



CZero Mobility

ICO Whitepaper

A carbon zero initiative. Let's build a better future for
our children.

CZero Electromotives & Ecosystems Private Limited

Team CZero

CZERO ELECTROMOTIVES & ECOSYSTEMS PVT. LTD.

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Prepared by:

The **CZero's Team**

Special Thanks To

Micro, Small & Medium Enterprises Department Government of Odisha and Department of Industrial Policy & Promotion, India to recognized startup under Start Up India.

Our Startup India profile

<https://www.startupindiahub.org.in/content/sih/en/profile.Startup.5abe34e3e4b026aa2861a020.html>

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1. Executive Summary

In recent years, climate change and energy security concerns have given rise to a major need to switch to green energy. Majority of the oil imports for most nations are due to the demand in transportation sector. Growing concerns for environment and energy security clubbed with rapid advancements in technologies and innovative newer business models are transforming the automotive business. Automotive industry globally is at the cusp of a major transformation.

Today electric mobility is the greatest opportunity for the planet to utilize abundance of clean energy and gradually exit from fossil fuel.

THE PROBLEM

Electric mobility is the greatest opportunity for the planet to utilize abundance of clean energy and gradually exit from fossil fuel. However, there are various challenges that need to be addressed to give enough momentum to electric mobility before the planet suffers an irreversible damage. Prohibitive cost of batteries, slow charging, limited life of batteries and meager numbers of charging infrastructure, associated support and service are to name a few challenges to be addressed.

THE SOLUTION

With patented products, CZero has developed and patented several products such as smart charging station, wireless charger, battery swapping station and a few more. All these infrastructure components will be brought on to a blockchain. Every such device and electric vehicles will be fitted with an IOT chip. These IOT devices will send usage information such as distance travelled, or electricity consumed in kilowatt. **CZMT Coin is backed by the carbon emission savings done using electric vehicles instead of fossil fuels.**

This paper details out CZero's blockchain based approach, ambitions, innovative ecosystem model, patented products and strategy to solve the above-mentioned problems.

2. CZero's Background

CZero Electromotives & Ecosystems is a startup based out of India, a recognized startup by Govt of India. It comprises of highly experienced people with relevant background in automotive, technology and entrepreneurship.

With patented technology, the CZero Token aims to become the de-facto currency of choice for Electric Vehicle adhering community, a one of its kind Eco Coin, The Carbon credit earning for an individual. The Token being backed by Carbon Credit savings already has a presumptive value based on a globally backed standard. The intent of CZero token is to spread the usage of Electric Vehicle Community worldwide given the motivation to earn these tokens along with the noble cause of leaving a better living environment for our future generations. The CZero tokens are designed to be redeemable against services or products on the CZero & associated likeminded partner networks, hence providing a monetizable value to the token.

The focus of CZero is to manufacture technically prudent but affordable charging infrastructure products such as

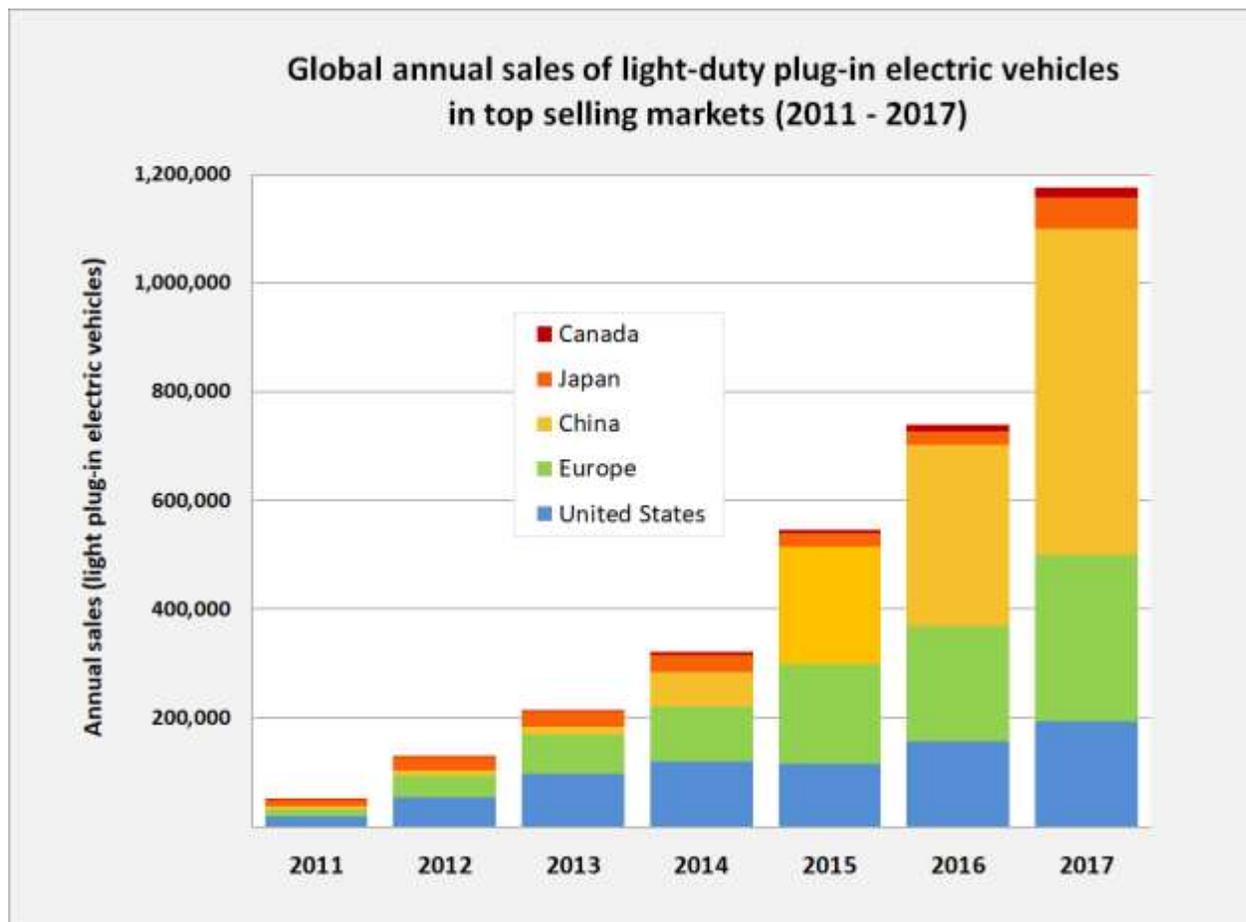
- AC Level 2 charging station
- DC Level 3 Fast Charging station
- Wireless Chargers
- Battery Swapping Station
- Custom packaged Li-Ion batteries
- Manage the network of commercial, community and personal charging stations
- An Innovative blockchain based payments and rewards system
- Along with 24x7 support and service.

