“We will make electricity so cheap that only the rich will burn candles” Thomas Edison

PREAMBLE

This document provides information on the Bitlumens project, its core conceptual idea, business model, competitive advantages, the team, ICO details and roadmap towards the first MVP. A more technical description of the core architecture and APIs will follow soon after. This whitepaper has been published in November 2017. We recommend following updates on our website and other media channels periodically, for new information and updates. Also, more detailed papers will be released in the future, specifically on the consensus and governance mechanisms. However, it should be noted that our architecture is holistic, all components tie together and synergize in a modular way.

Mission

Our mission is to offer a peer to peer platform where users adopt an off grid PV system to reduce carbon emissions and get access to lighting in places where there is no power grid. Our platform allows the payment of the hardware to be done through installments. The system also allows microfinance through digital currencies while using the blockchain. Our goal is to create both financial return and positive measurable social and environmental impact.

We also aim to provide KYC for each client while giving access to electricity coming from renewable generating sources in Latin America. Providing solar energy to remote villages and in consequence reducing CO_2 and health hazards, displacing kerosene lamps, plastic, biomass and biofuels as lighting source, increasing customer savings, proliferating financial inclusion and in some cases providing employment. Our digital platform aims at offering distributed, managed by consensus and off grid smart energy solutions in low resource households. Bitlumens GmbH is registered and incorporated in Zug, Switzerland.

Introduction

Bitlumens fosters gender equality and promotes financial inclusion through its platform. 1.1 billion women remain locked out of the financial system, not least due to the lack of identifications. Identity does not have to remain a barrier for financial inclusion and economic empowerment. In addition, according to the World Energy Outlook, 1.2 billion people don’t have access to electricity while 2.7 billion don’t have access to clean cooking. In some cases such as Ethiopia and Zambia only a small portion of rural inhabitants have access to electrification [see Table 1]. Most of them depend on inefficient and hazardous fuels, such as biomass, kerosene, plastic, battery torches and candles. Fuels and its combustion process contribute to the release of greenhouse gases into the

atmosphere. Among those fuels, kerosene is a source of CO_2 and black carbon. Black carbon or soot, a particulate matter (PM) resides only a few days or weeks until a natural phenomenon called coagulation happens, where cloud droplets and aerosol particles attract each other. This phenomenon helps to clean the atmosphere by flushing out aerosol particles. Hence, replacing all kerosene lamps worldwide with solar lights could serve as short-term action to reduce global warming. A single kerosene lamp emits over 100 kg of CO_2 per year when used four hours a day.

Globally, burning kerosene for lighting generated 240 million tons of CO_2 equivalent a year, around 0.5% of global emissions. In fact, just kerosene lamps replaced in Africa and Asia with solar panels saved 1.4 million tons of CO_2 equivalent in 2014 alone. Moreover, on a general basis burning 20 kg wood during one day emits about 200 grams of PM2.5, this equals smoking 10,000 cigarettes. The energy sector in Latin America and many other developing regions present major challenges to meet energy requirements. In fact, some of these countries rely on fossil fuels to meet energy demand. Price volatility, fossil fuel shortages, governmental regulations on fossil fuel prices, geopolitical settings, power outages and climate change mitigation are major key variables that need to be considered to address energy security. However, the Latin America presents a vast amount of non-conventional-renewable-energy sources such as wind and solar which can be exploited to address power reliability and energy security.

Table 1 illustrates the megatrends driving the development on solar off grid projects. Large number of people without electricity, increasingly cheaper solar panels, growing mobile phone penetration (SIM cards) and high energy spending on inefficient fuel sources are some of the variables we take into account to model off grid energy solutions. In addition, we focus on the intersection of high cell phone availability, low rate of electrification, high number of adults unbanked and high adoption rate of kerosene or other inefficient fuels used for cooking or electricity.

