

## COMMUNITY INCLUSION CURRENCIES

Lasting Solutions with Early Action and Resilience Financing

### Executive Summary

Community Inclusion Currencies (CICs) introduces a replicable mechanism for communities to eradicate poverty by creating connected, inclusive, and sustainable local economies using community currencies and open source blockchain technology. We propose reinventing cash transfer programs to act as a catalyst for communities to develop and trade their own medium of exchange (CICs) backed by their own productive capacities. Current pilots in Kenya have shown that CICs enable vulnerable communities to have a long-term multiplier - more than 21 times traditional donor assistance - effect on cash transfer fund impacts. CICs tackle multiple Sustainable Development Goals, particularly no poverty, no hunger, education, gender equality, clean water, economic health, reduced inequality, innovation and infrastructure, and sustainable communities.

### Overcoming the Limitations of External Aid

Traditional aid development programs have failed to address the fundamental problems plaguing the economic infrastructure of marginalized communities. The bulk of the aid flows out of the community too quickly to provide lasting impact, while key community members and resources remain largely underutilized. Finally, there is simply not enough aid to go around; The UN estimates 2 trillion US dollars are needed to meet the Sustainable Development Goals (SDGs) and World Bank Credit Gap. The ability to leverage existing aid into effective credit and attract private sector actors are key missing components to fill these gaps.

The Red Cross has been on the forefront of the cash-based transfer movement because of its ability to support greater agency and dignity for constituents and to bootstrap local economies. Along this vein, the Red Cross is interested in innovative solutions for Cash Transfer Programming (CTP).

Studies on CTP [[https://ssir.org/articles/entry/givedirectly\\_not\\_so\\_fast](https://ssir.org/articles/entry/givedirectly_not_so_fast)] have concluded that they have high potential but have yet to find sustainability and proper exit strategies. However, there is untapped potential in cash transfer if it is viewed as seed funding for the creation of a local medium of exchange.

Vulnerable communities don't lack demand, or labour, or ideas. They lack a medium of exchange to deploy their underutilized resources and an ability to generate financial capital themselves. This is the core of our proposal for Community Inclusion Currencies: to provide a replicable economic, technical and social mechanism that enables communities to increase local trade by leveraging capital from cash transfer programming and private sector funds.

### Introducing Community Inclusion Currencies

Community Inclusion Currencies are blockchain-based eVouchers that community members use to buy and sell basic needs in the face of scarce national currency. CICs are backed by the local goods and services of a community. Their value locally is softly-pegged to the national currency, while the exchange out to national currency varies based on the amount of reserves or "seed" funds remaining. While they circulate in communities at unit value 1:1 hard-pegged to national currency, their total exchangeable value to national currencies can never be greater than the value of their reserve. We propose reserve funds from both exogenous and endogenous sources.

Community Inclusion Currencies are complementary to the national currency by being counter-cyclical to the national market. When the value of the national currency goes down due to disasters, international market fluctuation, or other factors, the relative utility of CICs goes up, thereby allowing community members to continue trading basic goods and services amongst themselves.

