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**A RELATIONAL ANALYSIS OF SARAFU NETWORK:  
EMERGENCE OF A MONETARY ECOSYSTEM  
FOR THE PROSPERITY OF THE COMMUNITIES**

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## INTRODUCTION

In this research I will examine the implementation of Sarafu network, which is a network of inter-operable community currencies in a marginalized community of Kenya.

In the first chapter I will describe the theoretical framework of the research, which refers to an extended relational work approach to analyse the complex context of market and non-market related interactions taking place in the community via diverse media. In this chapter I will also present the background of the research by introducing Bernard Lietaer's conceptualization of the transition from a monetary system based on national currencies to one based on multiple community currencies (Lietaer, 2013).

In Chapter 2 I will expose the criteria of choice of the community and the methodology of the research, which was carried out through the integration of the following methods: semi-structured interviews, participant observation, and analysis of the transactions. The data sources for the analysis of transactions were: the Sarafu blockchain based database, the accounting book of a savings and loans association presented in Chapter 4, and of traditional forms of e-money in Chapter 5.

In Chapter 3 I will present the village of Miyani and I will analyse from a micro-sociological perspective a group of three families, and present how its members meet their daily needs, and assess the role of Sarafu in this respect.

In Chapter 4 I will proceed by describing, from a meso-sociological perspective the *chamas*, which are informal microfinance groups playing a fundamental role in the economy and society of the area. I will focus specifically on two of these groups, and I will present their economic interactions with their members and with external actors both via traditional media and Sarafu.

In Chapter 5 I will present the macro-sociological dimension of community life and the impacts of Sarafu had in the time period considered between February and December 2019, and in the Conclusions chapter I will expose the results of the analysis.

# CHAPTER 1 - THEORETICAL FRAMEWORK AND BACKGROUND

## THEORETICAL FRAMEWORK

My research is aimed at understanding how the financial innovation introduced with Sarafu network is improving the life of marginalized communities in Kenya.

Sarafu is a network of interoperable community currencies based on blockchain, allowing its users to trade with one another via 12 community currencies across the diverse communities.

The users, amounting to roughly 4500 businesses in June 2019 (Ruddick and Chirenga, 2019), increased exponentially, and are today more than 8000 (Ruddick, 2020). Of these communities 6 are located in urban slums, and 6 in rural areas, both Coast and Nairobi Provinces.

The communities living in the Mnyenzi sub-location, where the community currencies spread the most, and as it can be noticed from the chart 1.1, adopted the tokens named YENI, ZENI, and MIYANI.

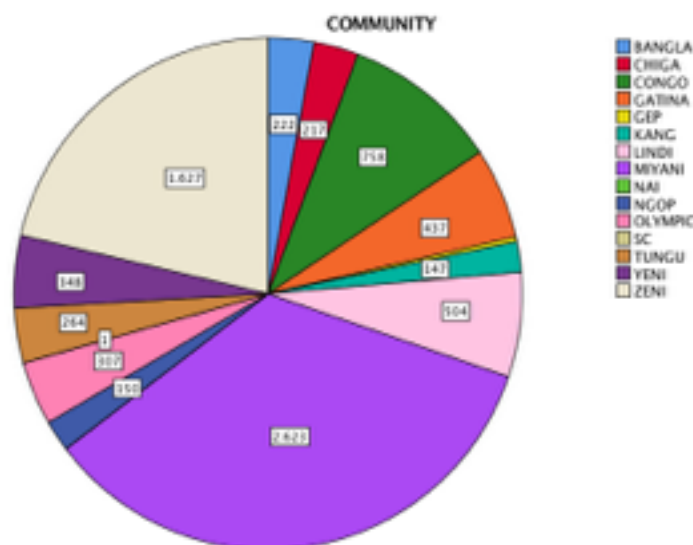


Chart 1.1 Users of the community currencies in the Sarafu network.

I will focus in particular on one of the communities, living in the countryside of the Coast Province of Kenya, in the Miyani area (Mnyenzi sub-location). I will do so by assessing how the popula-

tion of Miyani meets its needs, by considering 7 provisioning areas, namely Food, Water, Education, Healthcare, Housing, Credit, and Contemplative Practices.

In order to capture the complexity of relations within a community where large part of the economy is informal, and where there are no or few formal property rights, I will try to analyse the context through a plural paradigm taking into account diverse forms of economies.

More specifically, my analysis, instead of referring to a single economic model, is oriented to the integration of different models to achieve the most detailed picture as possible of the society living in the community, and its relation with external actors of any kind.

GDP is an unfit measure for describing the wealth of *local markets*, as Jane Jacobs (Jacobs, 1987) pointed out, and even more to consider the wealth of communities such as the one I will analyse. The founder of Grassroots Economics, William Ruddick, physicist and development economist in the White Paper of the foundation, proposes to regard communities as the *salient unit* of the economy, defined as "network that cares for its member nodes" (Ruddick, 2019, p.2).

In my research, however, I will consider not only the market relations traditional domain of economics, but I will refer also to the theoretical frameworks of: *household economy* as defined by Bjornholt (Bjornholt, 2018), and *commons economy*, as described by Bollier (Bollier, 2019).

According to Bjornholt, little attention was paid to forms of economies different from the market-oriented one, such as the economy of the household, which contributes the *non-profit*, or *volunteer work*, and the *household economy*. She points out that, even though in some cases feminist economics drove a change in the international standard of national accounts (UNSNA) that recognized the value of "Unpaid household work that leads to the production of goods", as Bjornholt remarks, the unpaid time devoted to "the care of family, friends and neighbours" (Bjornholt, 2018, p.140) is still not considered by conventional economics.

This is due to the fact that little attention has been paid to the *quality* of economic interactions, and that therefore, a large part of what grounds and regulates economic relations has been disregarded by economists and by economic sociologists.

The focus of this sociological and economic analysis is not on the formal aspects of relations, especially in an area where formal domain of economic interactions, such as written contracts, is often

absent, or is not of the kind western civilizations are used to, but on the meanings that the participants in such interactions share of them.

In a place like Miyani, as everywhere else, in fact, diverse kinds of socio-economic relations formal and informal coexist, and the boundaries of such interactions are defined by the actors themselves and their social context and community. One particular type of economic interaction is that related to commons: a commons, according to Bollier is a living social ecosystem through which people address their shared problems "in self-organized ways" (Bollier, 2019). The definition doesn't refer to a specific good or to a formal type of organization, it refers, instead, to the relations taking place among the members of a group and to the aims of this group. When conventional economics refers to goods as *excludable* or not gives for granted that the excludability is inherent in the good itself (Bollier, 2019), but actually a social choice is being made regarding that good which is culture-specific. Likewise, categorizing organizations and social groups referring only to their formal aspects can be misleading and might fail to capture their complexity.

As I will discuss in further detail in Chapter 4, the *chamas* are self-organized groups of 25 people. Their model was initially introduced in Miyani by non profit organizations seeking to empower the communities, but these systems, rapidly spread across the communities, and were autonomously adopted by the population as a means of governance at a community level for goods and resources, besides performing their traditional function of table-top banking associations.

These groups often have some aspects of commoning and some of market interactions, or in some specific cases can employ a commoning approach and in other a market-oriented one depending on the context, due to their capacity to self-determine which kind of relation is most fit for the situation.

The *relational work* approach as defined by Zelizer will be employed, in order to consider the economic relations as social interactions based on 4 elements: *distinctive social ties*, *the set of economic transactions*, namely practices conveying goods and services, *the media* used for such transactions, *the negotiated meanings*, consisting in the participants' understandings of the value of the relation at issue (Zelizer, 2012).

Zelizer's conception of the *multiple markets* (Zelizer, 2010) is particularly useful to interpret the transition part of the population is experiencing from a single-currency-based monetary system to a plural monetary ecosystem, because it provides the bases for a new formulation of money that best

fits such a complex and plural eco-system, one that challenges the traditional economic definition of money. For this reason, I will refer to the *relational work* performed in every economic transaction (Zelizer, 2012), whereby money is *earmarked*. According to Zelizer, economic actors, both individuals and institutions, "engage in the process of differentiating meaningful social relations" (Zelizer, 2012, p.146) through *earmarking* money. In such process, they differentiate an instrument considered homogeneous and fungible by the traditional economic theory. When earmarked, money is given a plurality of social meanings, and is used to create, destroy or shape social relations and boundaries. In a context such as that of the Sarafu network, for instance, the utility of the community currencies depends totally on the social meaning that is given to them, and this is constantly negotiated by its users.

The *relational work* meets the need for an extensive relational model to sociologically understand the monetary interactions taking place in the networks through the exchange of the local currencies. This requires also to integrate the relational and the enactive approach. Giorgino considers the *contemplative practices* essential to the study of social groups, because these give centrality to the *mindfulness*, as an essential component of the interactions among subjects, and to the embodied nature of relations. As he puts it "social processes are constituted by bodily based interactions, not yet patterns" (Giorgino and Walsh, 2018 p.34), and, likewise, the meaning doesn't have a "symbolic base" (Giorgino and Walsh, 2018, p.33) , but one originating from the embodied experience. This has implications on the social meaning of money. For these reasons, the presence of *life skills* was assessed as well, due to the fact that these ground social interactions, and at the same time are a resource for individuals and groups to disentangle from socially constructed identities.

In order to assess them in accordance with the enactive approach (Varela, 1992), the presence of the following elements was observed, without disregarding the mediation of substantial cultural differences from the context described by Giorgino: attention skills, Emotional awareness, sensorial awareness, Self-observational labeling skills , non-judgmental attitude and acceptance skills (Giorgino and Walsh, 2018, p.36).

The economic interactions in the Sarafu Network were investigated by examining the four key elements of the *relational work* model as described by Zelizer:

1. distinctive social ties: connections among individuals or groups involved in the economic activity;

2. a set of economic transactions: interactions and social practices conveying goods and services[...];
3. media for those transactions: representations of rights to goods and services;[...]
4. negotiated meanings: participants' understandings concerning the meanings of relations, transactions, and media including their moral valuation, combined with constant negotiation, modification, and contestation of those meanings. (Zelizer, 2012, p.151)

## **BACKGROUND**

Bernard Lietaer (Lietaer, 2013) described the transition from a monetary system based on national currencies to one based on a plural ecosystem of currencies helping communities to meet their currently unmet needs.

He exposed how the current monetary system hinders contemporary societies from adapting to the major changes occurring in our times (Lietaer, 2013).

In 2002 he outlined 4 major trends, that if not adequately and rapidly faced and coped with, could have caused major disruptions in society: age wave, information revolution, climate change and biodiversity extinction, monetary instability.

His predictions after 18 years appear to have been extremely punctual, and, unfortunately, the worse case scenario he outlined prevailed, since society didn't promptly adapt to most of the issues raised by these trends. Some of the proves of it are the global relentless concentration of wealth occurring nowadays (Routley, 2018), the dire consequences of the ongoing climate change (Bendell, 2018), and the financial crisis in 2008, which demonstrated how fragile our societies are.

These are extremely complex problems, engendered by the interaction of a large number of actors and factors, which don't have a straightforward solution, but it is exactly for this reason that the monetary system, which as Lietaer points out is nothing but an *information system* (Lietaer, 2002) regulating power relations in society, needs to be redesigned to coordinate action for addressing these, as well as many more, problematics effectively.

More specifically, he outlined the importance to create a monetary ecosystem that incentivizes cooperation and not exclusively competition among economic actors through the implementation of complementary currencies.

A centralized monetary system regulated by a national central bank produces currencies that have as their main characteristics: to be geographically attached to a nation state; to be *fiat*, meaning created



from a legal declaration; to arise from bank debt; to have a cost determined by interest rates. In a monetary system with such characteristics, actors have incentives to accumulate, rather than to make it circulate (Lietaer, 2001). This has dire consequences on society, such as concentration of wealth, due to the characteristics of interest, entitling a minority to receive a continuous transfer of wealth from the vast majority, who need money to make economic transactions (Lietaer, 2013).

This was confirmed by a study on German families on 2007, which showed that the wealthier 20% of the population received transfers from the remaining 80% of the population due to the presence of interest rate feature in the monetary system. This study showed also that the middle class was the one that was paying the highest price of this characteristic (Lietaer, 2013).

Scarcity of money, moreover, leads to competition and, therefore, to the community breakdown currently occurring in most societies. As Lietaer puts it, the absence of reciprocity among members of communities leads to the destruction of the social binds that keep communities together. Shorter-termism, another consequence of the current design of the system of incentives and disincentives is, the focus on short-term planning, which most economic actors are forced to have. Also the procyclical creation of credit, emphasizing upturns and downturns of the economic cycle is in Lietaer's view one of the effects of the current features of money, worsened by the mobility of capitals. For these reasons complementary currencies nowadays play a fundamental role as a potential solution to these manifold problems. They could add the "diversity and connectivity" (Lietaer, 2013, p.199) that would help the resulting monetary ecosystem to reach the optimum point between efficiency and resilience. More than 4000 complementary currencies of different types are now circulating, and most of them are of the LETS or Timebank kind, but also business to business alternatives are present, such as WIR, (Lietaer, 2013), or Sardex (Greco, 2015).