	Population without Electricity	Rural Electrification Rate	CO_2 (metric tones per capita) 2013	Mobile Penetration	Residential Electricity Price
	Millions	**%**	**tones**	**%**	**¢/kWh**
Haiti	7.5	17.2	0.23	55	33
Nicaragua	1.4	57.1	0.77	78	21
Trinidad and Tobago	0	99.4	34.52	140	32
Ethiopia	73	12.2	0.11	18	9
Zambia	11	3.8	0.25	40	15
Peru	3	74.5	1.87	66	9
Guatemala	1.7	74.8	0.87	51	18
Brazil	0.8	97.8	2.49	57	10
Honduras	0.9	76.3	1.05	66	17
Panama	0.3	65.65	2.7	81	16
Ecuador	0.5	97.05	2.78	55	8

Table 1:Potential Markets

Displacing kerosene and biomass

In many developing countries kerosene (paraffin) is widely used as fuel for light and cooking. The use of kerosene as lighting fuel is an important source of black carbon (BC) and carbon dioxide. Especially in rural areas and in regions such as Asia and Africa where most families use dim kerosene lamps to light their homes at night. The combustion originated from burning fuel indoors pollutes the air with harmful particles, which can irritate the eyes and lungs, and can also cause accidents. According to different studies 3.5 million premature deaths occur each year are linked to smoky indoor environments. Off grid energy services supplied from renewable sources can not only displace kerosene usage with efficient Light Emitting Diodes (LEDs), but also reduce the dangerous side effects produced by combustion.

Other sources of fuel are pine kindling, used in Latin America as a source of light. Like kerosene, pine kindling often causes health issues, such as long-term neurological and kidney damage.

Kerosene and biomass powered wick lamps are far less efficient than solar powered LED lanterns. As stated by kerosene is a dangerous and inefficient fuel used in wick lamps which provides less useful light compared to solar lanterns. Kerosene wick lamps provide 1 to 6 lumens per square meter. LED has higher efficiency - measured in lumens per watts- quality and quantity of lighting when compared to kerosene lamps. The use of LED lanterns entails reductions on greenhouse emissions and operating costs. A kerosene lamp producing 37 lumens during a period of four hours per day will consume about three liters of kerosene per month at an average cost of USD 0.35 per liter in India.

Most off-grid customers live in rural areas and on less than $2 a day. Therefore, energy accounts for a significant amount of their spending. However, distributed energy companies (DESCO) are bringing new forms of financing to the homes of people living in rural areas. As an example, for an initial down payment of 3,500 Kenyan shillings ($34) and daily installments of Ks 50 during a year, Kenyan villagers can get access to electricity.

By generating renewable power from the sun, DESCO aim at offering reliable energy services and reducing greenhouse gas emissions in a cost competitive manner. Some of these companies use “pay as you go systems” to provide access to credit for people who do not have access to cash. This solution provides ownership of the technology once all installments had been paid. Bitlumens provides a solution to support villagers gaining access to IDs, microcredits, electricity to power their phones and in some cases, power their cooking stoves by using solar panels and the blockchain. Combining clean tech, fintech, the blockchain and cloud computing, Bitlumens offers a software as a service (PaaS) where women living in rural villages and in need of power can get access to Sun Home Systems (SHS). The latter are user-friendly, eco-friendly, and smart internet of things (IoT) devices that bring power to the unbanked in places without power grid. In short, our platform gives kerosene or plastic-dependent households immediate access to cleaner, safer, and affordable energy in Latin America.

Initial Markets

	Lat	Lon
Guaramal Panama	8.337543	-82.551045
Valle Departament Honduras	13.422095	-87.547689
Chinandega Nicaragua	12.896268	-87.537753
Escuintla, Guatemala	14.3009	-90.7882

Table 2: Locations to install the first minimum viable product

2. The Solar System

Ideally, our Solar Kit will initially use a 15/20/50W solar panel and Lithium Ferro Phosphate battery. We will sell 3 systems coming with different appliances, i.e. two USB charging ports; integrated dimmable LED lights; LED Backlit LCD TV; Radio and TV.