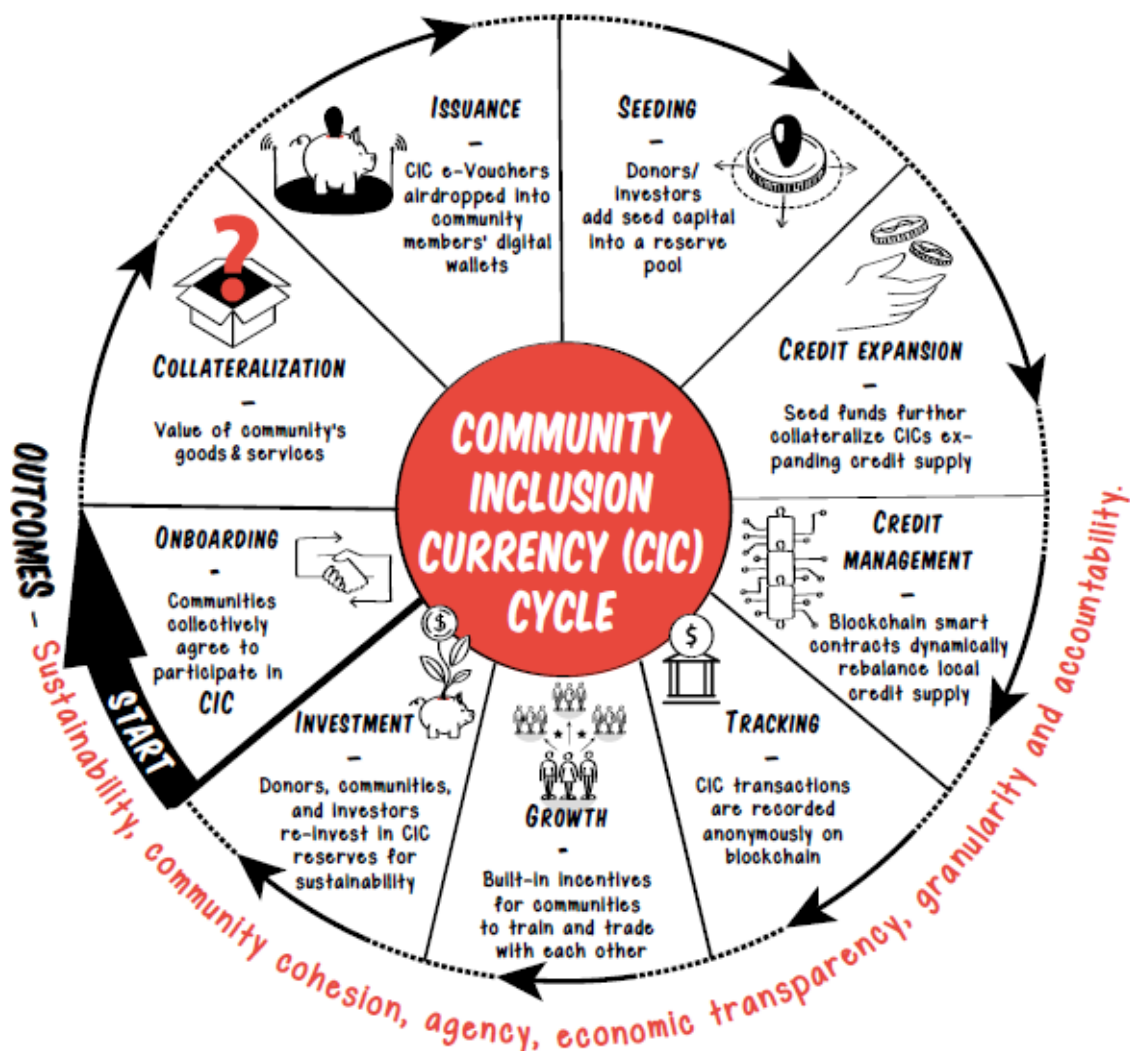


CICs are transformational in vulnerable communities because they provide this resilience. This is particularly true for the communities we target, which are in arid and semi-arid areas that frequently face disasters ranging from floods, drought, disease outbreaks or community conflict.

### Community Inclusion Currency Process Overview

The following diagram follows the path that a new community travels as it spins-up a CIC. Depending on the situation, not every phase will apply, however in every instance the starting point is actively engaging community leaders to ensure there is broad-based buy-in, setting the tone for a successfully implementation.

Diagram 1: CICs process cycle and attributable outcomes



Once a community self-select (or is identified by an NGO) to participate in a CIC project and completes a comprehensive onboarding process, CIC eVouchers are minted and distributed to selected community members as per their wishes via voting systems and standards. Selected token recipients could be all households and vendors in a community, or they could be determined by the implementing NGO(s) or via a community vote. Enrolment of community members can be completed by a data-upload process such as Kobo Toolbox, or via self-sign-up on an Android or Unstructured Supplementary Service Data (USSD) application. A USSD is a global system for

mobile communication technology that is used to send text (SMS) between a mobile phone and an application program in the network. Applications may include roaming or mobile chatting.