3. A primer on electric vehicles opportunity

Electric Vehicle or EV is a vehicle powered by an electric motor rather than a traditional internal combustion engine, which conventionally uses fossil fuels. On the other hand onboard rechargeable batteries that could be charged using the common household electricity power an EV's motor. EV's simplistic technology offer immense potential to dramatically reduce air pollution by zero greenhouse gas emissions, hence resulting in positive climate change.

With electric vehicle costs steadily falling, the transition continues to become more feasible. This potential is enabled and made compelling by the ubiquity of electricity and the growing. Availability of low-carbon, renewable energy sources.

Now nearly all-mainstream car companies are developing or already have products in the electric vehicle space as the adoption of electric vehicles is steadily rising, but it is still in its infancy stage.



4. The problems that CZero is going to solve

4.1. Limited Battery Life

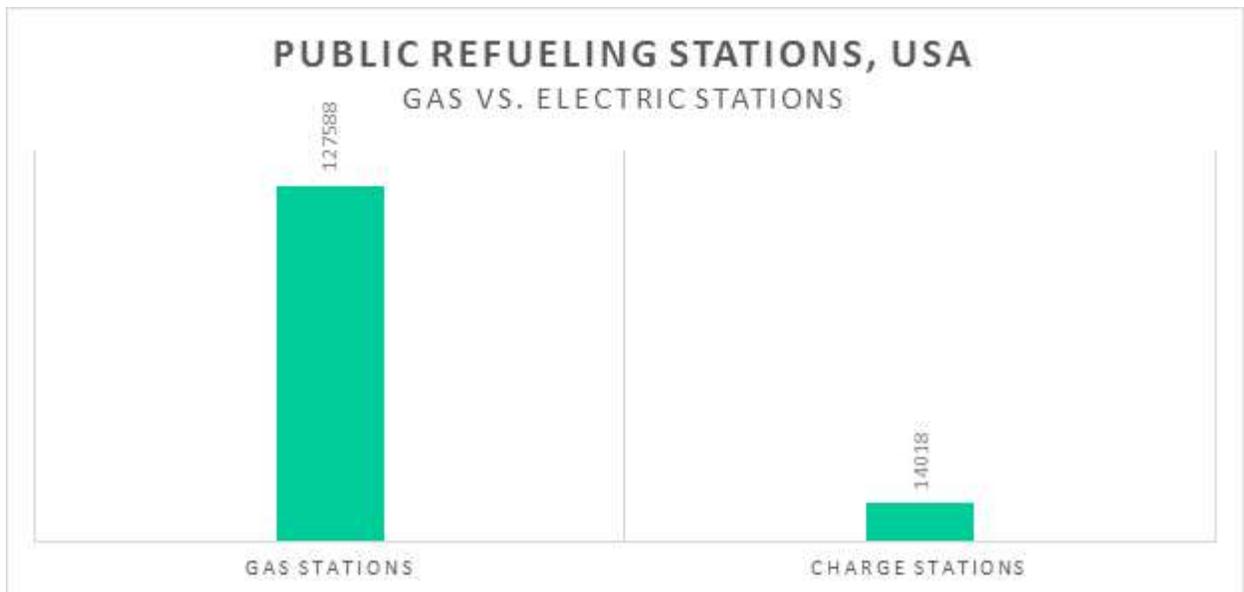
Lithium ion batteries are used in electric vehicles. They are the most viable option today. However, Li-Ion batteries have a limited life in terms of charging-discharging cycles. While some can last up to 2000 cycles some are limited to 500 only depending on various parameters and designs. Because of this fact, the EV owner must replace the battery in 2 to 5 years. Cost of battery is a sizable proportion of the entire EV cost which cause a reluctance to own an EV.

4.2. Prolonged Charging time

Leaving aside very high-end Lithium Ion batteries, most of them charge in 4 to 8 hours depending on chemistry and design. A fossil fuel car owner goes to a gas station less often and fills the tank in a few minutes. But an EV owner must charge almost every night. This is a bigger problem when going long drive. The user will have to find a charging station, take a break for a few hours to refill the batteries.

4.3. Lack of charging infrastructure

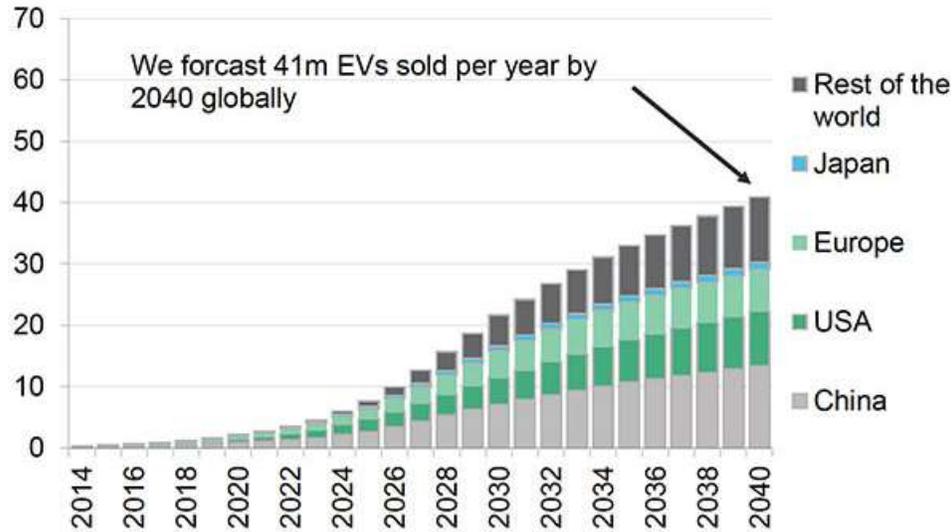
If you compare the number of gas stations across globe to the number of EV charging stations, the gas stations have presence in every few miles on earth. But EV charging station are very few. The network and supply chain for gas stations are well defined and matured how ever for EV charging stations, it is still in its infancy.



4.4. High cost of upgrade from gasoline to electric vehicles

While electric vehicles sales are rising, what will happen to existing vehicles? They will mostly be discarded, and owners must spend a lot for a whole new electric vehicle.