All these currencies, however, due to the fact that their features and their governance are tailored to meet the needs of the community for which they were created, face a major challenge when it comes to making the currencies scalable and interoperable. As Ruddick points out, a major cause of failure of community currency projects over the past two decades was the lack of acceptance (Ruddick and Chirenga, 2019).

Other traditional weaknesses of local currencies, as the failure of "Papleitos" in Argentina mentioned by Lietaer (Lietaer, 2013, p.184) proved, have always been the the security and transparency of the transactions.

To overcome these obstacles, Grassroots Economics implemented the community currency system on blockchain at the beginning of its digitalization (Ruddick and Chirenga, 2019). According to Ruddick this allowed to "build governance and collateral systems that safeguard their communities' markets and wealth" (Ruddick and Chirenga, 2019, p.5) via smart contracts.

According to Swan, (Swan, 2015), blockchain technologies can be classified in 3 groups: Blockchain 1.0, which concerns applications related to the systems of payments, 2.0, applications involving smart contracts to implement financial contracts and policies, and 3.0, including also applications of the technology that are not directly related to finance.

Swan points out that this potentially disruptive technology might reconfigure "aspects of society and its operations" (Swan, 2015). The reasons why this is the case are several: firstly, the technology enables the creation of distributed databases and archives which are potentially transparent and open to anyone. Secondly, the technology will improve drastically the security of the data within the databases, which will necessarily be copied on many nodes at the same time.

Thirdly, the smart contracts that can be created with the blockchain have different characteristics from both traditional legal contracts have peculiar characteristics which make them different from traditional contracts, and informatic programmes, because they are distributed and potentially unalterable. A smart contract is a programme encoded within the blockchain and executed automatically. The potential of such technology is that none of the users, nor external actors, if blockchain is functioning correctly, can prevent the contract from being executed according to the instructions encoded.

This, as Swan points out, has extreme consequences for the organization of social life, which could possibly lead to the creation of a new body of law, due to the fact that the traditional contracts are loosely binding if compared to the smart contracts, which are technically binding.

"Contract compliance or breach is at discretion of human agents" with traditional contracts, which is not the case with blockchain-based smart contracts. With respect to the case of the Sarafu network allows to create a platform to encode contracts regulating the financial transactions in a way that wouldn't have been possible before, a way which ensures secure and transparent execution of policies that have been agreed upon by the actors within the network.

This new paradigm showed the emergence of new models for the creation of systems of interoperable community currencies, such as Waba network (waba.network), or Credit Commons.

In order to understand the implementation of Sarafu, however, it is important to consider also the history of the foundation and of its projects' implementation. Grassroots Economics has been empowering local communities since 2011 by printing community currencies circulating as vouchers, such as Gatina Pesa, Eco-Pesa and Bangla-Pesa, and has used a USSD interface for the users of the community currencies since 2015 (Ruddick). The Sarafu network project started in 2018 on POA, which is a permissioned blockchain, and, in January 2020 (Ruddick, 2020) was implemented on a completely open source platform based on Ethereum (Wood, 2019).

Since its introduction, Sarafu network was meant to become a platform where the communities could design their own community currency. As the initial pilot project for the digitalization started in 2018, the foundation decided the initial token-supply based on the purchasing power needed to feed a family of 5 people for one day (Ruddick, 2019), corresponding to 400 Sarafu community tokens, which were given each new user registering in the system. The foundation decided also the geographical boundaries for the circulation of each token and their hierarchy. The Bancor protocol is designed to enable a hierarchical organization of tokens, which allows to automatically connect different tokens by injecting into their reserve the same token or *stablecoin*. This allows the implementation of connections among the currencies scaling according to a fractal model (Ruddick and Chirenga, 2019). For this purpose, one *network token* was created, and two regional tokens, which meant to be a reserve for the 12 community currencies. The tokens' exchange rates to one another and to national currency depends on the amount of reserve backing each token and is automatically calculated by the smart contracts implemented on the blockchain.

At the moment the platform has undergone a major transition by becoming a fully open-source platform (Ruddick, 2020), and the differences in prices of the diverse tokens created by the organization were equalized, so as to allow the implementation of a further step of the project, when the communities will be able to define by themselves the boundaries of the circulation of their own tokens.

The ecosystem of community currencies is based on clear policies that are encoded in the smart contracts regulating the transactions among actors, which are a key characteristic of Sarafu network, distinguishing it considerably from most community currency systems.

In particular, the model which Grassroots Economics refers to for the creation of the community currencies and their interoperability is one based on the *bonding curves*<sup>1</sup> described by Hertzog

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<sup>1</sup> Bonding curves are a model that enables the creation of tokens whose price increases as the supply increases. This token design was first theorized by Simon de la Rouviere in 2014 (medim.com)

(Hertzog, 2018). This protocol named Bancor allows the creation of a monetary ecosystem where each group can potentially create its own token (Ruddick and Chirenga, 2019).

Such technology allows, therefore, to create both "connected and decentralized economic systems"(Ruddick and Chirenga, 2019, p.4), and could possibly cause an unprecedented revolution for the field, since it could meet the need for a means of payment that is locally controlled but globally useful expressed by Greco (Greco, 2012).These policies, as well as their equations are described in the picture below.

### Community Currencies as Shares - Policies and Controls

Policy (on Smart Contract)	Control (on Platform)
<p align="center"><b>Pricing</b></p> $\text{Share Price} = \frac{\text{Reserve } (R)}{\text{Share Supply } (S) \cdot \text{Target Reserve Ratio } (F)}$	<p><b>Minimum Reserve and Target Reserve Ratio:</b>            The target Reserve Ratio is set at <math>F = 25\%</math>.            The minimum reserve is <math>R = \\$100\text{USD}</math>.            The minimum shares supply issued would be 400 with a share price of 1</p>
<p align="center"><b>Issuance</b></p> $\text{Shares Issued} = S \left[ \left( 1 + \frac{\text{Added Reserve}}{R} \right)^F - 1 \right]$	<p><b>Maximum Share Price:</b> As more reserve is added the share price can't reach more than 2x the value of reserve. After reaching a share price of 2, shares issued will be done via  <i>Shares Issued = Reserve Added</i></p>
<p align="center"><b>Redemption</b></p> $\text{Reserve Redeemed} = R \left[ \left( 1 + \frac{\text{Shares redeemed}}{S} \right)^{\frac{1}{F}} - 1 \right]$	<p><b>Throttled Redemption:</b> A shareholder can only redeem their shares for underlying reserve as a percentage of their share balances on a timed basis. <i>i.e. a shareholder can only redeem 10% of their share balance once a week.</i></p>
<p>Smart Contract solidity code available on GitHub:  <a href="https://github.com/GrassrootsEconomics">https://github.com/GrassrootsEconomics</a></p>	<p>Platform python code available on GitHub:  <a href="https://github.com/teamsempo">https://github.com/teamsempo</a></p>

Picture 1.1, Policies implemented in the smart contracts of Sarafu network by William Ruddick, (Ruddick, 2019).

The policies described above, however, are not fully implemented yet, because the communities at the moment cannot issue their own tokens by injecting reserve in national currency, nor in other tokens, and, therefore, cannot cash such reserve out.

Moreover, the *bonding curves* model, due to the fact that the tokens are accepted 1:1 with national currency as long as there is sufficient backing (Ruddick, 2019), allows actors to perform *arbitrage* between the price of the local currency and the value of the goods and services that can be bought

with that token. This should maintain the fluctuations within a certain range as long as there is acceptance of the currency. This is also aimed at rewarding the communities that provide wide acceptance of the community token for a vast range of goods and services.

Further, in the period considered in this research, the currencies' reserve was injected by Grassroots Economics sponsored by Doen.nl which provided a backing of of 10000 dollars (Ruddick, 2019). The redemption policy encoded on the smart contracts allowed the users to cash out 10% per month of their balance in Sarafu tokens, which allowed the application of the system based on bonding curves.

The community currencies minted were 40000, and were accepted as 1:1 with the national currency by the local businesses. These circulated at a velocity of money 3 times higher than the current M2 USD velocity (Ruddick, 2020), therefore leveraging the effect of the donation by the NGO.

NGOs, such as Kenya Red Cross and Greenworld Campaign took advantage of the *chamas* to provide cash assistance to the population in need, in such way that the assistance could foster local production (Dama, 2019).

Grassroots Economics also collaborates with organizations aimed at helping these communities to achieve the Sustainable Development Goals (United Nations). The foundation's goal is to empower the local *chamas* to generate endogenous credit by leveraging their scarce capital (Ruddick, 2019), and self-managing the issuance and circulation of the currency.

As pointed out by Marion Cauvet, Miyani, located in the Kasameni Location, faces severe droughts, that generate food crises which the inhabitants can hardly cope with, due to the fact that 80% of the population in the Location lives out of agricultural subsistence (Cauvet, 2018). In such situation Sarafu was introduced in 2017 as paper currency backed by a maize-mill run by a local *chama*, financed by Greeworld Campaign, which used the *chama* to manage it as a cooperative business. Cauvet points out in 2018 that this project has been able to provide relief from the food insecurity of the population (Cauvet, 2018).

The aim of Grassroots Economics's collaboration with the NGOs is that the communities can in the long run cease to need regular assistance from the organizations, and in the short run, the organizations willing to support the communities have a more effective alternative to cash assistance, which allows them, by seeding the reserve of the tokens managed by the community, to target their needs and keep track of the assistance through the secure and open source blockchain database.

Sarafu was implemented on a USSD interface, which allows also users who cannot afford a smartphone to use the digital currency on their handset-phone. This was extremely beneficial to the population, who could benefit also from a secure and unexpensive means of payment to make money transfers.

This is, however, only the last step on the path of financial innovation for the inclusion of marginalized communities in Kenya, as Edwards claims, for instance, mentioning the case of M-Pesa:

The combination of widespread cellular communication and the ability to transfer money instantly, securely, and inexpensively are together leading to enormous changes in the organization of economic activity, family relations, and risk management and mitigation. (Edwards, 2016 p.2016)

The population, as mentioned by Edwards was in large part already used cellular phones to transfer money, save and make payments before the complementary currency spread.

In Kenya, moreover, a wide range of microfinance apps are present providing credit to the poorest even with little or no collateral, but, as Donovan reports, in many cases these apps charge extremely high interest rates on the loans, and make the life of those who cannot pay the debts back even more insecure (Donvan, 2019).

## CHAPTER 2 - METHODOLOGY

### METHODOLOGY

The case study research methodology, as defined by Yin is used to understand the complex implications of the introduction of the Sarafu Network in its real life context (Yin, 2009). Due to such complexity, I decided to focus my analysis specifically on one area where the currency was introduced, in order to capture a picture as accurate as possible of the phenomenon. Since the occurrence of the phenomenon affects every aspect of social life, I deemed important to analyse the interactions taking place at three different levels: *micro*, *meso* and *macro*, (Denzin et al, 2018 p.341). This is done by paying attention to the perspectives of: the individuals, the organizations, the community, and their interactions with one another.

The fieldwork was carried out in a two-month time between October and December 2019, spent both in the Kwale county, where the Miyani village is, and in Kilifi, where the foundation's headquarter is located. In this period I conducted semi-structured interviews (Denzin et al, 2018) with 36 individuals in the Miyani area, and with 4 members of the Grassroots Economics foundation staff and the founder, participant observation, and the analysis of the transactions stored on the blockchain-based Sarafu dataset ([grassrootseconomics.org](http://grassrootseconomics.org)), and on the accounting book of one *chama*. Moreover, I integrated these analyses with that of the M-Pesa accounts of 6 users adopting both Sarafu and the traditional means of payment (Avanzo, 2020).

This research is focused specifically on the Miyani area, due to the conditions of extreme poverty and that it is a rural village in Kwale County, Kenya, which has some of the worst socio-economic indicators in Kenya. In the whole county subsistence farming is worth 80 % of the average household income, and 70% of the population is considered food poor (Cauvet, 2018).

In such situation, however, the users registered in Sarafu, the network of complementary currencies, which allows them to trade with one another, amount to more than 4598 in the Mnyenzi sub-location, even though Sarafu started to circulate only in 2017, with the introduction as a paper voucher backed by the Posho mill (Cauvet, 2018), and it was digitalized only in February 2019. The three tokens which together have more users than the remaining 9 local communities. For these peculiarities it is considered important to assess whether this social and financial innovation succeeds in

bringing prosperity to the communities, which concept should take into account the importance of all the forms of economy, namely household economy, market economy, state economy and commons economy.