The community agrees to trade Community Inclusion Currency eVouchers in lieu of, and at the same value as the national currency, using them to buy goods and services from each other. Purchases are made with the support of a 'Digital Wallet', which may take the form of a Native Android App, SMS or USSD Mobile App for Feature Phones, or a Contactless Payment Card. Program data such as daily volume and expenditure categories is relayed to the NGO via the program dashboard and based on parameterizations of this data it can trigger additional seed funds injected.

The eVouchers are spendable among other communities using their own CICs through connected reserve eVouchers using a smart contract exchange protocol. These reserve eVouchers can simply be CICs themselves that act as regional connectors. These connectors in turn can be connected to seed funds. This means that people can continue to trade even when an economic downturn results in a shortage of national currency or when Seed funds are used.

To increase community resilience through diversity of markets, people are able to trade one Community Inclusion Currency for others using an exchange protocol built into their eVouchers. Exchange rates are set based on supply and demand via bonding curves linked to smart contracts, and CIC's and their reserves can include restrictions to prevent the total supply of any given CIC from dropping too low.

Community Members can use fiat currency to buy more Community Inclusion Currency eVouchers, and equally sell CICs in exchange for fiat. Once again, an exchange rate and other parameters are set to ensure the total supply of Community Inclusion Currency never drops too low. Note that for sustainability CIC users should be able to deposit their own seed funds.

Finally, external funders such as donors, can provide 'Reserve' funds in their native currency, for example USD. These Reserve funds are used to ensure that there is enough capital available for Community Members to cash out their CIC eVouchers if they so desire.

### **Case Study: Multiplying the Impact of Cash Transfer Funds in Kenya**

In Kenya, Grassroots Economics in coordination with Red Cross has developed a pilot of CICs called the Sarafu Network. Participants receive eVouchers that they can trade via their feature phones with no internet required. These eVouchers are worth 400 Kenyan shillings (softly pegged) when used to purchase local goods and services and have variable amounts when trading out to national currency. The difference between CICs local exchange value compared to their national currency exchange value creates an opportunity for balance between CICs and for using national currency to purchase CICs - refilling their reserve.

Importantly, the pilot suggests that CICs can sustain the impact of CTPs. The Kenya Red Cross started supporting cash-for-work programs six years ago in Kwale, Kenya, which is chronically food insecure. Unfortunately, when the program ended two years ago, so did much of the communal work - except in those areas using CICs to fill the cash gap left. In those areas, community leaders had heard about CICs and seized the opportunity to start their own community currencies. Because of this, over the last six months CICs in the Sarafu Network have been adopted by over 5,000 small businesses and schools among communities (growing at over 1,000 users a month), reaching over 20,000 people in aggregate, and enabled over 65,000 transactions for basic needs to date. Each transaction is recorded anonymously on the blockchain, revolutionizing the humanitarian sector's transparency, accountability, and ability to measure progress on SDGs.

The Sarafu pilot CICs have had a significant multiplier effect on their initial seed funds. In a two-month period alone, with just 152,129 Kenyan shillings (US\$1.5K) in donor “seed” funds as reserve, there was the equivalent of 420,000 CICs eVouchers created and 3.2M in Kenyan shillings (US\$32K) of CICs in local trade - 21 times the size of the seed, with no loss to Kenyan Shilling trade. This multiplier effect on local trade only increases with expansion and time, since many program costs are flat and become more efficient with scale. Grassroots Economics was awarded the Blockchain Impact Award by [NewsWeek](#) and Business Week in recognition for this innovation.