2015–2040 (m vehicles per year)



Source: Bloomberg New Energy Finance, Marklines

4.5. Low Support, Service & SOS

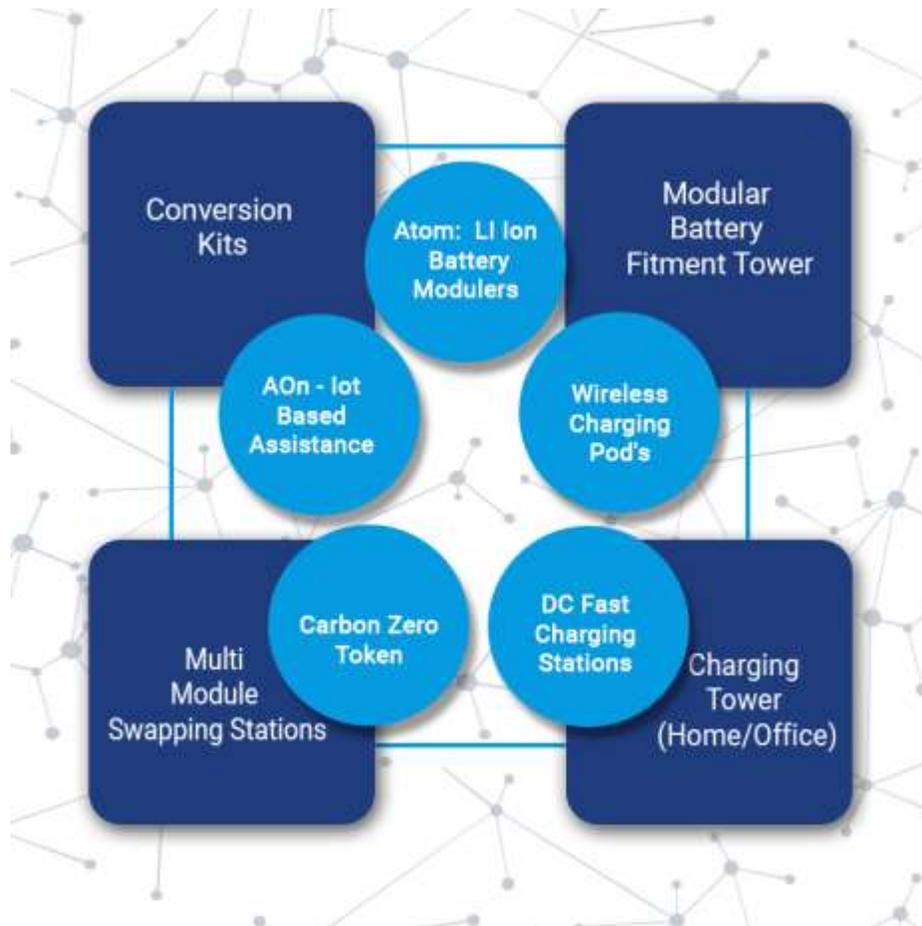
There are many people who want to try out electric vehicles due to various reasons like out of interest, environmental or just being cost savvy, however, they always have the concern of getting stranded when battery conks out or when EV's have a breakdown due to lack of quick charging option and expertise in repairing an EV being available locally. Such kind of support ecosystem is currently available or not matured enough. An omnipotent monitoring system which ensures that timely help is available.

5. Vision & Mission

To create a sustainable ecosystem around Electric Mobility by creating technically prudent, yet affordable EV infrastructure components and an omnipotent monitoring & support system which encourages mass adoption of EV's & transit to clean energy conveniently in a cost-effective way.

6. How we are going to solve these problems

The CZero EV Ecosystem Solution Components



7. Our Patented Products

7.1. ReV: CZero EV Conversion Kits

CZero EV conversion kits will offer to upgrade any diesel or gasoline-based vehicle to electric with following features.

- 1KW to 10kw ultra efficient electric motor power train
- Variable-frequency drive
- Atom battery modules & MDF Units are bundled as part of the ReV's, the numbers differ based on the power of the motor to be used.
- AOn & CZERO tokens also come bundled as part of the upgrade kits

The idea here is to ensure that more & more customers can join the green revolution without spending a moolah on new EV's.



7.2. Atom: CZero Li Ion Battery Modules

Patent Published ([View it](#))

CZero Atoms are custom-built cassette shaped battery modules, which are created to ensure they are as easy to be used as the normal AAA / AA batteries.

Atom's will be created with the best in class energy storage cells like 18650's being used by Tesla. These will offer the customer

- Cassette shaped units weight less than 4 -6 pounds each.
- Fast charging capability
- CZero owned BMS (battery management system) supporting external communication for various indicators.
- 48v to 400v output
- 2000+ charging cycles



Current Prototype



Production Vision



Production Vision

7.3. MBF Units: CZero Modular Battery Fitment Units.

The CZero MBF Units are custom-built fitment towers, which will encompass multiple Atom Based on the power requirement of the vehicle.

They will be created in the rack sizes of 4,8,16 & will be fitted in the vehicles for easier access but also ensuring safety from various physical damages. These will act as aggregators of the power generated by the mounted battery modules & will pass on this aggregated power to the controller/ motor. They offer

- Onboard electric actuator enabled racks to hold batteries
- Capable of ejecting or accepting a battery smoothly upon a button press.
- Reduces human effort of removing and replacing batteries.

7.4. CZero Modular Battery Charging Towers (Level 2 AC)

Patent Published ([View it](#))

CZero Modular Battery Charging Towers / Stations will not only be used for CZero Atom charging but also, will have authenticated / authorized access based system to charge most of the electric vehicles available on market today. They offer ease of use at office and at home as well.

- Offers charging through a 240V.
- Compatible with all electric vehicles and plug-in electric hybrids.
- Supports NFC authentication
- Mobile payments (wherever applicable, this will be activated for commercial outlets only)
- 3G/4G/Wi-Fi connectivity
- Rugged built quality to sustain in any outdoor weather conditions.

		
Current Prototype	Production Vision	Production Vision

7.5. DC Fast Charger (Aka Level 3 Charging)

When it comes to EV's, DC charging or ultra-fast charging is the need of the hour. No one wants to wait hours to get their batteries charged. Hence CZero's self-manufactured DC fast charging stations / units will offer 20 min charging equivalent to a full tank of power.