The blockchain-based database offers a large quantity of data available to everyone, due to the open-source nature of Sarafu network, which can give powerful insights on the life of the communities using Sarafu, but only on condition that the connection between the digital and the real aspects of users' life is correctly understood.

Even though the data on blockchain-based databases are automatically generated through smart contracts, these respond to, and are implemented by, human action.

This invites the researcher to a further methodological inquiry, before using such data, due to the fact that, however simple, a method has been designed and used to collect such data and organize them, and, in Gobo's words, a method "(partially) constructs its results" (Gobo, 2015), whereby disregarding this fact, and building a research on such data could lead to misleading results. If "the results are the constructions of the methods used, and knowledge builds upon previously socially constructed knowledge" (Hervieux, 2016), then, the acknowledgement of the socially constructed aspects of the blockchain should not be the weakest link in such chain.

For this reason, participant observation and the interviews played an essential role in understanding how the system works and is actually used, and, therefore, how the data present in the database are collected. This allowed me to gain a further understanding of what the categories in the above mentioned database represent, and how these categories are defined. The preliminary findings relative to the user experience and usage of the complementary currency system, in their turn, guided my analysis of the quantitative data, by indicating: which set of data was more fit than others to respond some specific questions, the correspondence between the user or group of users and his/her or their digital wallet or multiple digital wallets.

Likewise, when it was consistent with the scope of the inquiry, some of the research questions were designed in such way the answers, if interpreted in the light of the transaction dataset, could have possibly helped to gain further insights on the user's or on the community's life history.

It is, therefore, evident how in this context the analysis of the extensive quantitative data in the Sarafu database, and the qualitative methods are complementary, because the former without the latter could possibly lead to misleading conclusions, as well as the latter without the former, for lack of precision.



This is due to the fact that, as Bazeley points out (Bazeley, 2016), quantity and quality necessarily imply one another, and, as a result, the thematic analysis carried out, will consider both the qualitative and the quantitative nature of phenomenon, by collecting data of the two types from the diverse sources above mentioned, and their analysis will be carried out jointly, as Gobo suggests (Gobo, 2016).

This analysis is based on two very different sources of data, regarding, however, the same objects of study, and, instead of viewing them as requiring two "incompatible" analyses, aims at merging the two by and creating a synthesis of both, and, therefore, use the richness of the data to "interconnect subjective, intersubjective, and objective parts" of the world studied (Johnson, Burke, Grey, Robert, 2010).

## **INTERVIEWS AND PARTICIPANT OBSERVATION**

I decided to integrate semi-structured interviews, as opposed to other research methods, such as surveys (Gobo, Mauceri, 2014) , due to the need to understand in depth the cultural and social differences of the area where the fieldwork was conducted, which could have possibly interfered with my capacity to master the data collection process. Semi-structured interviews allowed me to investigate in depth the complexity of the relations among the individuals, to adapt to such differences, and to make the changes required for the performativity of the research method. One of the main hinderances was, the language barrier. The Duruma-tribe population speaks its own dialect, the Chinduruma (Ethnologue.com), which is different from Kiswahili, and only few of them speak English fluently, which is not my mother tongue either. For this reasons, an interpreter who knew Kiswahili, that is the most spoken language in Kenya, the Duruma language and English was assisting me. Moreover, the interpreter knowing the Duruma language was necessarily a member of the community considered, which could be considered a weakness to some extent, due to the fact that the interviewees might have not wanted to share with a member of the community some information that I inquired about. This was, however, also a strength, due to the fact that he knew the place and the interviewees and could, as he often did, mediate the cultural differences.

The sample was formed through snowball sampling (Denzin et al), in order to follow the thread that a monetary network like that created by Sarafu allowed me to follow, by asking the respondents to introduce me to his family, or those with whom he traded the most.

After the first interviews, I structured the standard interviews by asking the questions reported in the Appendix, without necessarily avoiding to inquire about any topic emerging from the answer, that could possibly be related to the research question. These questions were often asked during more than one interview, due to the considerable amount of time the intermediation the interpreter's work required, and were sometimes substituted for others that were more consistent with the context.

The interviews were organized in such way as to investigate the ways in which the community provided their families with the food, water, education, healthcare, and housing they needed, and to understand how they accessed credit. Moreover, I inquired about the effects of seasonality on their life and about situations of emergency they faced, such as food crises, and regarding their usage of Sarafu and other financial instruments or platforms.

After interviewing 20 people, who were mostly introduced to me by Shanga, the person hosting me, I decided to focus more specifically on the theme concerning the credit provisioning and on the different ways of obtaining credit depending on various conditions, since I realized that, due to the absence of banks and other financial institutions, the community solidarity networks had to be instituted by the members themselves, and that the standardization of credit provisioning present in the western globalized countries was not in place in the area.

In particular, the *chamas* appeared from the previous interviews extremely important in performing this function, reason why I focussed on 2 *chamas* specifically.

The first one on which I focused my attention, was the Peku VSLA chama. I was introduced to 7 of its members by Alex T., who is a member of the *chama*. I asked its members some specific questions to address the topic of the *chama* and its functioning.

Moreover, due to the importance of a solidarity network related to religious affiliations, and contemplative practices, I further investigated the topic.

Furthermore, I interviewed people that were in specific positions that allowed me to gain further insight regarding society, groups and institutions, such as the members of the council of the *chamas*, the M-Pesa agent of the village, or a *village elder* (the equivalent of a mayor for a village in that sublocation), as well as the Official of the Council of *Kaya Forest Council*.

## SARAFU DATABASE

The Sarafu database relative to the users is updated to the end of 2019, and is organized in this way: the variables, which are listed ([grassrootseconomics.org](http://grassrootseconomics.org)) are the following:

- *id*: it's automatically created by the system, and has a univocal correspondence to the number through which the person registered. Users, however, can, and sometimes do have more than one number, or users can share the same number. For this reason I asked who was actually using the SIM card and the wallet, and analysed the data accordingly, by either clustering or by reporting the fact that the account was used by more than one person.
- *start*: date of the user's registration, automatically generated by the system.
- *comm\_tkn*: the token was assigned automatically depending on the location where the user registered, currently a new system has been implemented. 15 tokens were created since the start, but only 12 tokens were exchanged by the community members, the rest consisted of 2 regional tokens, and 1 central token. ZENI, YENI and MIYANI are the tokens implemented in the Mnyenzi sub-location.
- *location*: it corresponds to the name of the village in which the user lives, and it is typed by the user, and, therefore doesn't necessarily match the official place-names.
- *directory*: the user is asked to provide a definition of what his business is during the registration. A variety of languages are used to input such datum, such as Kiswahili, English and the local dialects, such as Chinduruma. Due to the lack of filters between the user and the system, such category gives important insights regarding what the users want to be defined as, and what their main activity is. However, the fact that it has no predetermined standardization, in order to proceed with the analysis, and compare some of them it is sometimes necessary to cluster them.
- *business\_type*: it is created by the Grassroots Economics staff, by clustering the *directory* entries. For instance, all users who indicated "water", or "maji", which is the Kiswahili word for water, as their main business have been categorized as belonging to the "Water" group. It is therefore useful to use such categorization, when there is no real difference between the different directory entries.
- *bal*: refers to the balance in tokens on the day when the data are requested. It represents the user's purchasing power in Sarafu. The tokens are accepted 1:1 with the Kenya Shillings by the businesses within the network.
- *gender*: The user can define the gender variable by choosing among: *male*, *female* or *other*

Whereas the database regarding the transactions matches the data of the two users in such way:

- *source* refers to the *id* of the wallet used by the person who buys goods or services from the other, whose wallet-id is referred to as *target*.
- *s\_comm\_tkn*, *s\_gender*, *s\_location*, *s\_business\_type*, and *s\_directory* are the information stored in the database regarding the *source* user, whereas *t\_comm\_tkn*, *t\_gender*, *t\_location*, *t\_business\_type*, and *t\_directory* are the data regarding the *target* user.
- *tx\_hash*: code that identifies each transaction univocally and automatically generated.
- *timeset*: date and time of the transaction.

I used such data to measure descriptive statistics regarding: the frequency distribution of: number of transactions over time of specific groups and individuals in order to compare it to the time periods mentioned in the interviews regarding food crises and similar occurrences to monitor the usage of the token in such conditions. I analysed also the distribution of frequency of volume and number of transactions per *business type* or *directory* categories in order to have a general understanding of the impact of Sarafu on diverse kinds of activities, and businesses. Moreover, I analysed the accounting book of the Peku VSLA chama in order to have further insights regarding the financial situation of its members.

Moreover correspondence analysis was carried out in order to measure the dependence between the *business\_type* and *gender* variables on the database regarding the users in order to assess which types of business tend to be carried out by one gender or the other. The same method was applied to the transactions database in order to assess the relations between *s\_business\_type* and *t\_business\_type* variables, as well as *s\_gender* and *t\_gender*. These helped to understand some of the interaction patterns among the members of the community.

All these analyses were applied to the database of the users having as their community token the MIYANI, ZENI and YENI tokens, and the transaction database containing the transactions to and the above mentioned tokens both internal and external to the community. The time period considered for these analyses is between February 5th 2019 and December 28th 2019, which are the start and end dates of the implementation of the pilot project whose details are described in Chapter 1, based on POA blockchain in the community selected. The function used was CA() in the R software.

The result of the convergence of these diverse methods within the case study approach have been organized in accordance with the following theoretical frameworks, guiding the thematic analysis: that of *relational work* as defined by Zelizer (Zelizer 2012), the areas of provisioning, concept described by Bollier (Bollier and Helfrich, 2019) and that of *contemplative social research* (Bentz and Giorgino, 2016).

Moreover, both the type of analysis aiming at investigating the complexity of the economic and social bonds considered, as well as the peculiar context, required pluralism in economic paradigms. For this reason the presence of diverse and coexisting economic models is studied: the market economy, the non-profit economy, the household economy (Bentz and Giorgino, 2016), often disregarded by mainstream economics, the commoning paradigm (Bollier), and state economy (Bentz and Giorgino, 2016).

The thematic analysis is moreover organized as follows: a chapter is dedicated to the micro-sociological level of the analysis, and considers a group of three families, living in the Miyani area, with whom I developed a closer relationship than the rest, due to the fact that I was living in the office of one of them. These families have the peculiarity to have among them and with the rest of the community relations of different kinds, not only family relations, but also market, relations and commoning ones, and are also a group small enough to conduct a microsociological study.

The meso-sociological analysis focuses on three *chamas* in particular, and analyses with more detail the interactions among the members of one of them: the Peku VSLA, which is considered to be representative of the *chamas* developing in the area.

The last part of the analysis focusses on the community at a macro level, and the intervention of Grassroots Economics and of the State institutions on it, and its relation to the world outside.

The decision to select six of the provisioning areas chosen, namely Food, Water, Housing, Education, Healthcare and Credit, was due to the fact that they were based on the main needs of the population targeted by Grassroots Economics, which refers in its turn to the SDGs (sustainabledevelopment.un.org), partly mirrored by the *business\_type* categories. These provisioning areas were also confirmed to be important to the members of the communities during the interviews and in the fieldwork, reason why the analysis was organized in accordance with them.

## CHAPTER 3 - THE VILLAGE

### MYANI

Miyani is a village in the Kasameni location in Kwale County, Kenya. The whole Mnyenzi sub-location population amounts to 13916 people. The village is surrounded by hills, and stands on an island formed by the estuary of a river. The closest city is Mazaras, which is not far, but due to the bad conditions of the road, reaching it from Miyani takes around 45 minutes by motorbike. From a vantage point at top of the hill where Miyani was built, overlooking forests and maize fields, the gulf of Mombasa can be seen in the distance. Houses in Miyani are mostly made out of mud and wood or, for those who can afford a more expensive material, out of stones and cement, with a traditional roof made out of *makuti* or in aluminium.

The inhabitants don't have any formal property right on their own land or estate, the houses are usually surrounded by the fields owned by the family, and the plots of land are often not delimited by any fences. They have, however, market interactions extremely similar to those taking place in a community where property rights are protected by legal authorities, because the community members know each others very well, so there was little need for formal property rights. Moreover, the absence of formal property rights is also due to the high rate of illiteracy present in the region.

Crimes can be reported to the village elders, who are appointed by the Kwale County government to oversee the security of the village they live in. There are 18 villages in the Mnyenzi sub-location. Each village elder must report any security issue to his superior: the assistant chief, who in his turn is in charge of one of the 4 sub-locations, and refers directly to the chief of the Kasameni location, who decides whether to send the police or the army to the area.