### Value Creation

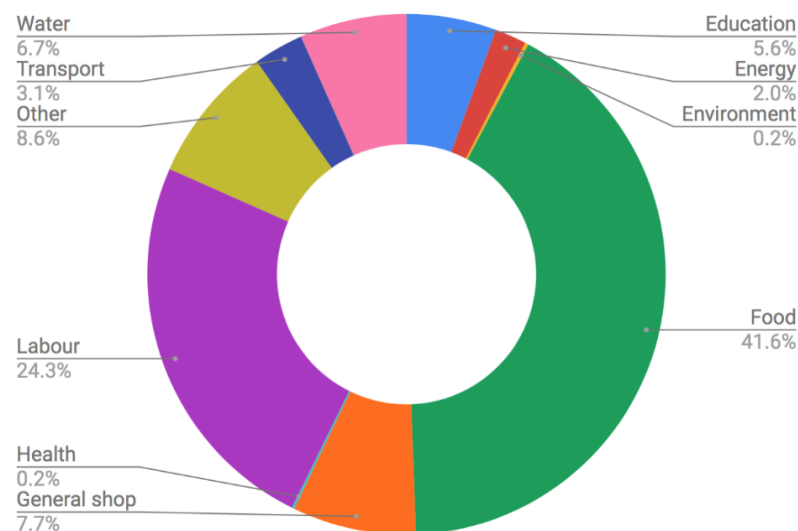
CICs offer a way to multiply aid funding by creating a local means of exchange with variable exchange rates to national currencies. These eVouchers track and increase local trade creating more vibrant, inclusive markets. The most radical aspect of CICs is the sustainability of trade within the community. Through local acceptance and backing in goods and services CICs will continue to circulate locally rather than drain out of the community as is often the case with traditional aid or CTP, outlasting the initial injection of donor funds.

The humanitarian sector will have open, free access to a new economic, social and technical mechanism for global communities to build resilient local economies and break the cycle of poverty. All code, systems, smart contracts, and algorithms will be available open source and disseminated through extensive networks.

If engaging 40,000 individuals, an estimated US\$5.9M will be generated in local trade, which continues to provide resilience and food security long after the grant period. This would directly affect 160,000 household members, the majority of whom are children. CICs enable them to make progress simultaneously on key SDGs: no poverty, no hunger, education, gender equality, clean water, economic health, reduced inequality, innovation and infrastructure, and sustainable communities.

CICs make local economies more resilient by enabling counter-cyclical markets to the national currency creating regional stability in a similar fashion to the Swiss WIR bank.

Diagram 2: Total goods and services bought with 10 different CICs, 2018-2019



CICs offer the additional value of providing new economic activity data that can serve as identity claims and credit underwriting data for people who are unbanked or underbanked, which address the “innovation and infrastructure” SDG.

## Good Governance

The CICs themselves are blockchain smart contracts with the following governance attributes:

CIC creators will be Savings and Internal Lending Cooperatives (SILCs) and community groups that vote using a voting token on taxation, participatory budgeting, ToT endorsements, reserve amounts and reserve tokens (eVouchers). CIC voting tokens will be automatically allocated and replenished each month. Sending voting tokens to another user will indicate endorsement and a proportional amount of taxation will go to that user. These voting eVouchers can also be used for other governance issues, like changing the CIC name. The goal is to expose as much control over the CIC eVouchers to users as is possible.

Regional eVouchers create exchange rates between connected CICs and in turn have a connection to seed capital issued by donors. The exchange rates of the CICs to each other don't vary based on the regional token's reserve. This regional token will be tied in value to seed funding with a 20% reserve ratio.

Seed funds will be governed by the donors themselves and moved into reserves of CICs based on donor plans as well as parametric triggers, which can include progress on SDGs.

Private data is held by the user in the case of smart-phone usage or by a designated intermediary such as the Grassroots Economics. For transmission of cash or eMoney over the system users may opt-in to offer full KYC information to money-on/off-borders such as Sempo. All CICs and regional contracts and amounts will be on a public ledger to enable transparency of the entire monetary mass. The digital ledger serves as secure data collection available to the humanitarian sector, promoting a deeper understanding of how vulnerable communities earn, spend, and are interconnected.