- Can charge an EV to 80% in 20 minutes
- 300v to 480v DC
- 20kw to 200kw
- Supports CHAdeMO, CCS and GB/T



7.6. CZero Multi Module Swapping Stations

Patent Published ([View it](#))

Comparing to gasoline/diesel filling, charging an EV is painful when the battery charging takes a long time, especially in a long drive. To alleviate this pain, CZero introduces a battery swapping system which will ensure that a vehicle will be ready in a matter of minutes with swapped batteries.

Swapping (Or switching) station is a place at which a vehicle's discharged battery or battery pack can be immediately swapped for a fully charged one, eliminating the delay involved in waiting for the vehicle's battery to charge.

- Fast battery swapping under five minutes.
- Unlimited driving range where there are battery switch stations available.
- The driver does not own the battery in the car, transferring costs over the battery, battery life, maintenance, capital cost, quality, technology, and warranty to the battery switch station company.
- Contract with battery Switch Company could subsidize the electric vehicle at a price lower than equivalent petrol cars.
- The spare batteries at swap stations could participate in vehicle to grid storage.

		
Current Prototype	Production Vision	Production Vision

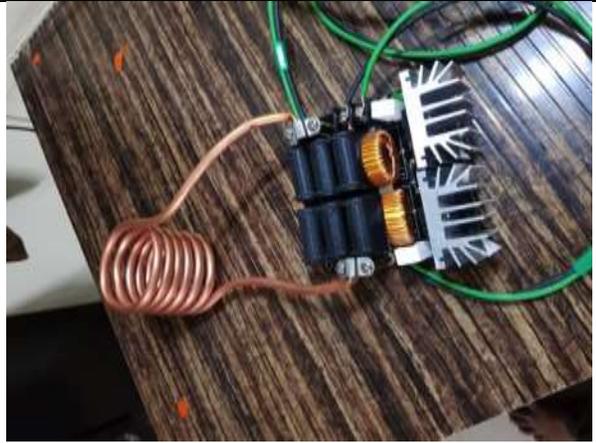
7.7. Wireless Charging Pod's

These are the next innovation in charging units. Home / Office / Anywhere this technology will ensure that the user doesn't need to physically plug the vehicle for recharging EV batteries.

We introduce a Wireless Electric Vehicle Charging system which is highly efficient, convenient and easy-to-use wireless charging technology for charging Electric Vehicles (EV). Drivers simply park and charge without the need for plug-in cables or adaptors.



Current Prototype



Current Prototype



Production Vision

7.8. AOn: Always On – Assistance / Monitoring System

AOn is an IoT based, low footprint, monitoring and alerting system embedded within the various components of the CZero products. Using Machine Learning & Artificial Intelligence based algorithms, the system will be able to monitor & assist CZero users anytime & anywhere. Hence providing a sense of security to the owners.

This system will be non-pervasive & will not infringe on the sensitive user data, only non-sensitive vehicle telemetry data will be recorded and analyzed to alert the users.

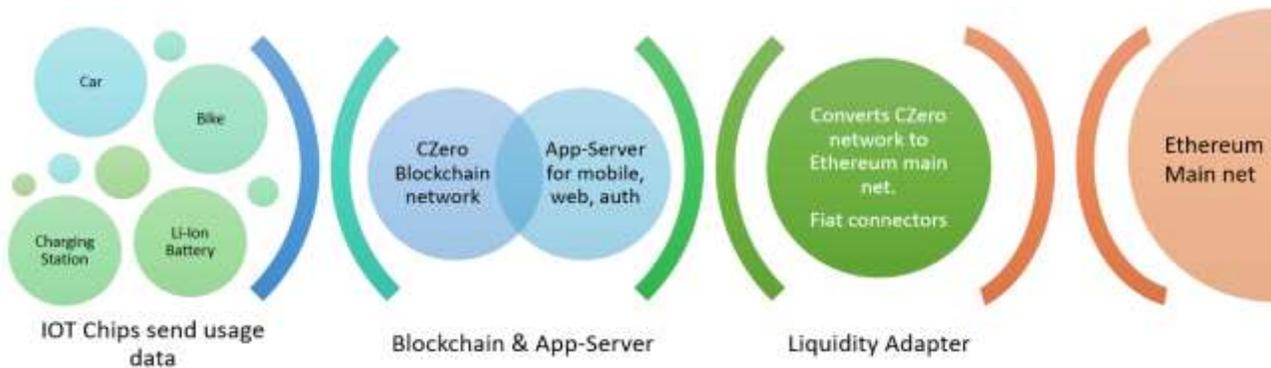
- Payment and account info.
- Battery health monitor
- SOS/Emergency assistance
- Charging station locator

8. Proof of Carbon Credits - The Blockchain of CZMT token

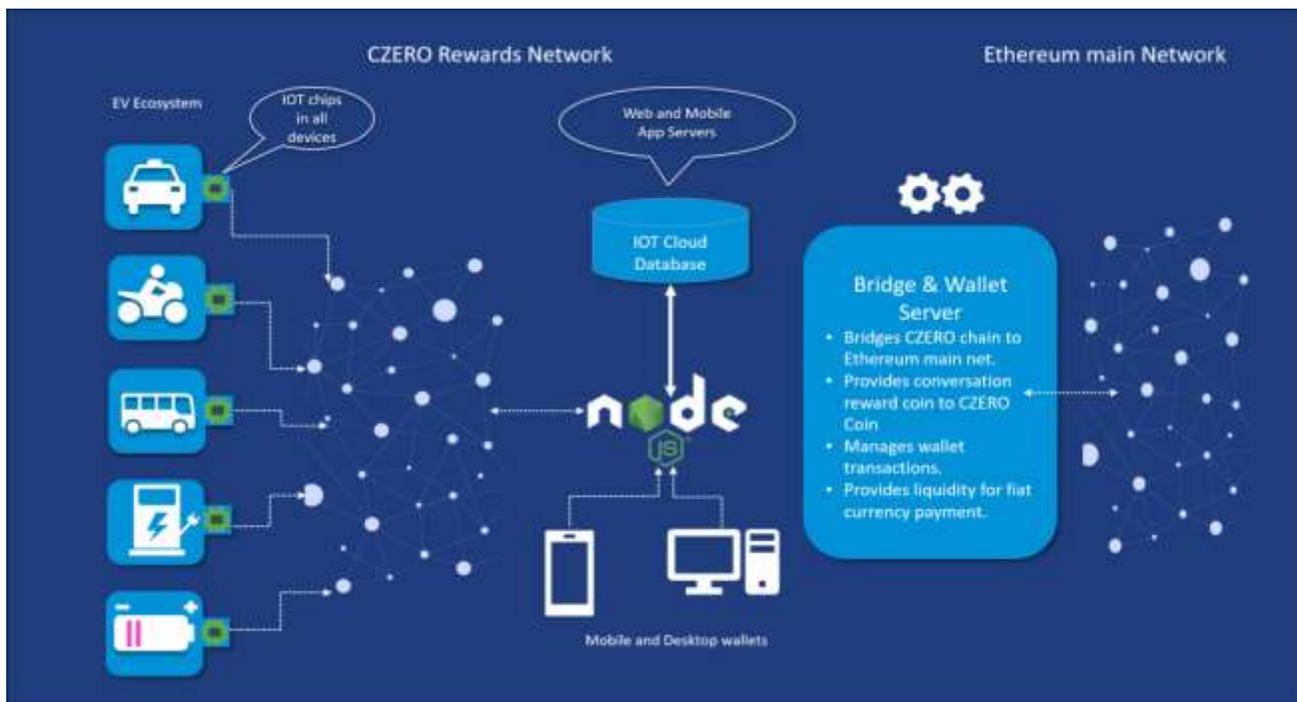
Objective: To increase the usage of Ecofriendly transportation & increased public awareness & keeness towards crypto currencies, CZero has introduced a reward token system named CZMT which will be like carbon credits for individuals.