	USB	LED Bulbs	LED Bulbs	Radio	TV 15.6'	Battery	PV panel
		200 lumens	400 lumens			Amp/h	Volts peak
First Configuration	2	2 used for 6 hours	-	1	-	3	15
Second Configuration	2	2 used for 4 hours			1 TV for 6 hours	4.5	20
Third Configuration	4		3 used 6 hours	-	1 TV for 6 hours	10.5	50

	GHI	PSH	PR	Y_e	E_v
	kWh/m²/a	[h/a]	[-]	[kWh/kWp/a]	[USD cents/kWh]
Ecuador	1641	1641	0.80	1313	11
Honduras	2230	2230	0.80	1784	30
Nicaragua	1909	1909	0.80	1527	32
Panama	2000	2000	0.80	1500	24
Guatemala	2200	2200	0.80	1760	31

Table 3: irradiance values, peak ours and the perfomance ratio.

The solar kit is connected to a smart meter and to the user's cell phone. We use programmable logic controllers (PLC) that allow the current to be measured. The code should measure the current and voltage each 5 seconds. With these values it calculates the power produced and consumed. The smart meter works with a memory card allowing our agents to add the load profile of each user to a centralized panel. The latter will provide the data in the form of text messages, such as,

available credit, battery availability, electricity consumed, lighting duration, daily cost and energy output.

To be able to provide financial inclusion two important pieces of information are provided, IDs and KYC. Bitlumens gives access to a platform that connects microcredit solutions to users who are not powered to the grid, offering SHS. We will provide cooperative banks with key pieces of information they require to open an account or facilitate financial services given the proof of valid microcredit. Each user will be able to have their own ID and credit history. This information can be shared to third parties who offer microlending solutions, governments and development banks. Users can get access to microcredits by paying a specific interest rate based on personal and behavioral variables.

The system will be comprised (at minimum) of the following components:

(i) A token creation smart contract (Ethereum)

(ii) A utility billing system contract (Ethereum)

(iii) IPFS (hash-based decentralized file storage)

(iv) A centralized server to hold fingerprint data and notarize identity requests (approve/refuse)

The Bitlumens team will own the private key to add and remove agents. Agents have the power to add utility bills for clients. The workflow is the following: the agent goes to the client's home, collects the money and issues a token for the client to use (so she can use the hardware). Then, the agent makes a blockchain transaction that contains the utility bill data of the client. The agent uploads the detailed information to IPFS. Smart contracts present the constraint of not being able to store more than 5 numbers. For this reason, we will use IPFS files to store the information on the file itself. More specifically, the transaction contains the following information: the token value information, potentially some of the energy consumption (but only a few, as storage on Ethereum is very costly) and a IPFS hash to the file containing the detailed energy consumption. Each client is assigned a user number, which identifies them uniquely. For KYC purposes, it suffices for the bank to ask a server (iv) that their client's number matches the correct fingerprint. Once they can trust the user number, they can look at the blockchain (ii) smart contract to estimate the credit rating of the client and participate on a microcredit. It is also possible to add a credit rating functionality, where a credit rating agency would associate client numbers with credit rating, thereby making the process easier for banks.

The MVP aims to support usage of Ether and Bitcoins and is built on the Ethereum network, as it is currently the most mature blockchain to implement smart contracts.