## Sustainable Development

Community Inclusion Currencies flowing through communities, geographic regions and municipalities can provide both qualitative and quantitative measurements for economic, environmental, and social indicators and impacts. Measurements of CIC transactions and user-contributed demographics, as well as third-party audit and survey data, can be packaged into valuable indices for development and used as standards for proof of impact related to the Sustainable Development Goals (SDGs). SDG impacts can have various measurements using CICs blockchain transaction data, such as:

**Economic:** The project solves major limitation in typical cash transfer programs, in that CICs continue to circulate within the community even after the donor funds stop. As mentioned earlier, the velocity of money for Sarafu CICs ranges from 0.9-1.7, approaching the US Dollars velocity of money for US dollars, which is 1.45. Furthermore, CICs create access to largely unavailable economic information (with substantial policy implication) from employment in the informal sector, which represents a significant 66% of employment in Sub-saharan Africa. Trade data helps indicate missing resources and businesses inside communities.

**Environmental:** CICs trade data can be analyzed to determine access and affordability of both electricity and renewable energy for underserved bottom-of-the-pyramid communities. This data can also shed light on imports and exports as well as tree planting and other environmental factors. Parameterizations on CIC trade data can be used to encourage environmental conservation.

**Social:** CICs build more inclusive, interconnected communities. Increased local trade between community members breeds more trust and familiarity, as well as more recognition of the

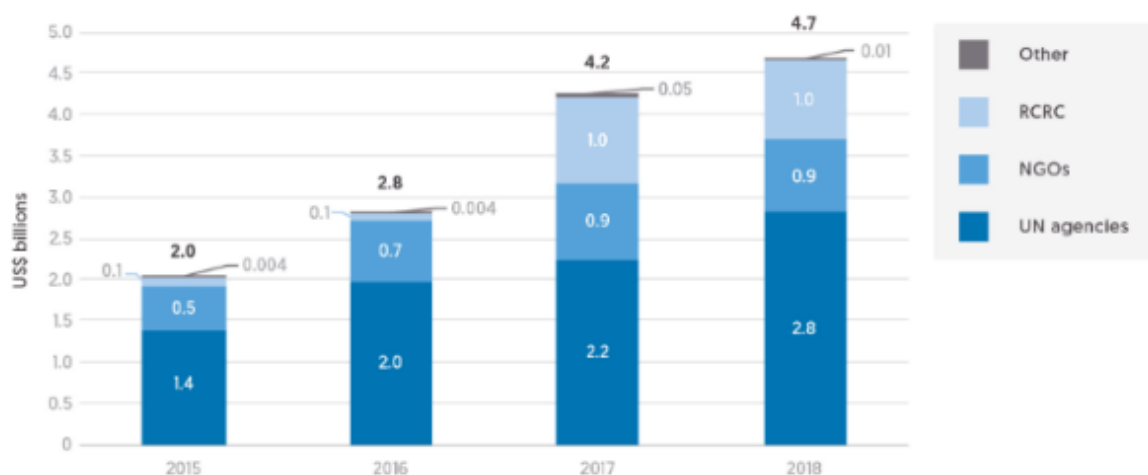


community as a resilient social unit that can weather the ups and downs of disasters or external markets<sup>1</sup>.

### Ex-ante Cash and Voucher Assistance optimized when channeled through CICs

According to UN OCHA, global volumes of ex-post (after a risk event occurs) cash and voucher assistance (CVA) schemes grew by 10% from 2017 to 2018, to a total of US\$4.7B. As detailed in the graph below, the Red Cross accounted for 21% of global humanitarian CVA in 2018.