The area is not served by tap water, and the toilets are located outside the houses, often in the fields. No sewerage system exists, and, therefore, the compound needs to be covered and dug again once or twice per year. Few houses are connected to the grid, and the majority of the houses uses solar panels to generate electric current. Kerosene is most commonly used to light the houses in the night, and, since only few inhabitants of the area have televisions in their homes, or other domestic appliances, what energy is most commonly used for is only to charge the battery of the mobile phone. They cook on Jiko stoves by burning firewood.

In Miyani I was introduced by Grassroots Economics to Mr. Shanga M., who is a businessman from the village and secretary of Miyani FDP.

Miyani FDP is a *chama* of 25 people founded in 2011 with the help of Redcross Kenya in order to mitigate the severe food crises in the area. It is formed by people from the villages in the area near Miyani, who save, lend money internally, and engage in food production activities.



Picture 3.1 Shanga's Office. 2019 Photograph: Sowelu Avanzo

During the most of my stay in Miyani, I was living in a building which the local community named Shanga's office. The building, however, is owned, and was built by the Miyani FDP, which opened a fish-shop inside it. The house is new and made out of cement and wood, and has a metallic roof top, unlike most houses in the village. This is where I started my fieldwork, and, for this reason, I had the chance to know Mr. Shanga and his family well, who introduced me in his turn to many of his contacts.

I will focus mainly on a group of three families related with each other: Shanga's, Kombo's and Jacob's, and on their interactions among each other and with the rest of the community. This choice is made to display as clearly as possible the relations of small groups of individuals within the context.

## **A FAMILY NETWORK**

Shanga is 42, and has 6 children. He was born and raised in Miyani until he was 18, then he moved to Malindi, but, after 5 years, in 1999 he decided to move back to Miyani, where he lives with Mary, his wife. He says that in Malindi, even though he was working hard, he felt like he was missing his community and family (INM1.1). Their house is surrounded by his relatives' house, where his grand mother lives with his brothers and cousins.

Jacob M., One of Shanga's cousins is married, and lives with his wife and 8 children in a house which is not distant from Shanga's. His children are still at school, whereas his wife works as a farmer. Kombo, who is Jacob's son in law lives with his children and with his wife in Chigojoni, a neighboring village. She works as a maid in Mombasa.

Katana T. is Shanga's cousin, who is 19, lives in the office. Shanga and Miyani FDP are assisted by him in running the fish-shop business where he serves the clients.

## **FOOD PROVISIONING**

In Shanga's and Kombo's as well as in Jacob's families, the household economy is based on agricultural self-production (INM1.1, INM2.1, and INM3.1) , since all of them farm their own land, and eat *ugali*, made out of maize harvested from the cultivation of the land, which is the local staple food. Jacob's wife helps him in cultivating the land, whereas Kombo's wife works as a maid in Mombasa. Shanga's wife works as a *saloonist* that is the equivalent of a barber and of a beautician for women. These are transactions in which Kenya Shillings are exchanged, the social ties consist in couple relations, their negotiated meaning which emerges is to contribute to the family's and the partner's well-being and food security, by offering one's help. They count on each other for reciprocal assistance.

Shanga's main source of income is the Tree Nursery business, which is in front of the Office, and is based on planting, growing and selling trees that are extremely useful to produce fruits and wood,



either for fire or for constructions. Trees are vital to the economy of the area, due to the overpopulation affecting the region.

He is also employed by the government as representative in the Budget Economic Forum.

As a member of the Miyani FDP Shanga also manages the fish shop, where Katana T., his cousin serves the clients in exchange for some pocket money and food.

They are cousins, and, therefore, for Shanga employing him in Miyani FDP shop means also supporting a family member, and teaching a job to a youth of his family. The shop sells fish and shrimps, which were not sold before they started the business. The peculiarity of the shop is that it accepts 100% of the payment of the fish in Sarafu, which then is exchanged at the M-Pesa agent for Kenya Shillings.

Shanga this year started renting, informally, since there are no property rights, a field 2 hectar large, which is larger than the one belonging to his family. He did so by investing the revenue from his other businesses from which he managed also to buy the products for mulching. When I was there, from October to December, the maize crops had grown very well, due the heavy rains. He was one of the few people in town who could invest, and his family had "saved" some of the maize in bags for the dry season, which was not common, due to the large number of people in each family.

In Shanga the overlapping of the diverse forms of economy is evident, because his fields would probably be insufficient to feed his family without the contribution of the piece of land he now rents. As a businessman, he sells the trees on the market, but also helps the Miyani FDP group, with whom he shares benefits and duties, a group in which a commoning experiment is taking place.

Moreover, his tree nursery business is funded by Greenworld Campaign Kenya, which is an NGO, therefore belonging to the non-profit sector, and he is being paid by the county government to plan the budget of the Miyani area.

Jacob and Kombo are fishermen, and they mostly sell their fish to the *chama*. Jacob is also part of the *chama*, and of the council, where he is *vice secretary*.

They don't have their own boats, and they have to rent one every time they go fishing from some fishermen living on the coast, whose main business is to rent boats and nets to those coming from the interior, who wouldn't be able to transport a boat from where they live to the coast. Renting a boat costs 100 Kenya Shillings per day, the same amount as renting the nets for one day, and buying a boat could cost even 10000 Kenya Shillings. When we went to the shore, Jacob also pointed out

that in a month, on average, if the catch is good, he can be paid by the fish-shop around 12000 Kenya Shillings and 6000 Sarafu for the fish caught, and pays around 3000 Kenya Shillings for the rent of the boats and nets, which is, therefore a considerable expense. It is, therefore, evident how the fishermen are extremely dependent on market interactions.

Jacob, Shanga and Kombo, are, therefore bound both by both family and market relations oriented to commoning. Their interactions also define their roles, since Shanga defines them "manufacturers" (INM1.1), even though Jacob is also a member of the Miyani FDP, and, therefore, shares the profits from the fish-selling business. This market is facilitated, as they claim by the presence of Sarafu (INM1.1, INM2.1, INM2.2, INM3.1, INM3.2).

Sarafu, therefore, facilitates this cooperation among family members that constitute a value chain, since Jacob and Kombo fish, Shanga manages the shops and Katana T. materially sells the fish to the clients, who are both members of the Miyani FDP, therefore sharing the profits of the business, and external to it. They, therefore, benefit of a service which is useful also to the rest of the community (INM3.1).

Shanga points out that every time he receives fish from the two fishermen, he has to "go deep into his pockets" (INM3.1), and, therefore to pay him at any cost, even if he lacks money in that moment. The meaning of this transaction for Shanga is both that of taking care of a relative, and of the business, because he points out that Kombo in exchange for the liquidity is maintaining the business relation with Shanga and the Miyani FDP. In Shanga's words "If you deny him some cash he won't give you fish". (INM3.1). It is evident that the two types of relation, namely market and family relation are not juxtaposed, but complementary, since the success of the business is based on the fact that they don't give their fish to other fish businesses.

Kombo uses a fishing technique which is very dangerous, because he has to dive very deep for a long time, and, therefore, expose himself to the risk of being attacked by sharks, or to run out of air. As he puts it:

Kombo: you can even take 45 seconds or 1 minute inside the water.

Shanga: And it is 20 meters deep.

NR

Shanga: Sometimes sharks are coming, but you don't have to think so, because when you think so... you go up.

Interviewer: That's terrible!

Shanga: Yes, everything is to risk.

Kombo: To attain success you have to risk!

INM3.1

Here they show the risk, which Miyani inhabitants and fishermen in particular face. In this case Shanga is praising Kombo's courage, by virtue of which he can sell fish. This interaction is meant to strengthen their bond, by praising his value as a fisherman.

Also Jacob's value as a fisherman is praised by Shanga. He points out that Jacob goes few times fishing, but is like a retired professional footballer, playing few times with amateur footballers.

Shanga's praise is also a means to convey value, because it affects the self-confidence of the subject and also shapes his relations within the community. This shows how monetary interactions are embedded into extremely complex relational contexts, and how Zelizer's model helps to understand this.

Jacob's wife sells the produce of their farm outside the family, whereas Kombo points out that he needs to buy the food he doesn't grow in his farm, like mandazi or rice. The social ties for these transactions are those related to the local diet, which induces them to consume products that are not produced locally, and, therefore, are more expensive than the staple food *ugali*. For these products, unlike with fish, Kenya Shillings are the only possible media of exchange, and they have to interact with other communities to obtain them. Eating such food is part of the local diet, but also establishes a boundary between those who can eat them and those who don't, making a high presence of such food in one's diet a status symbol to some extent.

All of them point out that Sarafu improved the situation related to their food security in INM1.1, INM2.1, INM3.1. As Shanga points out, the introduction of Sarafu made life easier for the community:

Shanga: Once it was this: We had to do a lot of man-power to get food, with Sarafu now you can at least get something in return. So, without Sarafu, when you got no money, then everything was flat. But for now, somebody might come here and say: "may I have a place to cultivate so that you can give me Sarafu?"

INM3.1

According to Shanga, it is easier now to employ some community members to cultivate the fields, due to the medium, the "something in return", which allows such transactions, that is Sarafu. The

social ties in this case are restricted to the community members in need, and, therefore this exchange allows an improvement of the food security in the area, by allowing transactions that before Sarafu was introduced were not as easy. It is reasonable to imagine that these transactions among community members have strengthened the social ties among them, and that pursuing food security for the community is a common goal that all the participants of the network are aware to be sharing. Food security is one of the issues which Sarafu addressed the most, by facilitating a radical transformation of the market economy, from one where resources were considered to be scarce, due to the lack of money, to one where resources are abundant, as described by Lietaer (Lietaer, 2013).

This result is counterintuitive, if it is taken into account that little changed apart from the introduction of Sarafu, and it shows the fact that a monetary system is nothing but an information system, and therefore draws attention to the importance of the elements of relational work that are most disregarded among traditional economists: *meaning* and *distinctive social ties* (Zelizer, 2012).

Kombo, furthermore, points out that many people have been buying fish from the fish shop from the nearby villages since Sarafu was introduced. He also says that the circulation of Sarafu and their capacity to market fish have mutual beneficial influence on one another.

Kombo: Mnyenzi, Vikolani, Mangaraba, Mukanyeni, Vyogato, all people come to the office. ... So people come from far. So fisher are making Sarafu doing very well. INM3.1

The success of the Miyani FDP shop is, therefore also due to the strong social ties between the members and the rest of the community, to whom they sell the fish.

The donation of 2 fridges by Grassroots Economics, has both helped the two business and also facilitated the circulation of Sarafu in the area.

The donation, is in fact, in some respect a collaboration among the foundation and the *chama* members aimed at improving the quality of life of the community, since they both benefited from each other's action. Grassroots Economics provided the fridges by which the business, could flourish and provide backing for Sarafu by accepting payments 100% in that token, that, also for this reason, became a reliable means of exchange within the community. Without a backing provided by the community, in fact, the potential of this endogenous source of liquidity for the community, could have remained partly unused.

This is confirmed by the data, since the volume relative to the category Food amounts to over 2602275 since the introduction of Sarafu, which is the second largest amount per Business Type

category (the categories are described in detail in Chapter 2). The data reported below refer to the business type category (*t\_business\_type*) weighted by volume of transactions (*weight* category) from February 2019 to December 2019 among the owners of the MIYANI, ZENI and YENI tokens.

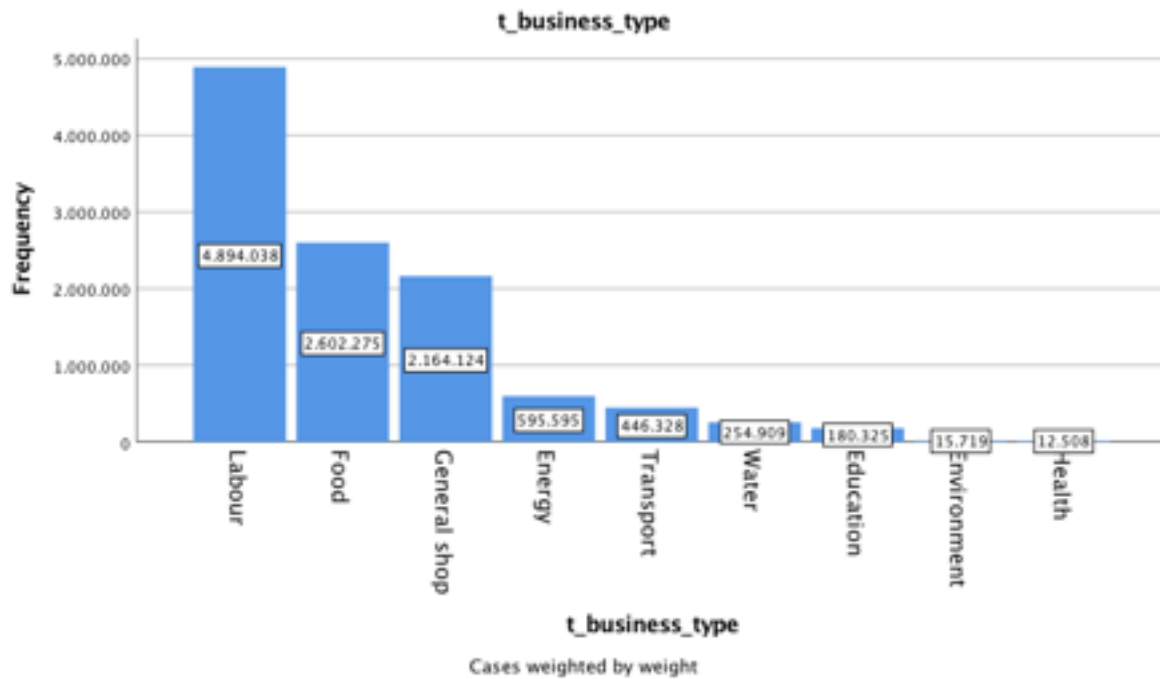


Chart 3.1 Spending in Sarafu over the time period February 2019 - December, 2019 in MIYANI, YENI and ZENI tokens excluded the transactions carried out by the system.