The intent is to let people associated with the CZero ecosystem earn these crypto tokens proportionate of their usage of the CZero ecosystem.

Sequence of process



Over View

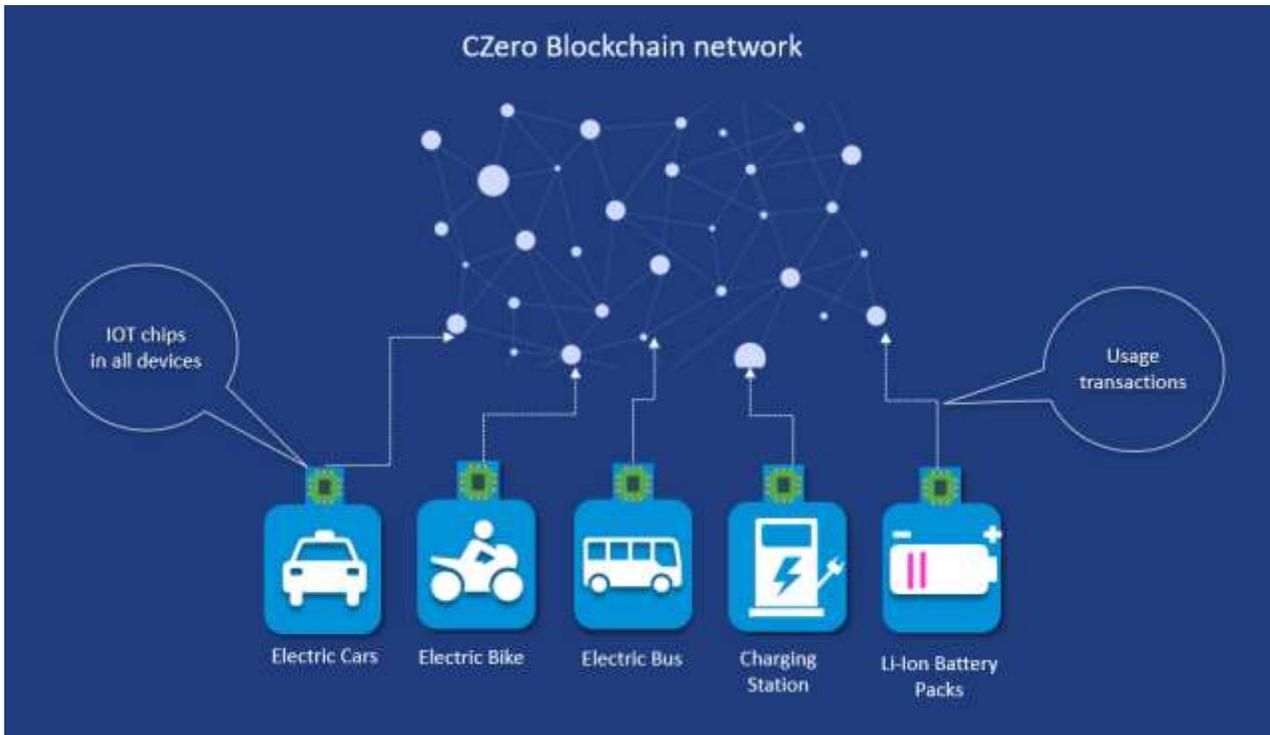


The details are explained below

Stages of the coin generation

8.1. Data Collection Stage process

Each of the devices such as cars, bikes, charging stations or battery are fitted with IOT chip. These IOT chips are microcontroller based IOT devices which will send non-intrusive usage data to a secured CZero Blockchain Network.