Diagram 3: Global Volumes of CVA, 2015-2018<sup>2</sup>



Despite CVA's expanding role in ex-post humanitarian assistance, there has been limited innovation in this space, especially in the context of ex-ante (or funding post risk event) and forecast-based action schemes. This is unfortunate because CVA has a significant potential to play a crucial role as an anticipatory modality: in providing households with essential liquidity before a hazard strikes so that they can reduce their exposure, reduce their risk of disaster and even, in some cases, avoid a disaster altogether. This can apply in both natural hazard and conflict situations

Indeed, liquidity means communities don't need to sell assets to cover costs in either a slow or sudden onset disaster or when they want to act to protect their houses, save lives, and livelihoods. Supporting markets through CVA at demand (household) or supply (vendor) level prior to a shock can support availability, stabilise prices, maintaining, and possibly increasing, access to essential services too (i.e. health, education). Indeed, efforts to date have focused on making social protection mechanisms shock-sensitive: allowing vertical and horizontal expansion – in response to a disaster once it has occurred. Increasingly CVA, based on forecasts and agreed triggers, is being considered in terms of its potential for use in anticipation of disasters – for early action.

To the end, over the past decade, new risk forecasting systems have emerged paving way for a handful of ex-ante CVA mechanisms to be tested in the field For instance, in 2015, based on an El Niño **forecast**, funds were released through the World Food Program's Food Security Climate Resilience Facility for Zimbabwe and Guatemala to take anticipatory actions to better cope with the consequent drought impacts.

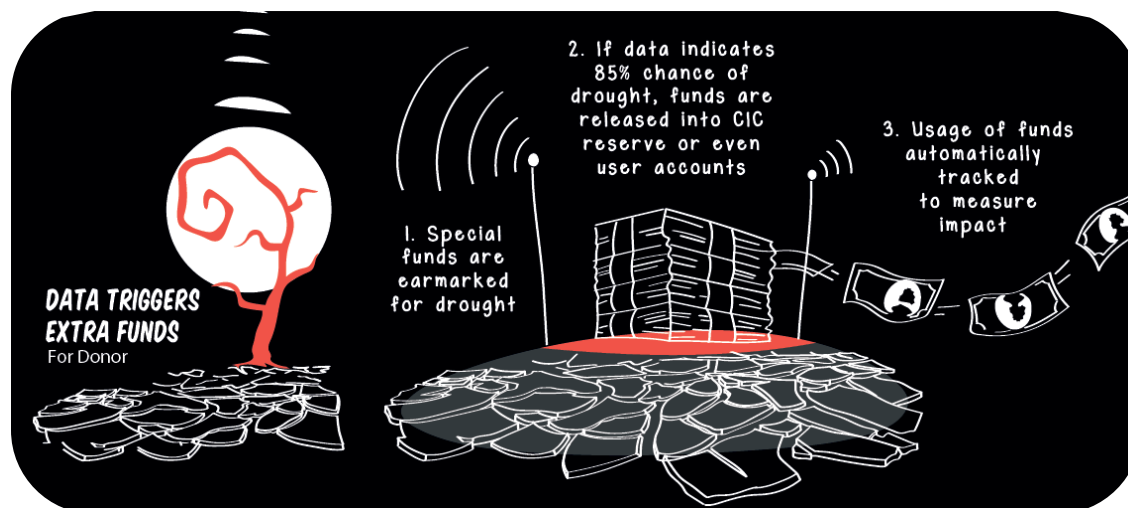
There is growing evidence and understanding that timely finance prior to a disaster has a significant positive impact and is very cost-effective (compared with costs of emergency response). However, uncertainties in forecast systems, and issues related to progressive

<sup>1</sup> Preliminary study: <https://www.grassrootseconomics.org/research> by Daan Sillen

<sup>2</sup> Development Initiatives based on data provided bilaterally by implementing agencies and UN OCHA's FTS.

recoveries, multi-donor funding coordination, cash and voucher traceability, alternative sources of capital, and promoting long-term resiliency remain large<sup>3</sup>.

Diagram 4: CICs offer a dynamic and sustainable solution to challenges facing anticipatory CVA



Some of the key design elements of CICs (i.e. conditionality for pay-out, targeting communities, tokenized payment method, traceability, leverage, and rapid aid release) steers greater impact, cost-effectiveness and efficiency for CVA across the **entire** development-early action-recovery spectrum<sup>4</sup>. CICs not only change the existing paradigm but also seed an environment that is fundamentally builds long-term resilience in vulnerable communities.