Moreover, it is evident that from the perspective of the community, the two fridges also enhanced food security, because Jacob reports (INM2.1) that, due to the fact that fish perishes easily, after he goes fishing, he gives Shanga (working for MFDP) all the fish he caught, in order to store it in the freezer, and then he gets paid in Sarafu and Kenya Shillings. When he wants to have fish, he buys it back in Sarafu from the shop.

They have, therefore, a mutual advantage, because traditional fish shops used to dry fish, which was impossible or very hard in the rainy season, due to humidity. It was the *chama*, by virtue of its political nature, that directed Grassroots Economics to meet the needs of the community in such an effective way, reason why this is an outstanding example of how the market economy, the non-profit sector, and the commons economy can cooperate to target specific issues, such as, in this case, the lack of local trade and production and of national currency, the need for the local currency to be

widely accepted to circulate, and the need for a technology which could improve the quality of life in the community.



Picture 3.2 traditional fishing boat, craved out of a single tree named Dhau. 2019 Photograph: Sowelu Avanzo.

## WATER PROVISIONING

The dry seasons, and especially the one from January to April are the most critical period of the year for the inhabitants of Miyani, and of the Mnyenzi sub-location. The absence of aqueducts managed by the government makes water provisioning one of the most dramatic social and economic issues for the population. The problem is twofold, because, during the dry seasons, on one hand, the families need to store water for consumption, on the other hand, the absence of water to irrigate the fields engenders food-security problems. All the families collect rain-water in buckets, as it is visible in the picture of Kombo's house below, and that is the main water-provisioning source.



Picture 3.3 Water-self-collection system, Kombo's house. Photograph : Sowelu Avanzo

Such water is free and abundant in the rainy season, whereby, they don't depend much on other sources.

In the dry season, on the contrary, water being scarce, the families in Miyani were forced to collect water from the river, which is distant around 20 minutes on foot from the town. In the households, those who go to the river and collect the water are usually children and women. This however, during my stay in Miyani never happened, because it was in the rainy season, and in April 2019 Grassroots Economics distributed 9 water tanks in the area through the Miyani Food Distribution Point.

Two of such tanks were in front of Shanga's Office, and, due to the fact that he is a member of the Miyani FDP, he has free access to the water both for his business and for the daily consumption. The same can be said of Jacob and Katana T. Kombo, instead uses the tank which is in the Chigojoni area, where his home is located. The tanks collect rain-water in the rainy seasons, but in the dry season, when rain is extremely scarce, the persons appointed to sell water by the Miyani FDP have to buy water from the water boozier, which is a truck transporting large quantity of water, which refills the empty tanks. Shanga and the other members of the Miyani FDP who help him manage the tanks distribute free water to the members of the *chama* and to the family and friends coming to the Office. In such case, if those taking water are not members of the Miyani FDP, the donation is made out of friendship or kinship, whereas if they are, they have the right to it, because of their membership.

There is also another commons related to water, that are the dams built in the area. These are artificial water basins collecting rain water, which is mostly used to irrigate the fields. There is one in front of the Office. Katana T. explained to me that they were dug collectively either by *chamas* or by groups of people gathered by the *village elders*, to address the scarcity of water issue. When maintenance works need to be done, the members of the communities donate money, time and their skills to solve the problem. The maintenance of the dams, Katana T. pointed out, was not only fundamental to the water provisioning, but it was also an essential work which needed to be regularly done, because if the levees of a dam like that in front of the Office would break, the water would have destroyed or flooded many houses. The water is free for every member of the community also in the droughts, and, before Grassroots Economics distributed the Sarafu tanks, the water collected through the dams was also drunk after it was treated with chlorine, but nowadays this very rarely happens.





Picture 3.4 Marabaini Sarafu tank. Photograph: Sowelu Avanzo.

When the self-collection of water is not sufficient to the household needs, the family has the chance to turn to the market or to the commons economy. In the first case they need to pay either in national currency or in Sarafu, in the other case, they have to contribute to the maintenance of the water source, as well as to accomplish their tasks for the sake of the common good. Due to the presence of water in many aspects of life, the transactions carried out in each of these three different economies, especially in the dry seasons, can assume vital importance. There is also another way through which families, such as Shanga's, Kombo's and Jacob's obtain the water they need in case the quantity they have is insufficient, that is by sending *boda boda* riders<sup>2</sup> to buy bottled water from the towns and villages in the surroundings. Khalid T., one of Katana T.'s cousins, is 20 years old, has been working

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<sup>2</sup> A *boda boda* rider is a person who works as a taxi driver riding a motorbike. It is the main transportation in the area, because few people have a motorbike, and almost nobody has cars.

as a *boda boda* for one year. When interviewed about his task to carry water to the village in the dry seasons, he explained to me that on his bike he can carry 6 drums of water, containing 20 liters each, and that transporting them to the village takes him 30 to 45 minutes, for which journey he is usually paid 100 Kenya Shillings or Sarafu. In case those who send him are Sarafu users, a part of the transaction is usually in Sarafu (INM5.1). He pointed out that he was asked to do so especially from January to April 2019, during the driest season of the year. In this period he wasn't registered in Sarafu network, since he registered only at the end of April. However, the Sarafu database shows that from June to September, and especially in July, he made transactions amounting to 18291 Sarafu, whereas, during all the other months when he was registered in Sarafu network, he exchanged only 4460 Sarafu. The significance of this difference supports the hypothesis that the community members used also Sarafu to pay him to fetch water to the villages in the dry season, and gives us an idea of how much water might have been carried by one *boda boda*.

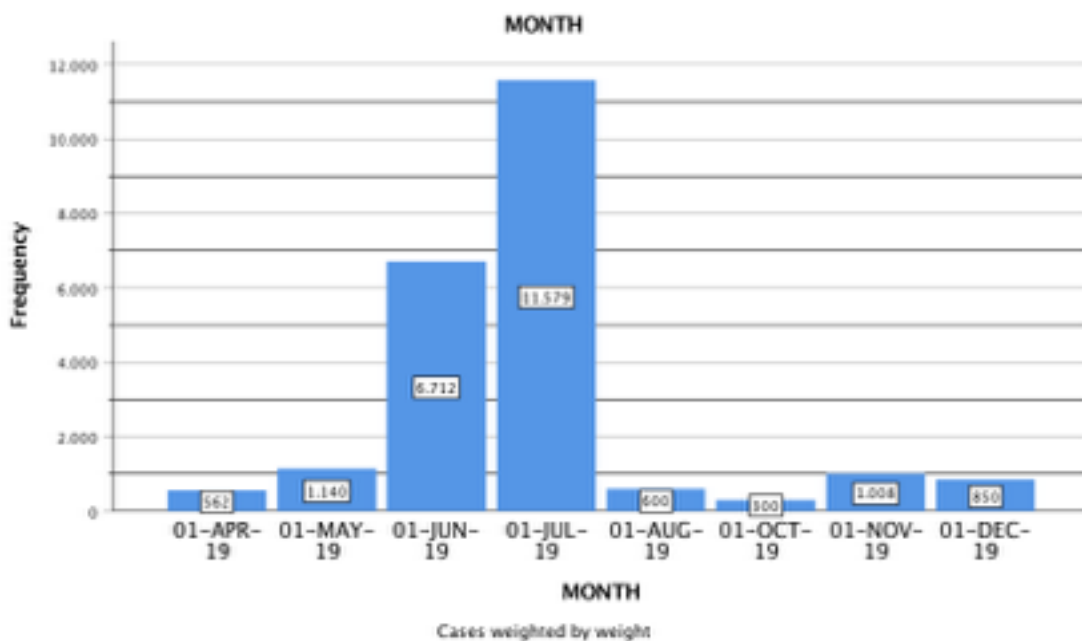


Chart 3.2 volume of Sarafu tokens exchanged over time period April- December, 2019 by Khalid T.

These are the suppliers of last resort of water for the village. Khalid T. pointed out that if his parents ask him to fetch water for them, he does that for free, but in case a cousin is in the same situation, and says he cannot pay him, but he will reciprocate somehow, he responds "I just can't fetch", and "We need to make an agreement first" (INM5.1) This shows the importance of the social ties to

economic transactions, since Khalid's behavior changes radically depending whether he is carrying water for his father or mother, or for a cousin or a friend. Even in a situation of life and death, like that described by Khalid, he cannot base his choice simply on mutual trust, but needs to reach an agreement with the people who are not "close relatives" (INM5.1). In this respect, the *relational work* performed draws a line between the household and the market economy. This line is not simply due simply to kinship, since his cousins are his relatives as well, but to closeness. Moreover, in a society where everyone has at least 3 or 4 brothers, the meaning of being cousins is not sufficient to make him fetch water for free, because this, in its turn, could endanger his and his close relatives' financial stability, and their future capacity to be food and water secure.

Surely, the water tanks are at the centre of diverse economic relations as much as to show how the same object can belong to different economic worlds, depending on the relations that it facilitates or to its social meaning: the tanks distributed by Grassroots Economics for instance, are a donation to foster water stability in the area; they are indirectly, and in some cases directly, managed as a commons by the Miyani Food Distribution Point; are managed directly by appointed persons who sell the water partly in Sarafu and partly in Kenya Shillings to the inhabitants of the villages; this person has free water in every season for his own family, unlike the others, but to keep his position of manager of the tank he must work effectively his function, otherwise the Miyani FDP would transfer the tank to another person. This example shows the interaction of 4 forms of economy: non-profit, commons, market and household, and their mutual interdependence. The Grassroots Economics foundation, by donating the tanks to the communities for free, also facilitates the circulation of the currency by making it possible for the community members to meet one of their most basic needs by exchanging Sarafu, and it is, therefore, making a service to the community at issue which reinforces their connection to the organization. In the same way, the *chama*, by mediating between the foundation and the individuals who manage the tanks has a benefit from the new network they create in doing so, and helps the whole population in their struggle for water-security. Moreover, the choice of the person is crucial, because, if he is not able to save a considerable amount of Sarafu or national currency during the rainy season, there is no chance that he can buy the water from the water boozier and sell it in the dry season. The person appointed is given a role within the market, which, however, is supported by other types of social ties to the community members that appointed him. Moreover, his capacity for accumulation of purchasing power is surely beneficial to some extent to society.

Even though the volume of transactions of the category Water is distant from the level of spending related to the food provisioning in Sarafu, since, over the time frame from February until December 2019, amounts to 254909, it is still considerable, if it is taken into account that only 75 users selected such category in the whole sublocation.

## **EDUCATION**

The school fees for a family in the Miyani area amount to a large part of the total spending, since there are no schools where tuition fees are free, and even though the only school present in Miyani is managed by the county government, and it's called Miyani Primary, a fee of 600 Kenya Shillings every three months is needed, which is a large amount for a family below the poverty line with many children. Moreover, the school fees for the secondary schools are much higher, and they can even reach 20000 Ksh. per year. Sarafu is accepted only by a local Kindergarten, named ECED, whereby the Education spending category hasn't reached a considerable volume until now, but still is an important service for large families.

4 of Shanga's sons and daughters go to a primary school in Kilifi for which he pays the tuition. Since Kilifi is too far to commute, they stay there during the week. One daughter is at the secondary school, and the government pays for the tuition due to a scholarship she was awarded with, and the remaining child is at home with the mother.

Jacob manages to pay the tuition fees for his 8 kids, whereas Kombo, when inquired about it, responded that, since he had recently not paid the tuition fees for one of his children's education, his kid was sent back home from school.

