on what is added, substituted, or left out, food fraud can lead to health issues, some major, and even death. Some examples include lead poisoning from adulterated spices and allergic reactions to a hidden, substituted ingredient that contains even just one food allergen.

We work on several fronts to protect consumers from the potential health risks and economic harm from food fraud.

Appendix I:
Message by Canadian Food Inspection Agency (CFIA), Canada

Food fraud may occur when food is misrepresented. It can pose serious health risks if, for example, unidentified allergens or hazardous materials are added to food products. It can also have an economic impact on the buyer (for example, paying for a product that is actually of lower quality).

Types of food fraud:

1. Substituting: Substituting a product with something of a different character or quality. For example, substituting Pollock for Cod.
2. Adulteration: Adulterating or diluting a product by mixing in other ingredients or elements and not declaring them on the label. For example, adding sugar syrup to honey, adding sunflower oil to olive oil, adding fillers to ground spices, or adding apple juice to pomegranate juice.
3. Mislabelling: Mislabelling a product as something it's not. For example, labeling farmed Salmon as wild Salmon, or labeling apples as organic when they aren't certified as such. It could also include providing a false net quantity declaration.

Making false claims or misleading statements to make the product appear to be something that it isn't. For example, claiming a product is "preservative-free" when it contains preservatives, or is "sodium-free" when the thresholds aren't met.

Attention to food fraud is growing: In Canada, it's prohibited to sell food that is falsely labeled, but misrepresentation may still happen and is an emerging issue around the world. It's hard to know exactly how much food fraud there is in Canada. Globally, all forms of food fraud are estimated to cost the global food industry between $10 and $15 billion per year, affecting about 10% of all commercially sold food products, according to the U.S. Grocery Manufacturers Association.

Worldwide, food fraud is reported most often in: olive oil, honey, dry spices, fish, fruit juices, and organic food products.

https://inspection.canada.ca/food-labels/labelling/consumers/food-fraud/what-is-food-fraud/eng/1648661693364/1648661694161

Appendix J:
Message by UK Food Standards Agency (FSA)

Consumers should have confidence that their food is safe and what it says it is. We define food crime as serious fraud and related criminality in food supply chains. This definition also includes activity impacting on drink and animal feed. It can be seriously harmful to consumers, food businesses and the wider food industry.

The UK Food Standard Agency (FSA) works to prevent, detect and investigate food quality across the UK. The National Food Crime Unit (NFCU) under the FSA focuses on seven types of food crime/adulteration:

1. Adulteration - including a foreign substance which is not on the product's label to lower costs or fake a higher quality
2. Substitution - replacing a food or ingredient with another substance that is similar but inferior
3. Misrepresentation - marketing or labeling a product to wrongly portray its quality, safety, origin or freshness
4. Theft - dishonestly obtaining food, drink or feed products to profit from their use or sale
5. Waste diversion - illegally diverting food, drink or feed meant for disposal, back into the supply chain
6. Illegal processing - preparing meat and related products in unapproved premises or using unauthorized techniques
7. Document fraud - making, using or possessing false documents with the intent to sell or market a fraudulent or substandard product.

Green Earth Notes: All the above 7 points are a direct result of lack of transparency in the food supply chain, and Green Earth blockchain aims to address this problem at its core, by tracking the food products right from the point of production and processing, through the logistics, till the food products are delivered to customers. The entire food supply chain with individual transactions will be visible on Green Earth blockchain.

To learn more, please visit our website: www.GreenEarth.ai
For any questions, comments or suggestions, please email: team@greenearth.ai
Thanks for your time and interest in our project.

Disclaimer: Green Earth Blockchain Token (GEBT) is a utility token meant for the working of the Green Earth Blockchain project. The GEBT token does not represent any asset or security, and there are no guarantees of any type regarding the token price appreciation over any timeframe.