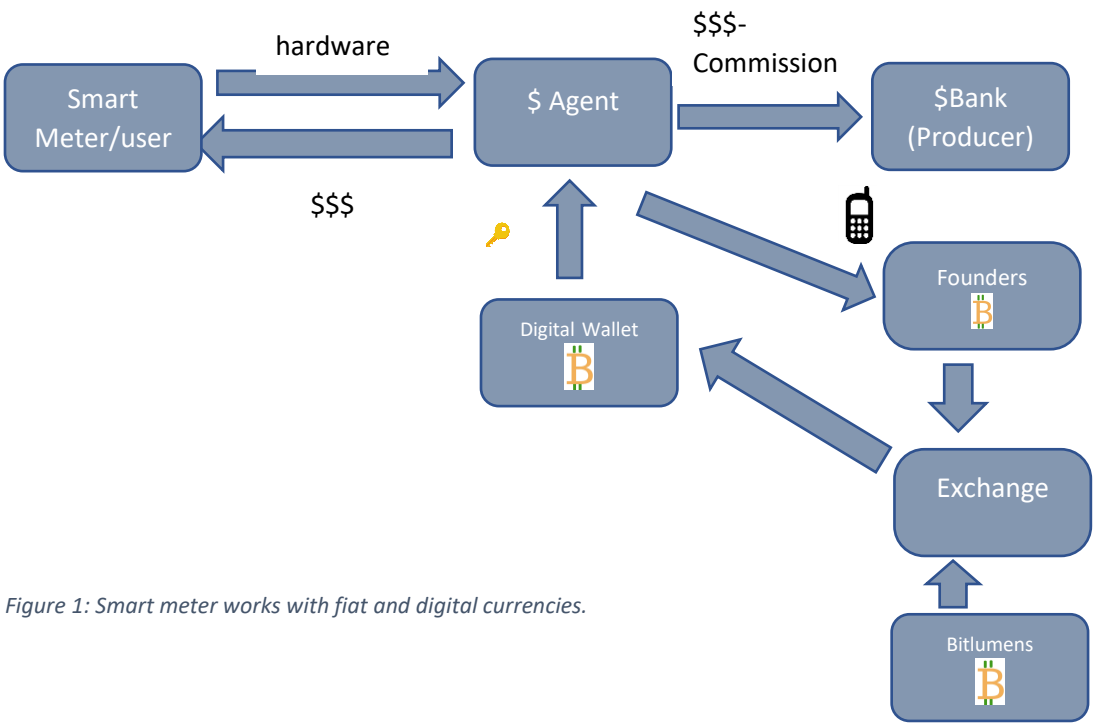


Figure 1: Smart meter works with fiat and digital currencies.

Figure 1 shows the process and how payments flow through the system. Our mission is to include women living in rural villages into the financial system by providing microcredit solutions. Therefore, Bitlumens aims at licensing the platform and operate with cooperative banking services in a global scale to improve the lives of villagers while contributing to carbon mitigation strategies related to the Paris Climate Agreement of December 2015.

Use Cases

License the Software to a Microlending Entity

Bitlumens software can be licensed to banks (SaaS) in exchange for fees or revenue share. Bitlumens helps the Cooperative Credit Banks originate new sustainable loans, then it syndicates or sells these loans to 3rd party investors where each microcredit has a piece of hardware as collateral. This process allows for the legal creation of the loan and transfer of funds to the borrowers based on an existing banking license. On the payment side, the depository is a collaborating Cooperative Credit Bank and all members who borrow on the platform will be onboarded as a bank member with full AML/KYC and associated accounts.

Before originating a loan, agents will perform the due diligence on each interested villager, including behavioral variables. The platform will evaluate credit metrics and derive a credit score based on the collected information and on the regulatory framework adopted in each country.

Allow Certified Emission Reduction (CER)

Bitlumens fulfills the requirements based on the clean development mechanism (CDM) under the article 12 in Kyoto's protocol and earn sealable certified emission reduction (CER) credits. The emission reductions occur when villagers don't use biomass or kerosene as lighting source. This information is included in the measurement, verification and reporting (MVR) framework under the Paris Agreement. The methodology for measurement is taken from the intergovernmental panel on climate change (IPCC). Reporting is done through the actions taken to mitigate GHG and on adaptability measures that are considered relevant to the achievement of the climate change objectives. In addition, data verification is done through national MRV and through ICA. The idea is to license the platform to governments to visualize the emission reductions in different areas of the country based on sensors, IoT and the blockchain. This will allow clear auditability and the possibility to enter into Carbon Credit markets.

Tokenizing the Machines allowing Peer to Peer Lending

Our manufacturer sends the machines to the port. The quantity ordered by Bitlumens will be stored in the blockchain so later agents can collect the machines and verify that the number of machines arriving at the port is equal to the number of machines Bitlumens paid. The machine serial number is stored in the blockchain. Crowdfunders can then buy one these machines and get an approximate 3% interest rate per month if and only if that machine is being used by the women living in rural villages. Therefore, the loan is collateralized by the machine. The latter is transported to the end users who pay the agent with cash. Part of this cash is given in commissions to our agents and part is sent to the local bank. Agents must input the amount into Bitlumens mobile app along with the KYC and biometric information of each user. Once the machine operates we can show the load profile of each user. This will increase transparency among crowdfunders to show a real person is using the device. Investors will be matched to villagers based on a first come first serve logic. The token will flow to the account of a villager and matched to the serial number of one of the harware. Villagers will pay the hardware by installments and the investor will be paid an interest rate per month based on the amount paid by the villager.