For all the family members, to both the men and the women of the families, contributing to paying the school fees for all the children seems a duty of extreme importance, and having a kid at home from school is considered to be a "shame" (INM3.2) to the family, as Kombo points out.

In order to avoid the social stigmatization related to this fact, he was forced to request a loan from diverse microfinance apps. The apps at issue didn't request any collateral from him, but Kombo has to pay a high interest rate, which he admits he is not able to pay back, and that this could lead to worse consequences. I asked him whether he tried to request a loan from his friends. He responded that, even though they could have helped him by lending maximum 1000 Ksh. each, they could have possibly asked him to pay back before the deadline which they agreed upon with him, due to

unforeseen expenses, and in case he wouldn't pay back, they would nickname him and stigmatize him. As he puts it:

Kombo: It was not a good move from me to go from a friend to another and another and another. It becomes a very chaos if everyone went 'I need my money!' 'I need my money!'. If you got 5000 from different people, those different people, those people will ask you their money at the same time, it becomes a problem and also it confuses you. ... If he sees you: "that guy is a cunt, man! he asked me 1000, and promised me he would pay in 2 weeks and now yet, he has not yet!" so you are bad-nicknamed: a lot of names, because of what? Because of 1000. So it's harsh. That doesn't sound good. INM3.2

The symbolic meaning of the "names" is to inform the community members of the financial risks that they incur by lending to a person that has not returned a loan he was granted by other members. Therefore social stigmatization, which Kombo fears controls the credit issuance in the community exactly like the banking system does through informatic databases allowing the credit issuers to be aware of the risks they would incur by lending to clients within the black list. He points out that the neighbors and friends would not charge him with any interest, but this is more costly to him than the high interest requested by the lending apps, due to the different social ties. His relation to the app is between him and them, and, therefore, the messages they sent him to remind to pay back the loan don't have any social meaning.

they [a microfinance app] have sent me a message saying I must pay that loan, but I don't have money. So it says it to me only. Then, when I get the money I'll pay that, because it's something between them and me. But not a person like you: "I need my money! You said to help me and now you are denying to pay me my money."... so that way of rushing is not good. So that's why we are deciding to get loans from mobile phones.

INM3.2

Therefore, in this case, the market economy was more effective for him to meet his need to pay the school fees than the household economy. I then asked him whether he asked his closer relatives to help him. He responded that he could, but for him this choice would have been worse than the constantly-growing interest, which he is not able to pay, and of the social stigmatization.

As he puts it, since he is a fisherman, his activity is influenced by seasonality, and, therefore it happens very often that he lacks liquidity, and, requesting loans from his relatives, would change their and his own perception of Kombo within the society. They would consider him to be a person who cannot provide for his children's future, and he would do the same. To avoid this, he decided to not even ask his parents any help.

I can't beg my relatives and ask for money, I have to find a way because they have needs, they have basic needs. You know, so it comes that you need to fight for your own... for rules. So to me, I prefer to struggle on my own because in the good days I'll just finish with the debts so I can move on. INM3.2

What he wants to convey both to his parents and sons by refusing to request help from the family is the importance to him of his own struggle for economic independence, which the market relation with the app allows him to carry on. Even communicating his need to the family, would mean to surrender, due to the fact that the family members would feel obliged to assist him without asking for anything in return, but still he would probably pay a tremendous cost in reputation and self-confidence.

Sarafu network introduction seems to have helped all the three families to pay the school fees indirectly, even though the school these were paid by them in Kenya Shillings. Jacob for instance points out that now he can pay the school fees, whereas, before Sarafu he "could manage, but fifty-fifty"(INM2.1), and Kombo says that in his opinion, even though he is going through a period of financial instability, "Sarafu is uplifting, it's giving us a certain courage with our daily activities" (INM3.2). The overall perception of the families is that Sarafu improved the local economy, and, therefore, improved their capacity to pay the school fees.

## **HEALTHCARE**

All the three families refer to doctors and hospitals in Mnyenzi, which they have to pay, because the County government provides only emergency assistance in the public hospitals, that are considered to have lower standards. Kombo's fifth son is affected by sickle cell anemia, disease which causes his father much distress and suffering, so much so that he decided not to have children anymore. In the local cultural context it appears normal for a young man with 5 children to have more than that, which, however, was not possible for Kombo, because the situation related to his fifth children is for him difficult to manage. He has, in fact, to pay for the tabs the kid needs to swallow, which cost 40 Ksh.per day, and he must constantly keep some savings in case the child's health worsens due to anemia, and blood transfusions are needed. He tells us that when he was small, he had a hernia problem, whereby he had to receive blood transfusions, which cost 75000 Kenya Shillings. 45000 Ksh.were donated by a friend of Kombo's from the USA, who was working there for an organization named Schools for Kenya. Shanga explained to me that, he was not there for a

project in Miyani, but since they became good friends with him, they hosted and took him fishing with them. In this case, the fact that they let him take part in their daily activities, meant to establish a special relation with this man, by virtue of which, and also out of compassion for Kombo's situation, he decided to help him. Kombo points out that without his help, his child would have died, and even today, his life is constantly in danger if Kombo doesn't have enough money to pay for transfusions. Apparently, the sickle cell anemia is particularly common in the area and in his family

Kombo: Even my elder brother has one kid with that problem, and our neighbours also have some problems, so it's common, but you have to be at least financially stable. If you can't manage, then he goes. INM3.1

His financial stability, however, depends much on the seasonality, because he points out that fishing is extremely difficult in the dry season and also in case the rains are too heavy, and when he was interviewed, heavy rains were flooding the area. In case of emergency, he said he would request a loan from some member of the community, but in order to manage both the education and the health of his children, he had to take loans from microfinance apps.

Shanga's wife 6 years before the interview was running a kiosk in Miyani, but was affected by a disease, and she had to close it and to start working as a *saloonist* from home. She explained that while she was ill, the members of her church assisted her by carrying buckets of water to her home and keeping the house clean. The action of this solidarity network had absolute importance to her health conditions, because it helped her to maintain good hygiene, and contributed to her healing. This had a particular meaning to the group, since it was carried out by virtue of their Christian principles and out of reciprocity, whereby they didn't ask anything in return.

## HOUSING



Picture 3.5 Traditional house with solar panel. 2019 Photograph: Sowelu Avanzo

Shanga, Kombo and Jacob built themselves the house where they live, on a piece of land that they were donated by their parents, or which they inherited. The parents, when their sons grow up or get married, generally let them build their own houses close to the family house, divide their land in equal parts, and give them one portion. Moreover, it is not common for people to sell their plots of land, both because they mostly have no property rights on it and because of the inherent value it has in their culture. Shanga and Kombo could afford to buy materials of a better quality than most inhabitants of Miyani. As regards Shanga, he has paid for the construction materials by using his sav-



ings derived from his work as a businessman. Kombo's house, was built when he was employed as a wholesale-manager in Mombasa in 2001, and it is visible that it was not renovated much since then. Jacob lives in a house made out of wood, and he paid someone to cut the wood in the Kaya forest nearby, so that he could build his house (INM2.2). In all these three cases, the household economy was central to the construction of the house, but they had to access the market to obtain the materials. The construction was usually carried out by the family itself, which, therefore, didn't need to access the market.

What is referred to as Shanga's office, where Shanga spends most of his time during the day, and runs his business, was built in 2014, and is owned by the 25 members of the *chama* Miyani Food Distribution Point. All the members of the community access it, and it is particularly useful to the Miyani Food Distribution Point members, because of its centrality and its closeness to the Posho mill, which is another project run by the *chama*, and to the water tanks and the Tree nursery. The Office has 3 rooms: a main one, where the fridge, Shanga's television and stereo are, and where the fish is sold, and two bedrooms. The main room is also a meeting point for the people in the village especially for the youths, who go there every day and watch the television and listen to the music. Shanga's is one of the few televisions in town, and, moreover, it is the only one with premium football channels which are an attraction for the village members, who often support Italian or British football teams, and watch their games. It is also used as a storeroom, since it is fit for storing bags filled with maize before this is milled in the Posho mill. The place is an outstanding example of commons, because it can be used potentially by each member of the village as a meeting point, but the use of the space by them is subordinated to the needs of the Miyani Food Distribution Point, being it the group of people that built it and manages it, for instance, to store maize harvested.

Shanga's wife, who works as a *saloonist* from home, planned to start running her business in another building which is now unused, managed by the Miyani FDP, but, at the moment of the interview, she was waiting for the answer of the members of the *chama* for approval.



Picture 3.6 Kombo's house, 2019, photograph: Sowelu Avanzo.

## CREDIT PROVISIONING

Jacob has a bank account, which is something very rare for people in Miyani, since most of the population doesn't access to such financial instrument, also because the closest branch of a bank is distant from the village. Moreover, *chamas* perform a similar function effectively: that of collecting the savings, and they grant loans at an interest, unless an emergency occurs related to the health or the education of the family of the member, in which case, the loan is interest free.

Jacob and Shanga are respectively secretary and vice secretary of Miyani FDP, which, like other *chamas* has the function to both collect their savings and grant them loans in case of need. Their wives, are part of other two *chamas*, namely Yehu for Shanga's wife, and Yowani Silc Group for Jacob's wife. Neither Kombo nor his wife are part of any *chama*, due to the fact that he is a fisherman, whereby, he spends most of his time by the sea, and his wife for she is working in Mombasa. Kombo's situation shows that the relational and political dimensions of the *chamas* are extremely important to the community, because the fact that Kombo could not participate the *chama* meetings

made it impossible for him to become a member of any of these groups, even though he could have possibly contributed some savings to the group. This is due to the fact that the chama is not simply a traditional savings and loans association, which matches the members who have a surplus with those who lack it, but a "living ecosystem" where all the members must share "stewardship, responsibilities and benefits over time" (Bollier p. 79) .

Moreover, most of the members taking part in the meetings are women, contributing both their own and their husbands' savings. In the Duruma culture, in fact, women are supposed to remain at home, cultivate the land and take care of their homes and families, whereas men usually work outside the house doing fishing, farming, or other labors either in the surroundings or in town. This contributed to making them those who manage the financial situation of the household. Also due to this reason, some of the chamas, such as the Yehu appeared to be specifically for women, reason why Mary can attend meetings on Shanga's behalf at Miyani FDP as representative of her and his family, whereas he cannot do the same (INM5.1). Jacob and his wife attend meetings of each other's chama interchangeably. being excluded from the *chamas*, was a problem for Kombo's family, because this is the one of the main sources of credit for the Miyani inhabitants, especially after the introduction of Sarafu. The relevance of the *chamas* in the lives of Jacob's and Shanga's families is evident from the fact that both Jacob and Mary (INM2.2, INM5.1) saved and requested loans from the chamas. Moreover, Sarafu contributed to the circulation of goods and services within the community, since before its introduction little liquidity was available to the population, and also to the *chamas*. But neither of the two innovations were exclusively financial innovations, but also social, due to the radical changes they brought about in the communities, addressing both the capacity to meet the basic needs of the population, and the social structure. Mary for instance points out that she and her family can "use S to buy food, if they need vegetables, they can use S to buy" (INM5.1), due to the fact that the presence of a market and a means of exchange fostered local production of food.

Before Sarafu, due to lack of liquidity, there is evidence that the loans requested to the chamas were less frequent and of larger amounts. Shanga's wife, for instance also requested from the Miyani FDP a loan of a considerable amount for the standards of the standards: 50000 Kenya Shillings to open her shop more than 6 years ago, before she got sick and had to close it. She said that she managed to pay back the loan in one year and within the deadline. The same can be said about Jacob, who requested a loan worth 2000 Sarafu which he used to buy *unga*, and to pay people who cul-

tivated his piece of land. He pointed out that he decided to take the loan in Sarafu because he could easily spend it in the shops selling food that accept it (INM2.2). Before Sarafu network and the *chamas* started to appear in the region, Jacob took a loan to pay school fees for his daughter from a bank, worth 15000 on which he paid an interest rate of 8,3%. All of them appear also to be aware that by using Sarafu, they are facilitating its circulation, and, therefore indirectly uplifting the conditions of the community, because this can be spent only within the boundaries of the Sarafu network, which unites the population and directs it towards common goals, which surely fosters a process of commoning of resources through the market.

These endogenous sources of credit which are Sarafu and the *chamas* made it possible for the community members to take small loans for their daily activities, for which they wouldn't be able to involve a bank, and would have to turn to the household economy, which surely has limitations. Both according to Jacob and Kombo, one of the advantages the chama has, for instance, is to establish clear rules, such as the deadline by which one has to pay back, and the fees in case one doesn't. Therefore, the market economy, in this case, and the commons oriented one of the *chamas* reduce the uncertainty related to the potential social damage that requesting a loan in a more informal market would cause.