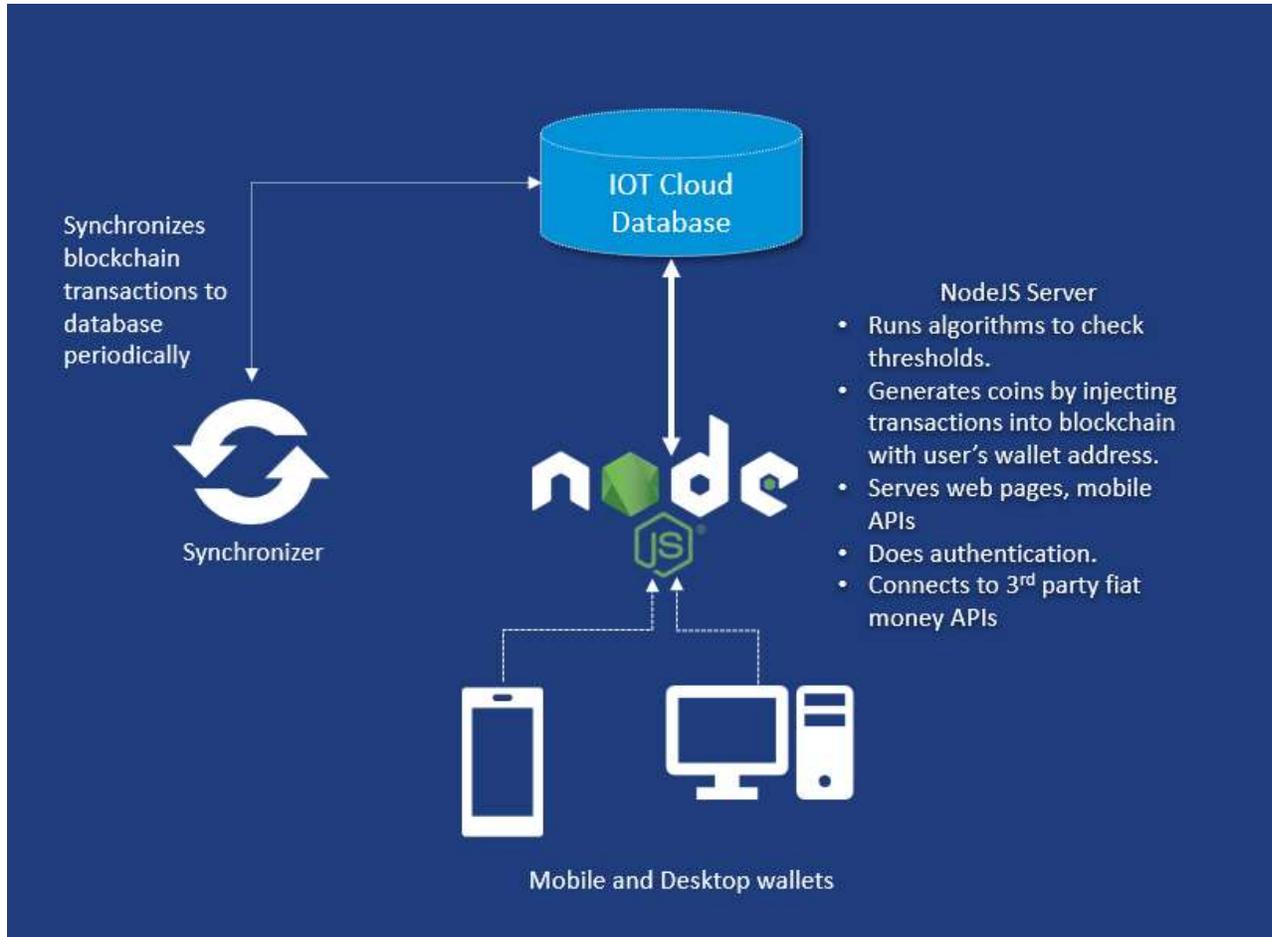


Each transaction gets written to blockchain in a fast, secure and high-performance mode.

These data represent amount of kilowatt consumed by the EV or delivered by a charging station. They also represent kilometers driven using that amount of energy consumed.

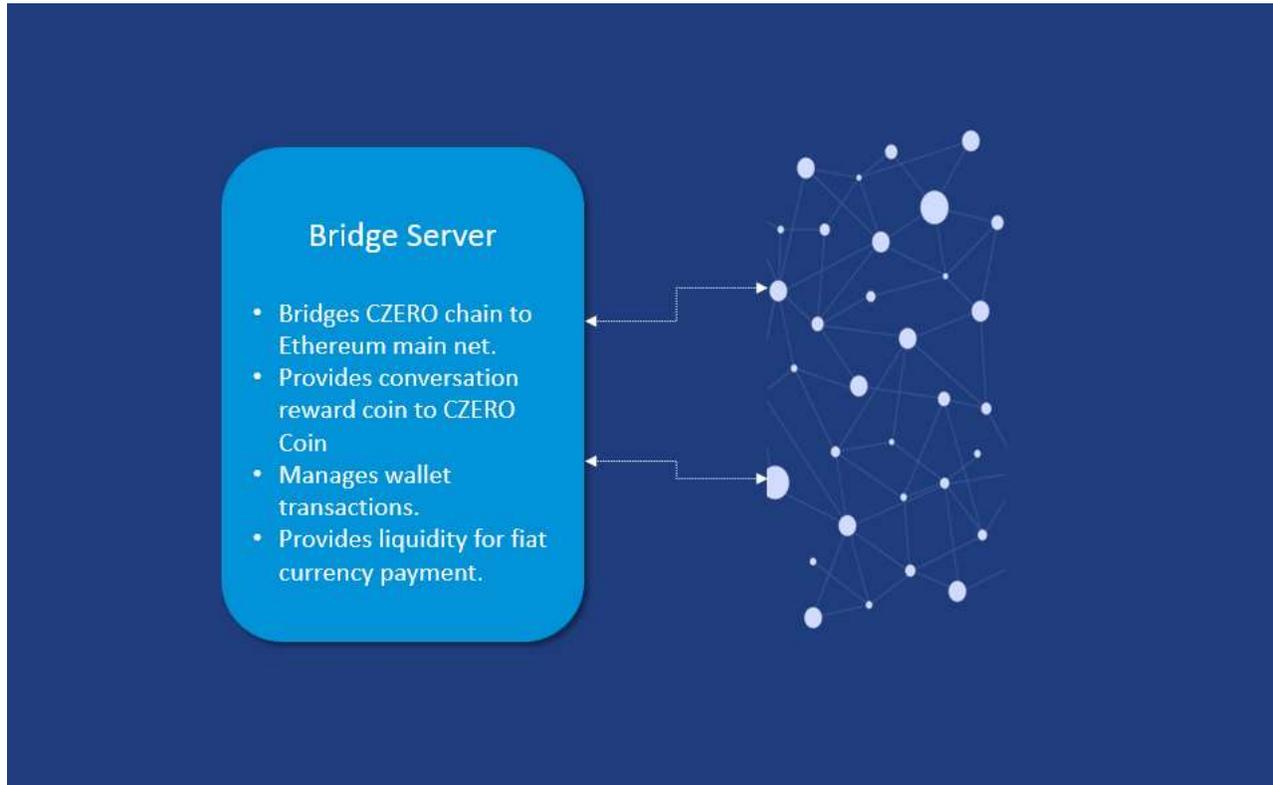
8.2. Data Analytics and Coin Generation

- These IOT transactions in CZERO blockchain network gets synchronized periodically to a NoSQL database for further processing and analytics.



- Based on usage and transactions, upon certain threshold crossed, automated transactions are created from node server to blockchain to generate coins and are credited to user's wallet.
- User can either spend those coins in the CZERO network for various services or exchange the reward points to public tokens on Ethereum main network.
- These tokens will be redeemable for CZero services in the markets where CZero ecosystems exists.