Tokenizing the machines using Pool Lending

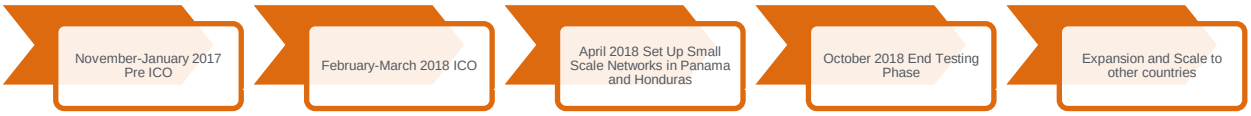
An alternative approach is that Bitlumens administrates the sales of the solar kits to the villagers. In this model, Bitlumens sells the solar kits asking for a down payment of 20% in local currency. The purchaser then amortizes the equipment in monthly installments of 5% in local currency during a period of 18 months (one and a half years). The down payment and the installments are made in cash or mobile payments to the Bitlumens agent. Thus, the purchasers pays a total of 110% for the solar kit. The 10% profit that arises from the transaction is used to buy back Bitlumens tokens from the market. These tokens are then burnt, i.e. destroyed. With the increase in the Bitlumens network and credit activity, the number of Bitlumens tokens in circulation will

decrease. It can be expected that this will lead to an increase in the value of the Bitlumens tokens over time.

3. Project timeline

Customer defaults rates are expected to vary in each region, but for simplicity reasons our model takes 10% average rate. However, these cases need to be assessed regularly. Our model quantifies the amount of default of each customer over a time horizon. The agent working in the field will collect the system back and then sell it second hand.

Our system gives the option to add a digital ID for each user, collecting credit data, creating credit scores and giving access to financial services. In India, for instance, the Aadhaar system is now accessible to more than 1.1 billion people. Users can open accounts by presenting the Aadhaar numbers. We plan to deploy a similar scheme in Latin America, where agents collect the fingerprints of our users and save these in centralized servers supporting encryption. In addition, agents will upload the KYC, load profile while the system will calculate the credit score based on the user's credit history. We expect to have one project manager per 100 users, installing between 60-100 systems each month. The IADB is providing technical assistance while working closely with their women's project. Hence, our goal is to train women and make them part of our team as agents. Their wages will depend on the region and are based on commissions. During the third trimester, we expect to have a regional manager to support us on scaling the project in the country.



The following table shows the breakdown of how we expect to invest the funds over a period of 3 years:

Hardware	35%
Legal	2%
Wages	35%
ICO Expenses	2%
Software development	20%
Marketing and PR	6%
Total	100%

During the first trimester, we expect to start the development of an API. Communications between Pay as you go systems front-end dashboard, loggers, and mobile app and Bitlumens back-end's HTTPS server are via RestAPI/JSON. Bitlumens back-end system uses a PostgresSQL database to store the actual data points and IDs. It runs a full ethereum node, and is

used for data retrieval and analysis. In addition, we will use Solc compiler, IBM Hyperledger, Ethereum, Java, HTML, IPFS, Native iOS/Android, PHP, Node, Golang and Haskell.

The role of the blockchain within Bitlumens operation is to record each user's KYC and the already predefined smart contract to preserve verifiable records of the contract's conditions during purchases. Specifically, once a smart contract is created for a purchase, sensors collect ID data that is ultimately sent back to the blockchain where the smart contract evaluates the results, makes a decision regarding adherence to the terms of the smart contract, and stores the measurement hash of the yes/no outcome relative to the contract terms, as well as a pointer to the actual purchase and credit data preserved in Bitlumens MySQL database.

On Bitlumens, the only state update that can be settled on the blockchain is a transfer of tokens, and the only tokens that can be transferred are the ones that the transacting parties already deposited into the channel. This makes all channels independent from each other, which has the immediate benefit that any transactions related to channels can be processed in parallel, greatly improving transaction data.