As Jacob puts it: "requesting a loan from the chama is good because you are given a time", whereas in case one would request a loan from a friend, this friend could tell the person who took the loan before the deadline "where is my money? Give me my money back! So that's why most of the people decided to request loans from *chamas*".

The advantage of the market economy, however, was only partial for Kombo, who managed to receive loans from the microfinance apps, but at the time of the interviews, these threatened him to report his case to the Credit Reference Bureau, that would prevent him from requesting new loans. Kombo could benefit only in part of Sarafu and of the *chamas*, because his activities were centered outside the community, and could, therefore, not directly take advantage neither of the process of commoning taking place through the endogenous source of credit which Sarafu brought about, nor of the new social and economic structure the *chamas* facilitated. This contributed to perpetrate his social and economic marginalization.

## RELIGIOUS DIMENSION AND CONTEMPLATIVE PRACTICES

The contemplative practices that appear to be employed by the members of these families show how their perception of themselves influences the way in which they interact with each others and with the community.



Picture 3.7 7th day Church, Miyani, photograph: Sowelu Avanzo

For instance, the fact that in the community as previously mentioned, a strong solidarity network of solidarity is present in the community and it is formed by the religious affiliation groups, such as those gathered by the churches and the mosques. Firstly, it is interesting that people from the two main religion in the territory form families together, and there is tolerance and freedom of worship. Shanga for instance, is Muslim, and his wife Mary is Christian. The woman shows how the community of the Redeemed Church she is part of assisted her during her illness by carrying buckets of water to her house, which she couldn't leave, cleaning her house and utensils. This assistance was

for free, and bears a symbolic meaning of reciprocity related to Christianity. Such form of assistance in a place like Miyani can be, furthermore, essential to maintain hygiene and, therefore vital to the community members. Another example of such community practices is offered by Jacob, whose house fell at some point, and he didn't have enough money to repair it, and the members of his church, brought some wooden poles and built a temporary one with him. Jacob explains that they spent their time and money to cut or buy the poles didn't ask anything in return: " I assist you, and tomorrow I have the same problem, and you can assist me" (INM2.2). The reciprocity arising from such actions is similar to what Lietaer described as one of the main characteristics of communities (Lietaer, 2001), but is present only under some circumstances: it depends specifically on the cultural and social environment, and it is aimed at targeting some specific provisioning areas. This is a clear example of the *negotiated meaning* of a transaction, and its *distinctive social ties* influencing the other 2 dimensions of *relational work*.

In Kombo a feeling of anger took the place of faith due to his son's vicissitudes, as well as to the exclusion from the community.

Interviewer: Are you religious?

Kombo: I used to... now I'm just angry. To say I'm not it is not true. Because we have our traditions. As Africans, apart from the Islamic and the Christians, we have our beliefs. We grew that there is God, we grew that there is something. Everything that is not good to do to somebody, you don't have to make it.  
INM3.1

Kombo here refers to the traditional animist Duruma worship, which is a central part of the local people's identity and culture, and, even though most of the population is either Christian or Muslim, beliefs related to it continue to ground to some extent their conception of the two monotheistic religions.

He also points out that some of the people are just going to church or to the mosque without actually believing, nor following moral principles which their religion imposes. As he puts it: "I feel like being honest to others, I'm being part of a religion. Going to church doesn't mean you are neat". He also points out that: "you can go to church every Sunday, mosque every Friday, but your actions to your relatives it doesn't match" (INM3.2).

To such behaviour he juxtaposes his own principles. The most important to him is: "what i don't like to be done to me, I don't apply to others"(INM3.2), and also being humble and capable to handle conflicts, accepting "all that comes across", but also knowing that one has to start from changing oneself if one wants to bring a change about in society.

The principles on which his wisdom is based seem to be grounded not only on the cultural reminiscence of the animist religion, nor on Christian nor Islamic principles, but also on work on oneself due to his personal approach to contemplative practices, as Giorgino defines them (Giorgino, 2014). These influence his conception of the world as well as his action in society. This contemplative work is extremely relevant to social and economic interactions because it facilitates the creation of a solidarity network which transcends the boundaries of the religious group the individuals belong to, by drawing attention to life itself, both as individuals and as a community.

Whether religious or not Kombo, Mary and Jacob appear to have carry out such contemplative work on themselves. Kombo points out that the difference between him and those who go to church is that "they are singing, to prove it [their faith] to other people, they are sending messages to other people. I can also send them, because I know what to do". This is how Kombo defines his own embodied contemplative knowledge of himself and of the world, which he communicates not only through symbols, like religion does, but by materially, by acting according to what he feels and believes to change reality. "That is giving me more strength, even though i'm not going to church" (INM3.2) he comments. Jacob and Mary as well show how contemplative knowledge directs them towards action oriented to life. Jacob, for instance, points out that his connection to God made helped him tolerate a period in which he was hungry, and helped him to find enough money to feed his family. He points out that some years before he had helped an old Muslim man who was sick, by taking him to the hospital, and he comments on this "when you assist someone God gives you a lot"(INM2.2). Mary as well points out that praying helped her to face difficult periods in her life, and in particular to heal from the disease which affected her.



## CHAPTER 4 - THE CHAMAS

### THE CHAMAS

The *chamas* are self-organized groups, that in most cases provide saving and credit for their members, but perform diverse other functions as well. They are usually formed by 10-25 people, who gather weekly to save and lend the money to the members in need. As the senior field officer of Grassroots economics, Ruth Njau, points out, they are more present in the countryside of Kenya than in the urban slums, where, instead, microfinance institutions are more widespread (INGE2.1). She claims that the success of *chamas* was due to the higher level of mutual trust which inhabitants of rural areas like Miyani have compared to those from the urban slums. Apparently, the fact that in the inhabitants of the countryside know their neighbours very well, and that they live in extended families are some of the reasons why these groups spread more easily there than in cities. She makes a point that since most of the people in urban slums are not born and bred there, which is, instead, usually the case in a place like the Mnyenzi sub-location, which condition implies that the former are usually less trustful of each other than the latter.



Picture 4.1, chama meeting in Vyogato. 6/10/19. Photograph: Sowelu Avanzo



The *chamas*, not requiring any sort of collateral, unlike the formal microfinance institutions, base the due diligence exclusively on the reciprocal knowledge of each member's family and social background, developed by living in the same community. The members of the chama can, in fact, distinguish between those who are most reliable, who will most likely pay back the loans they receive, from those who are not.

In Miyani *chama* models have been introduced by NGOs, however, nowadays they are mostly run autonomously by the community, and the members feel free to adapt the rules of a specific chama model to their needs, or mix them between different models if they think these are not fit for the purpose.

During my stay in Miyani I noticed that they are extremely widespread, and a person is usually part of more than one chama. In particular the models of chamas that are used the most in the area are the SILC group, standing for Savings and Internal Lending Community, which is a model created by the Catholic Relief Services, an NGO inspired by Christian principles, and the VSLA, the Village Savings and Loans Association, which is a model invented by the Village Savings and Loans Associates Ltd.

Both of them are evolutions of the traditional ROSCA model, which rendered more flexible the microfinance scheme, and belong to the ASCA (Malanchini et al, 2010) group of microfinance models.

The aims of the two types of *chama*, as well as the rules recommended by the organizations are extremely similar: the amount of the members is the same, the meetings are once or twice per week, each meeting starts with the contribution of a small amount of money from each member, and continues with the distribution of loans to those who request them. (VSLA.net). Neither CRS nor VSL Associates Ltd. give any suggestion regarding the range of interest rates to apply, and prefer to let the self-governance of the groups decide about such matter.

Both groups collect savings and lend money for a limited period of time, at the end of which, the savings in the common fund and the profits are shared, and the members are free either to start a new chama, or to leave the group. At the end of such period there is what is called the *share-out*, when all the savings and the profits deriving from the interests are shared among the members based on the amount of shares they accumulated or the amount they saved in the period.

The SILC groups differ from the VSLA because the former lets the groups decide how long the chama should last, so that they can plan the cycle taking into account the seasons, or other events, such as festivities.

The SILC handbook by CRS explains the aims and principles of the SILC groups, and the rules they recommend that the members follow. In particular, according to the organization, the SILCs are aimed at increasing the value of human, social, financial, political and physical assets(crs.org).

According to the organization, a SILC group produces for the population several social and economic benefits, such as the improvement of attitudes like transparency, capacity to set-up laws, book keeping, but also, through the institution of emergency social funds, the groups can promote healthcare or education of the families involved. In their conception, the chamas facilitate the creation of new bonds among the community members, to develop joint decision-making skills, and to empower women.

There are also political benefits, such as the fact that the population can engage in a dialogue with local political institutions as a group, and, therefore, having stronger contractual power.

One of the main economic benefits they claim chamas have is to incentivize saving-culture among the members of the group, who save small amounts of money, and receive back large amounts, and a share of the profits of the chama at the end of the cycle.

Ms. Njau (INGE2.1) points out that Grassroots Economics realized the positive impact of these groups on the communities especially in the rural areas, and decided to propose the groups to adopt Sarafu in order to increase the purchasing power of the group, by recommending that its members register in the Sarafu network. These would receive 400 Sarafu, accepted as worth 400 Kenya Shillings if spent among local businesses, and not cashed out.

Moreover, they contacted the CRS to receive a training in order to promote the creation of new SILC groups that would use both Sarafu and Kenya Shillings.

In particular, according to ms. Njau, the groups could benefit from the chance to save Kenya Shillings in the chama, and spend Sarafu, as well as to save and request loans in Sarafu. Through Sarafu, they would have additional reserve of Savings, and, provided that the velocity of circulation of the token is higher than that of Kenya Shillings, it would be easier to pay the loan back within the community. Grassroots Economics, by taking such action was aimed at expanding the monetary network. The new users, by adopting Sarafu as a group, would foster its circulation and, trade with those already registered in the monetary network.

Moreover, ms. Njau claimed that both Sarafu and the chamas had a major effect by empowering women, who are, for cultural reasons, those who take care of the family, and of the fields, while men are mainly working outside the household, and often far from the community. She claims that these two social technologies had an important impact, since they promoted local production and enhanced unused productive, as well as political potential of women.

## THE PEKU VSLA



Picture 4.1 Peku VSLA, Peku, 7/11/2019 Photograph: Sowelu Avanzo

In the village of Peku, adjacent to Miyani, I was introduced to the other members of the chama by Alex T. , who explained to me that since June, they started a chama named Peku VSLA, of which he was the CBT, standing for Community Based Trainer (INM7.1), namely the person who invited the members to join the chama.

He explained to me that the chama was created in June 2019, its members were 25, and most of them already knew each other before the chama started, since they live near the chama meeting point, in Peku. The governance of the chama is organized as follows: there is a committee, formed

by 5 persons, who have the positions of *treasurer*, *secretary*, *vicesecretary*, *chairperson* and vice-chairperson, which is the typical governance structure chamas in the area usually have.

Alex T. was also elected *secretary* of the chama. His role consisted in performing the book-keeping activity, which is extremely important to every chama. He does so by keeping track on a specific accounting book all the loans the members of the chama take, and all the amounts saved in the common fund, he calculates the interest rate, which, from the loan book (see Appendix) appears to range from 4%, which are emergency loans, to 16,6% in one case, but in most cases is 10%. The rate is fixed and, therefore, the amount of money due doesn't depend on the time the person will take to pay it back, but, the *mwanachama*<sup>3</sup> is charged with a fine if he or she exceeds a certain deadline.

The role of the chairperson of the chama is to gather the members, inform them about the meeting, to decide when a session starts or ends, such as the saving session, or the lending session, and to present the topics that are discussed in every chama meeting.

The *vicesecretary* and the *vicechairperson* substitute the members of the committee are not able to join the meetings.

Moreover, they appointed two additional members of the committee: the *police-woman* and the *mshauri*, which can be translated into the English word *mentor*. The role of the police-woman is to go and check, when someone is absent, if the person is sick in case nobody knows why the person didn't join the rest of the group. In case of unexcused absence, the policewoman records that on the book, and the person is given a fine.

the Mshauri's role is to decide whether a discussion or an argument have already last too long, and, it is time to move on with the meeting, whereby he is given the power to impose silence on the members speaking to maintain order.

The fact that in appointing the members, before the chama started, the members of Peku VSLA considered necessary two more positions besides the 5 members of the committee recommended (VSLA Associates), indicates that they perceive the chama as a technology that the community owns, and must serve and be customized to the specific needs of the community, not as an appropriation from an organization external to the life of the community.