8.3. Coin interoperability with Ethereum main net.

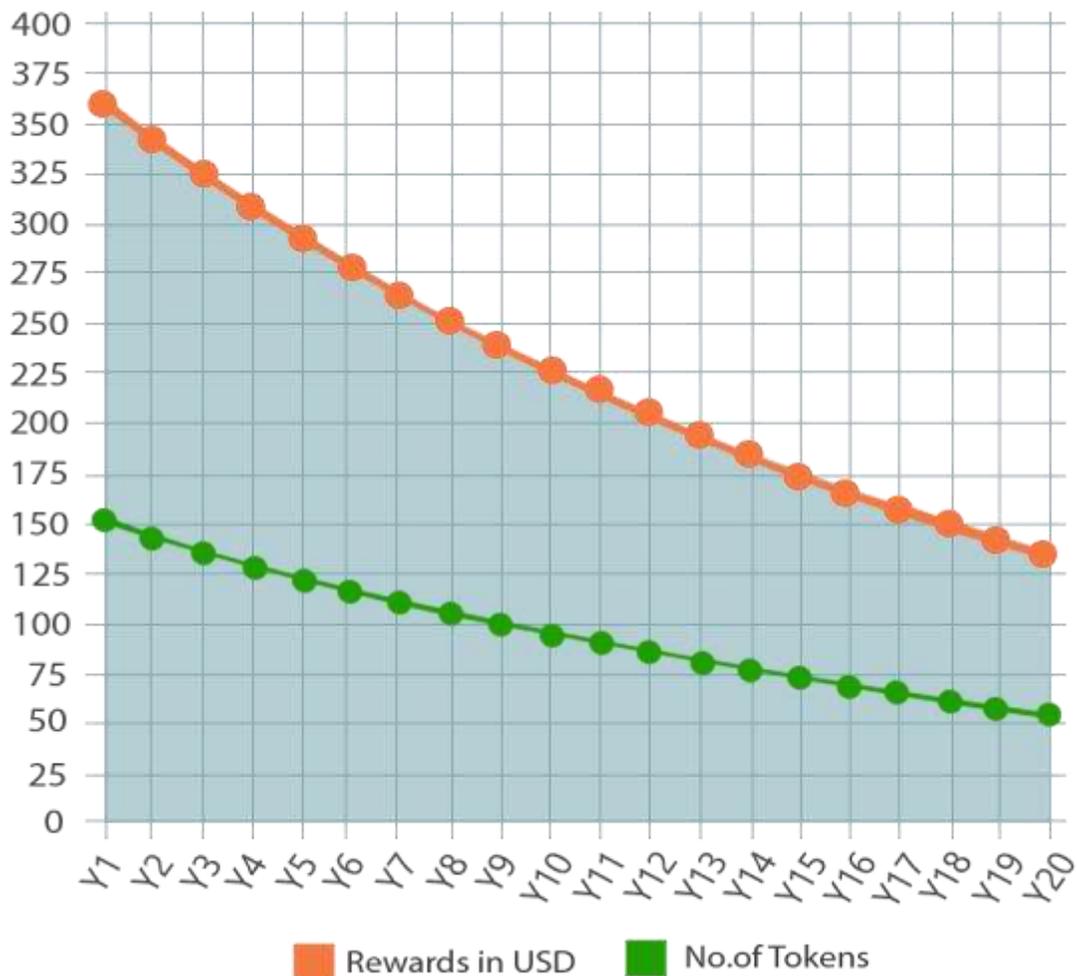


- Upon coins generated by IOT transactions on CZERO network users get coins on CZERO network side.
- User can select number of coins he or she wants to take to Ethereum main network and choose to take them out.
- The CZero proxy server will aggregate such transactions, batch them & than write them to a public ETH public blockchain.
- Hence the usage of the ecosystem will generate CZERO reward tokens as per a defined algorithm and get credited to the customers wallet.

8.4. The formulae and sample calculation

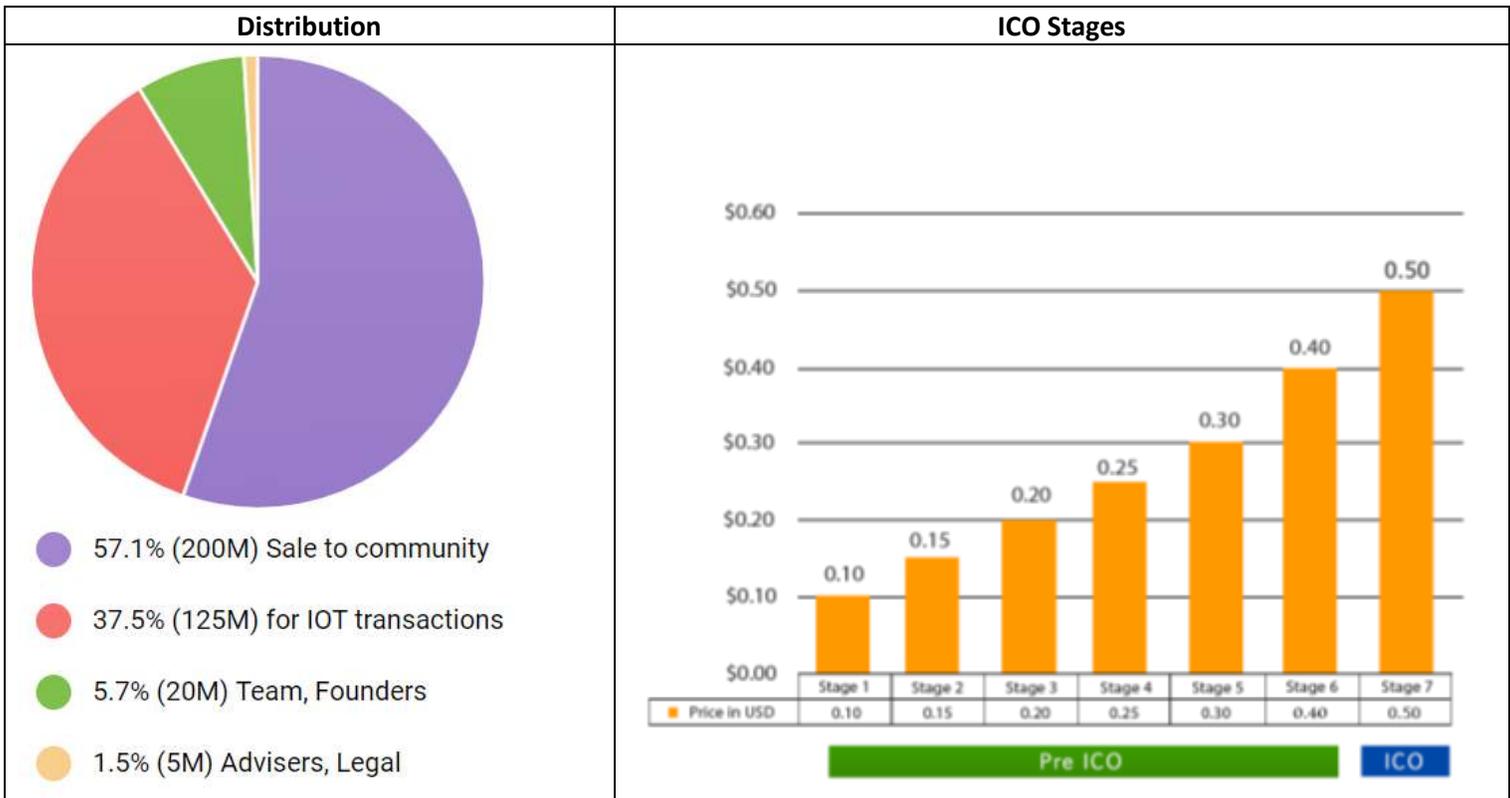
- CZMT Coin is backed by the carbon emission savings done using electric vehicles instead of fossil fuels
- About 10 kg. or 20 pounds of carbon dioxide is produced when a gallon of gasoline is burnt.
- Traditional car travels 20 miles per gallon, hence per mile, it generates 1 pound of carbon dioxide
- Electric vehicles consume approximately 0.2 kwh electricity per mile
- Hence an electric vehicle saves 1 pound of carbon by using 0.2 kwh of electricity, costing around 2.4 cents in USA (Avg cost is 12 cents per kwh).
- CZERO Token is pegged to 100 pounds of CO2 savings or per 100-mile travel
- Hence one CZERO Token is as valuable as 2.4 cent x 100 = \$2.4 USD
- 1 CZERO Token = 100 pounds of CO2 savings (or 100-mile travel for a normal car)
- Life of an electric vehicle is longer than other types, let's say it is 20 years.
- An average young American male drives appx. 15000 miles a year.
- CZERO has a difficulty factor of 0.95, i.e. every year he will receive 95% of previous year's rewards.