We expect to have the smart meter ready in the second trimester as we plan to create a peer to peer network for power exchange without the need of having a power grid. The smart meter will inform the user how much power has been produced, consumed and stored into the battery which can be traded in exchange for tokens. In addition, during the second trimester a sensor will be added to the battery allowing rentals. These rentals will allow users to generate revenue. Initial trials use commercially available sensor devices. We consider developing our own hardware after two-year term. In addition to be being waterproof and tamper-resistant, sensors need to have a number of security features into its reusable sensor devices, including IDs from already registered users, provide shields for tokens going from the owner of the battery to the renter, informing users on the state of battery, share battery location with the owner, incorporating multiple levels of access control permitting only authorized users to interact with the loggers. The users in the network should have bought tokens in advance held in custody in the digital wallet. These tokens are sold by crowdfunders (investors) who had purchased the token in the ICO.

Bitlumens will be working with a solar manufacturer who can ship 100 units together with the pay as you go system within a two week period. In addition, the company had already started to build a website and works with two law firms to start the process of getting all the necessary licenses in Guatemala and Honduras.

Roadmap

Description	Concept	Proof of Concept	Prototype	Live	Growth
Developer Claims					
	○ Website ✓ Whitepaper	✓ Product Prototype ○ Licenses	Pilot Studies Beta Users ✓ Hardware	Clients Software Prototype	Scalability Additional Features

4. **Token Specification**

Our token is a participation rights token, ERC20 and aims to provide social and environmental transformation, where all proceeds will support the development of the software and MVPs in Panama, Guatemala, Honduras and Nicaragua. The token is unlimited in time, it has a periodical reward based on success of the company rewards, dependent on revenue and not on profit (not dividends).

Bitlumens token is also seen as a loyalty token allowing investors to show their affiliation and level of support in the project. It does not represent equity. The company may use a percentage of profits to repurchase the participation right tokens from the open market at the prevailing market price.

Bitlumens utility tokens are initially distributed in a presale. Participants may acquire 1 Token at a discounted rate by pledging a defined amount of Ether (ETH) into the token sale smart contract. For users holding other currencies, it will be possible to use third party conversion services, to acquire Ether for the purpose of buying a Token.

The duration of the ICO will be 28 days. The first five hours are defined as Power Hours. During this period, 1 Ether will buy 480 Token. After the first five hours, the price will increase to 440 tokens per Ether for the 3 days or 72 hours. Then, the next two (14 days) the price will be 400 tokens per Ether. Finally, until close 360 tokens will be issued per ether.
The ICO will terminate if an equivalent USD 7.5 million have been raised. This amount corresponds to the projected findings and investment needs for a period of 3 years.

The total supply of tokens is capped to 50,000,000, with the smallest available denomination being 0.0001.

The table below shows the approximate allocations of tokens.

Token Description	Amount
Total Supply	50,000,000 Tokens
Sold in Presale	10%
Sold in ICO	50%
Bitlumens holdings	18%
Bounty Allocation	2%
Team&Mentors/Advisors	20%

Presale

To ensure the best access to our initial subscribers, BITLUMENS organizes a presale which will be restricted to those who register at the dedicated list.

They will enroll by going to the address https://birlumens.com/presale/

To register you will have to give the number of tokens you intend to purchase, and the address with which you will subscribe. The presale list grants a 30% bonus program, provided that the registration takes place three days before the ICO starts i.e. February 26th. This information will be updated on the website bitlumens.com

KYC/AML

Know your customer (KYC) procedures refer to due diligence activities that are performed to get a certain level of information from clients. We have adopted KYC procedures to verify the identities of the subscribers to the BTL token sale, thus ensuring each subscriber is comfortable and confident with the process.

We have also a set of anti-money laundering procedures to enforce our AML policy. KPMG senior management has decided to implement AML/KYC policies in line with current best industry practice. We will announce soon the partnership we have established with a leader in the digital implementation of such policies