For donors interested in early action, CICs compared with traditional CVA, significantly reduce the risk exposure associated with acting in vain: acting on a false alarm where the hazard fails to have the expected impact. When an early action is triggered it is not necessary to transfer hard (or local) currency directly to community members but rather simply increase the community's eVouchers supply (i.e. similar to quantitative easing carried out by central banks, worldwide). By increasing the number of eVouchers available to trade, CICs mimic the act of transferring funding through a traditional CVA program. However, if the forecast model produced a false alarm (i.e. drought or flood is not imminent), donors could collapse (or burn) the number of eVouchers within a community; and thus, returning the system back to its pre-crisis levels.

CICs create the possibility of enhancing the effectiveness and efficiency for ex-ante CVA schemes in unimaginable ways mainly due to network effect, technology, and community stewardship.

### Contact Information:

If you would like more information about CICs or a high-resolution copy of the CIC poster below, please contact the following individuals.

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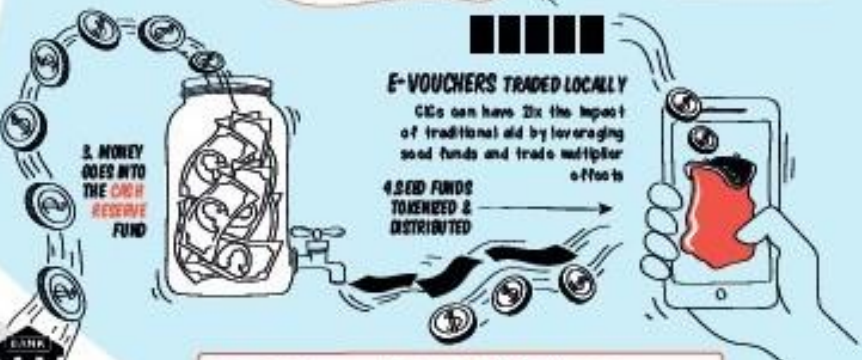
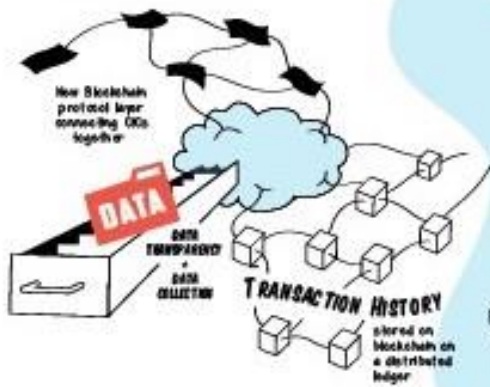
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<sup>3</sup> University of California, Office of Research, "Forecast-based Financing for Food Security" (September 2018)

<sup>4</sup> Data compiled from 10 active CICs deliver 21x more impact than traditional humanitarian assistance (see poster below for more)

# COMMUNITY INCLUSION CURRENCIES

## LASTING SOLUTIONS WITH EARLY ACTION & RESILIENCE FINANCING

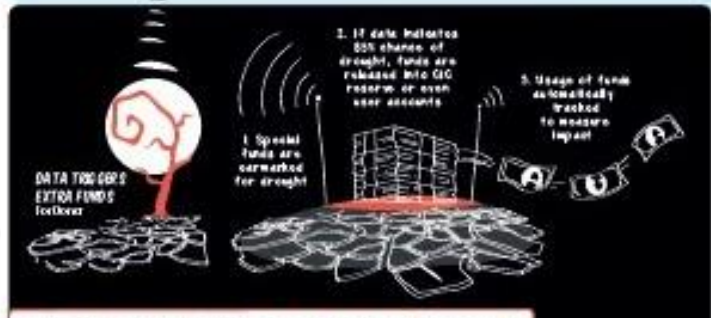


### INPUT



### Part A: Seed Reserves

### Part B: Economic Growth & Resilience



### Part C: Precise Data for Early Action Protocol