Below graph show rewards distribution for a life time of a user.



8.5. Token distribution and life cycle

Smart contract address	0x19315C53bBe54BAc9E2F710d075E0388E136b302
Token Address	0xBBb97c9C3eF95217Cc94fAF27be18324cEe538C2
Start date	10-Jun-18
End date	23-July-2018
Softcap	250k USD
Hardcap	20M USD



Key highlights

- The token offering six stages of pre-sale, each stage offers 25 million tokens. The 7th stage is ICO which offers 50 million tokens.
- The tokens are not pre-minted, they are instantly minted as and when an investment is made to the crowd contract address.
- Hence there won't be any extra tokens to burn.
- Reserved tokens will be credited to our accounts upon ICO ends.
- Funds raised from the ICO will be used to scale up current operations, build the CZERO IOT Blockchain network, country wise hardware certifications and marketing.

8.6. Fund utilization plan

The raised fund will be utilized in following way.

1. Setting up manufacturing facility 30%
2. Setting up R&D lab for products 20%
3. Reserved for salary, raw material and other recurring expenses 30%
4. Marketing, branding and collaborations 20%

Strategic Partnership

Meet Our Strategic Partners for Manufacturing



Niltech
Manufacturing Partner

Partnership

Founders



Pratik Batra
Co-Founder & CEO



Madhu R
Co-Founder



Vijay Bhaskar
Co-Founder

Advisers



Amarpreet Singh
Advisor



Yaliwe Soko
Advisor



Tudorache Alexandru
Advisor



Paul Francis
Advisor



Solomon M.
Top ICO Adviser & Strategist



Timo Tripler
Top ICO Adviser & Strategist



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Bikramaditya Padhi
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Saurabh Singla
ICO Marketing



Disclaimer

The purpose of this white paper is to present the CZero Mobility's products to potential Token holders in connection with the proposed Token launch. The information set forth below may not be exhaustive and does not imply any elements of a contractual relationship. Its sole purpose is to provide relevant and reasonable information to potential Token holders in order for them to determine whether to undertake a thorough analysis of the company with the intent of acquiring CZero Mobility's tokens. Nothing in this white paper shall be deemed to constitute a prospectus of any sort or a solicitation for investment, nor does it in any way pertain to an offering or a solicitation of an offer to buy any securities in any jurisdiction. This document is not composed in accordance with, and is not subject to, laws or regulations of any jurisdiction, which are designed to protect investors. Certain statements, estimates, and financial information contained in this white paper constitute forward-looking statements or information. Such forward-looking statements or information involve known and unknown risks and uncertainties which may cause actual events or results to differ materially from the estimates or the results implied or expressed in such forward-looking statements. This English language white paper is the primary official source of information about the CZero Mobility's Products & Token launch. The information contained herein may from time to time be translated into other languages or used in the course of written or verbal communications with existing and prospective customers, partners, etc. In the course of such translation or communication, some of the information contained herein may be lost, corrupted, or misrepresented. The accuracy of such alternative communications cannot be guaranteed. In the event of any conflicts or inconsistencies between such translations and communications and this official English language white paper, the provisions of this English language original document shall prevail. CZero Mobility does not allow users to avoid capital controls of any kind and does not allow them to invest in any foreign assets. The content of this white paper is not binding on CZero Mobility's limited and is subject to change in line with ongoing research and development on the CZero Mobility's platform.

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It is your sole responsibility to ensure that your participation in the Token sale is not prohibited under the applicable legal restrictions in your country of residence or domicile.

CZero Mobility's tokens are intended to be used by their holders only for its designated purposes. These number and variety of such purposes may be increased in future by adding new services and features on CZero Mobility's platform. CZero Mobility's tokens are not any form of securities, equity shares or bonds in CZero Mobility's limited. CZero Mobility's tokens do not represent a loan or debenture or financial advance to CZero Mobility's limited. CZero Mobility's tokens do not grant its holder any kind of participation or interest, whatsoever, in the assets or properties owned by CZero Mobility's limited. CZero Mobility's tokens are non-refundable once acquired or earned by its holder.

Thank You

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