Tokenconomics

1. Value of the Token

Equations and Identities

The model depicts different types of variables, i.e. exogenous and endogenous. We take the token supply as endogenous (Q_S) while demand (Qd), number of users (N_0) and power providers (N_W) are taken as exogenous. Hence, determined by external forces. The following equations illustrate the attainment of equilibrium where supply of tokens equals the demand of tokens:

$$Q_d = Q_S \quad (1)$$

The number of tokens supplied is capped at 100 million and is illustrated in the following set:

$$Q_S = \{1, 2, 3, \ldots, 100.000.000\} \quad (2)$$

$$N_0 = \{1, \ldots, n\} \quad (3)$$

$$N_W = \{2, \ldots, n\} \quad (4)$$

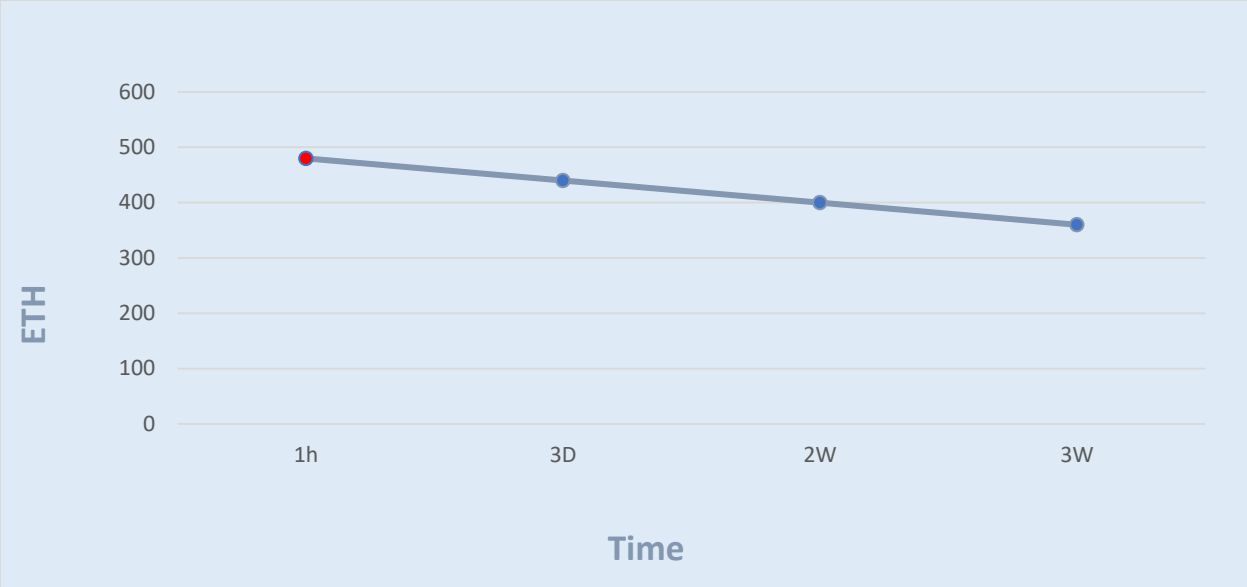
The intersection between sets will happen in several common objects:

$$N_W \cap QS = \{ \chi \, I \, \chi \in N_W \text{ and } \chi \in Q_S\} \quad (5)$$

$$N0 \cap QS = \{ \chi \, I \, \chi \in N0 \text{ and } \chi \in Q_S\} \quad (6)$$

The rate of the token supply is adjusted every period, i.e. first hour, three days, two weeks and the last two weeks. The value (P) of tokens supplied (Qs) is set to decrease over time to compensate early adopters.

First hour 480 Token for 1 ETH
First 3 days 440 Token for 1 ETH
First 2 weeks 400 Token for 1 ETH
Last 2 weeks 360 Token for 1 ETH



Where early adopters will get a higher compensation than those joining the network at a later stage:

$P.Q_S = \{(1, 480), (1,440), (1,400), (1,360)\}$ (6)

Equation 7 shows how more than one Q_S can legitimately be associated with the same P value.

$Q_S = \{ \chi\ I\ \chi\ \in N_W \text{ and } \chi \in Q_S\}$ (7)

The quantity theory of money depicted by Fisher's Equation, defines velocity v as nominal output (real output Y times the price level P) divided by the quantity of a monetary aggregate M:

$$v = \frac{YP}{M} \quad (8)$$

Similarly, the following equation depicts the velocity of a token:

$$T_V = \sum_{i=1}^{n} \left[\frac{E_{(v+i)}}{Q_s}\right]^t \quad (9)$$

Where T_V reflects the token value over time, $E_{(v+i)}$ is the energy value demanded from users and power providers. $E_{(v+i)}$ depicted in equation 9 is the same as Y under Fisher's identity. The power demanded increases over time according to power needs, technology adoption and disposable income.

The first MVP is expected to be financed through the initial coin offering (ICO) where 60% of the tokens are sold. Y is the electricity output in each region of study, σ_c is the average price users pay

for energy services and Q_s are the number of tokens supplied. Ceteris Paribus, the value of a token increases over time according to the load demanded by users, while the token supply is capped according to the presale:

$$\Delta Q_S = \Delta (T_{V1} - T_{V0}) \quad (10)$$

When the supply of tokens changes (ΔQ_S) from the value Tv_0 to a new value Tv_1, the change is measured by its difference. To denote the value of the function at various values of T_V we use $f_{(vi)}$. The rate of change in the supply of tokens:

$$f_{vi} = (Tv_0 + \Delta Tv) \quad (11)$$

The change in Y per unit change in V can be represented by:

$$\frac{\Delta y}{\Delta v} = \frac{(f(Tv_0 + \Delta Q_s) - f(vi)}{\Delta Tv} \quad (12)$$

Other scenarios to be considered at a later stage are; effect to the velocity of tokens if an increase in the size of the token base triggers a fall in the value of tokens?
In this scenario, the outcome will depend on relative moves among different values. If the value of a token falls by less (in percentage terms) than the increase of the token base, then the velocity of tokens will fall. A fall in the velocity of tokens will still be accompanied by a decrease in inflation.

Team

Veronica Garcia: CEO/Founder: Veronica Garcia has been an investment consultant at Credit Suisse and UBS. After finishing her graduate studies at the ETH in Zurich she joined the IBM Research Lab in Zurich. She had worked as a consultant for the World Bank, IADB and Castalia.

Daniel Heller: CIO: Daniel Heller has been associated with the Peterson Institute for International Economics since January 2017 as a visiting fellow. Before joining the Institute, he was head of financial stability at the Swiss National Bank, head of the Secretariat of the Committee on Payment and Settlement Systems at the Bank for International Settlements, and executive director for Switzerland, Poland, Serbia, Azerbaijan, and four Central Asian republics at the International Monetary Fund. He received his PhD from the University of Bern and was a research fellow at Stanford University. His academic publications are on optimal design of bond auctions, demand for central bank money, and collateral requirements for over-the-counter (OTC) derivatives clearing. His current research focuses on the impact of emerging digital technologies such as blockchain on the financial sector, financial stability, and central banking.

Stefano Battiston is SNF Professor at the Department of Banking and Finance of the University of Zurich. His work applies the complex networks approach both to the empirical analysis of large economic networks and the modelling of their dynamics. Since several years, his main interests have been financial contagion, default cascades, and propagation of financial distress, where he combines the insights from the statistical mechanics of networks with the analysis of economic incentives.

Thomas Kansy: Advisor. Thomas is an experienced quantitative modeler and designs and carries out complex research on the relationship of asset values and regulation. Thomas has worked with a broad portfolio of public and private clients, including multinational energy companies, multi-lateral organisations such as the OECD and World Bank, governments across the world, and the European Commission.

Herbert Sterchi Advisor: Herbert has been the Lead Finance at Thomson Reuters Global Resources. He specialized in accounting processes, SAP implementation and audits based on IFRS. He had pioneered controls and procedures, bringing increased accountability to technology and content development and reducing overall spend while increasing product functions and features and reducing time to go to market.

Rekha, Developer: Rekha is a senior Java/J2EE developer of working at Cygnet Infotech, having rich experience developing cloud ready scalable applications. She is an analytical thinker that resolves on going issues or defects, often called upon to consult on problem that have eluded resolutions by others.

Priya, Designer: Priya is a senior graphics designer working at Cygnet Infotech, having rich experience in user interfaces and user experience. She is a creative designer & feels a creative release when dots connect, things fall into place for better visuals.

Nirav: Java Architect; Nirav is a Java architect working at Cygnet Infotech, who is known for innovative ideas and transforming concepts to realities. He is passionate about innovation, communication, and teamwork to ensure quality, timely project completion.