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<sup>3</sup> member of a chama in Kiswahili

A Peku VSLA meeting starts and ends with a simple prayer in which they ask God to help them in the difficulties they face every day. The members belong to diverse religions: for instance Alex T. (INM7.1), and Katili N.(INM8.1) are Christian, whereas Sidi M.(INM9.1), Chizi M. (INM10.1), Bendera K.(INM11.1), Miriam C.(INM12.1) are Islamic, but all of them participate these moments and are free to pray differently from the chairperson according to their beliefs. It is evident that the prayer has an important social function, because it focuses the collective attention on the importance of the meeting, and trains the members to develop life skills such as a *non-judgemental attitude*, by letting each member employ the contemplative practice he or she perceives as his own within a collective frame. This is an important example of how the economic and social life of the community are grounded on such life skills, which are not, therefore, exclusive domain of the self, but have, instead, implications on social interactions.

Moreover, it is also relevant that this cultural element of the chama is most probably not due to the influence of the organization teaching the VSLA model, which, unlike the CRS, is not a religious organization, and, therefore, not aimed at conveying religious principles (VSLA). This indicates that it probably emerged from, and was decided by the users, because they perceived it as important, and not in a top-down fashion, as it would have been if the VSLA had recommended the community-based trainer to start the *chama* with a prayer. This shows that probably it is a spontaneous expression of the need of the community members to share such moment, and that it has for them some connection to the activity of the *chama*, which is considered to be everything but mondain, connected, instead to life and death.

After the prayer, the secretary, who counts the members and takes attendance, imposes a fine on those who don't show up without a plausible reason.

the *treasurer* of the chama is asked by the *chairperson* to collect the savings from each member, contributing, in the Peku VSLA an amount ranging from 50 to 250 Kenya Shillings. The money is usually in cash (INM8.1), and they are collected in a box, but also M-Pesa can be used by the members, who can send the amount to a specific account used for the chama. After the first session, loans are distributed to the members who wish to request them in Kenya Shillings.

Two sessions follow, where the members save and receive loans in Sarafu.

After this session is concluded, the meeting proceeds by discussing the management and implementation of the income generating-projects (PO). These are financed by the common fund, and

some of the members are selected through a votation to contribute to the management of the projects.

The projects implemented by the Peku VSLA are the following: they buy maize flour from Shanga and pesticides from the Miyani Food Distribution Point chama, which they store in a warehouse owned by one of the members, and sell those products in the village of Peku when the demand of such products rises due to seasonality. The *chama* was also given and manages a water tank donated by Grassroots Economics to the Miyani FDP, which was placed in Peku. Alex T. explains that they intended to start using the water tank during the next dry season, and that at that moment it was unused, because the rain-water was sufficient, and because the tank needed some maintenance before the water collection started.

Moreover, the group is cultivating a vegetable garden in order to sell its produce.



Picture 4.2 Peku VSLA vegetable garden. 21/10/2019 Photograph: Sowelu Avanzo

If not all the aspects of a *chama*, and surely not of all the *chamas* correspond to the concept of commoning theorized by Bollier (Bollier, 2019) surely, in this particular project, the characteristics

of commoning are particularly evident. The *shamba* is owned by one of the members who, due to his age was not using it, and, given his impossibility to pay workers who could cultivate it, he decided to let the members of the *chama* use it. This man decided to do so in order to contribute to the prosperity of the community, and such agreement is mutually advantageous for the group and the man, because, Alex claims that the field needed maintenance, which he could not take care of on his own. Due to the new management it was flourishing, and, when I was there in October, *Sukuma wiki* and *Okra*, as well as *cassava* and other local greens were cultivated and sold both in Kenya Shillings and Sarafu. I asked whether the workers were paid by the *chama*, and Alex responded that they were not, but they would share the profits deriving from the business with the other members of the *chama* at the end of the cycle. Each member of Peku VSLA was taking turns based on a schedule established by the *chama* to take care of the collective vegetable garden, and of the maintenance work that needed to be done.

Alex explained that they were inspired in taking such collective action by a similar project run by the Miyani FDP, near Shanga's Office.

This transition towards commoning seems to have been the missing link between the household economy and the market that allowed the community members to match properties (the field), labour force, expertise and the food demand. Sarafu, as Tayari points out, helped them to market the vegetables and meet also the needs of people coming from other villages because they could use Sarafu. In T.'s opinion, the circulation of Sarafu itself should be regarded as a commons, since his intention, by promoting the vegetable garden, was also to promote the circulation of the community currency, as it's evident from his words "we can trade with the Sarafu, so we can make people to be used on how to use" it (INM7.1). He is aware that the Sarafu network is not only something that the *chama* can and should benefit from, but also something the *chama* should actively support.

It is evident from the accounting book (see appendix A) that the amount the group managed to save in Sarafu is slightly higher in the period between June 2019 and November 2019. The amount saved in Kenya Shillings amounts to 21750 Ksh, whereas the amount of savings in Sarafu was 23720.Sarafu on the date 28-11-19. Therefore, the group, through the complementary currency doubled the purchasing power they will obtain at the end of the year. If the group of people interviewed is taken into account, the divergence between Sarafu and Kenya Shillings is more evident: they saved 2800 Kenya Shillings by 28-11-19, and 5450 Sarafu over the same time period.



The only person who took a loan among them is Chizi M. who is also the *police-woman* of the chama received 300 Kenya Shillings on August 25th, and she could return only 200 out of the 380 Kenya Shillings due. In an interview she explains that she used the money to buy *unga*. She was charged a fee amounting to 50 plus the 10% interest, so the total interest she will pay on the loan amounts to around 26,7%.

It is worth to notice how after she received the loan in Kenya Shillings, she kept saving in Sarafu, and managed to increase her savings in the community currency, which were 350 in August and reached 1400 on the 28-11. This amount is a precious resource for her, because without the community currency she might have not saved at all, and at the end of the year, the share she would have of the chama profits, would be much inferior. This also suggests that it was easier for her to obtain Sarafu than the Kenya Shillings, but also that at the time of the year when she would take the loan in Kenya Shillings, namely during the dry season, the local businesses had no unga left, reason why she had to buy it in Kenya Shillings.

The fact that the members of the chama pay such high interest rate on loans to buy flour during food crises, and that they prefer this system to the more informal network of friendship or family in order not to be stigmatized, displays how dramatic the credit situation is in Miyani, but also shows an element of the chamas which doesn't match the commoning principles, since the members of the community with larger shares make a profit out of Chizi M.'s need for credit.

It is also evident how the complementary currency provided an additional buffer for the rest of the interviewee, which helps them to bear the scarcity of national currency.

Rechel C., who is Alex T.'s mother, saved 1350 Sarafu, and Alex T. 650 by the 28-11-19, while they deposited in the common fund only 400 and 350 Kenya Shillings respectively.



<b>Savings in Sarafu</b>	<b>21-07</b>	<b>18-08</b>	<b>01-09</b>	<b>19-9</b>	<b>10-10</b>	<b>31-10</b>	<b>07-11</b>	<b>28-11</b>
Alex T	50	300	300	300	300	300	350	650
Miriam C	100	400	500	600	750	900	950	1100
Chizi M	200	350	750	1050	1200	1250	1300	1400
Rachel C	150	400	500	700	850	1150	1250	1350
Sidi M	150	350	400	600	750	750	800	950
Bedera K	100	250	250	450	550	600	600	700

Table 4.1 This table presents the cumulative savings in Sarafu of 6 among the chama VSLA members interviewed in Peku as reported in the accounting book of the chama in the time period 30-6-19 28-11-19.

<b>Savings in Kenya Shillings</b>	<b>21-07</b>	<b>11-10</b>	<b>01-09</b>	<b>19-09</b>	<b>10-10</b>	<b>31-10</b>	<b>07-11</b>	<b>28-11</b>
Alex T	50	100	150	150	150	150	250	350
Miriam C	150	300	450	600	750	850	900	950
Chizi M	100	150	300	300	500	500	500	500
Rachel C	200	200	250	300	300	350	400	400
Sidi M	50	150	150	200	200	300	300	300
Bedera K	100	150	150	250	250	300	300	300

Table 4.2 This table presents the cumulative savings of 6 among the chama VSLA members interviewed in Peku as reported in the accounting book of the chama in the time period 30-6-19 - 28-11-19.

Many of the members of the VSLA interviewed, appear to be living in a precarious condition due to the absence of a strong solidarity network outside the chama. Sidi M. ,for instance, is a farmer, and lives alone with one child, and in 2017 had to receive food assistance from Red Cross Kenya, since she wasn't food-secure. Katili N. is a farmer as well, his wife passed away, and he has 4 children. He is not included among the members of the chama list, because he was recommended to join the chama on November 25th by Shanga M. In order to feed his family, he has to live out of casual labour, because the crops from his field are not sufficient. Chizi M. sells firewood and farms. She has

6 children and her husband is unemployed, because he is sick, which causes to her household financial instability also related to the cost of the medications she has to buy regularly. Bendera K. and Miriam C. are farmers with 3 and 4 children respectively. Miriam saved 1100 Sarafu, and 900 Kenya Shillings, whereas Bendera K. 300 Kenya Shillings and 700 Sarafu over the time period.

To them the chama and Sarafu were of vital importance not only from a financial point of view, since they mitigated the adverse effects of seasonality by allowing them to have additional purchasing power in case of need (INM7.1,8.1,9.1, 10.1, 11.1, 12.1), but also from a social point of view, because they facilitated the creation of a network, which was market-oriented in some cases and commons oriented in others. As previously mentioned in Chapter 3, the two innovations to the traditional networks change the "rules" (INM3.2) of social interaction in the villages. This is the reason why the new rules are considered so important by the members that they instituted 2 more guardians to preserve them. Moreover, being part of the committee is being given a role, and therefore, becoming an authority for the group in one specific aspect of the life of the group, which also contributed to the reorganization of society, which allows even the members who financially contribute less to the chama to have a relevant position, instead of being marginalized. If the rules were not formalized or followed, the relational element would probably prevail on the political one, whereby the group would lose its peer-to-peer nature. For this reason, many of the rules are also meant to symbolically establish order within the group, what Alex defines "discipline"(INM7.2). He explains that those who don't attend the meetings, those who don't save, but also who arrives late and speaks, or those who text during the meeting, must pay a fine. In this case, the fine represents a clearly defined boundary between life inside and outside the *chama*, between formality and informality. These rules have also the positive aspect to focus the attention on the meeting, to separate it from the rest of its members' lives and activities.

It is also important to notice that the chama is one of the few social spaces where women are actually dominant over men and this is not only evident from the numerical superiority, but it is also symbolically evidenced by the presence of a police-woman, as well as of a *chairlady* and a female *treasurer* in the *chama*.

This dominance, however, doesn't seem to be aimed at excluding men, but at contributing to the well-being of the women's families, by taking part in the community life in order to perform the functions that a man often doesn't perform, because he is working outside his home, such as man-

aging the finances of the family, reason why most chamas, like the Peku VSLA don't exclude men. It is also true, however, that attending the chama meetings appears to be one of the few socially accepted activities that a woman can perform outside her home that involves socialization.

Another reversal of conditions outside the chama is present inside it: that related to the generation gap: in a society where the "elders" (INM13.1) are considered to be the authorities in the families, also because of their political and economic power, because of the prestigious position they are given by traditional political structures, symbolized by the *village elder*, and due to fact that they own much larger portions of land than the youths respectively. Alex says that the chamas and Sarafu also disrupted the cultural barriers that prevented youths from suggesting changes in the cultivations, and, therefore, changed what he defines as the "mode of thinking"(INM7.1) of the elders. He points out that the social innovations facilitated constructive dialogue among all the members of the chamas, by fostering "awareness"() of each others' problems, as well as helping to take collective actions to find solutions, like the diversification of the crops. He points out that before the introduction of the community currency, these people would have responded to an educated youth recommending that the father diversified the cultivation of a portion of his own land that they knew best what to cultivate, because of their experience. These conservative elders, however, when fish shops started to accept Sarafu, started to reconsider the innovation as something positive, because it directly affected their food provisioning, and so registered in Sarafu network.

Youths have little space in society, because, due to overpopulation, the youngsters have few chances to make a living by cultivating their own land, like some of their parents did. Katana T. (INM6.1) who is 20 confirmed this, and explained that the most of his generation wants either to move to Mombasa or to Nairobi. Some might continue to work as fishermen, farmers or as boda boda riders in Miyani, but it's a small minority of the population. The labour market, therefore, is saturated for them, and it will continue to be so if the economy remains one related almost totally to agricultural subsistence.

Surely, the economic model the older population refers to is one based on agricultural self-production, which is not fit for meeting the needs of such a large, and constantly growing population, and the hierarchical social structure perpetrates this generation inequality (INM6.1), and leaves the younger kids without any position in society. Both chamas and Sarafu network empowered them, as also Alex T. points out(INM7.1). He is 28, and has 8 siblings. His father is retired, but he worked as a headteacher of an elementary school in the area (INM7.3), his mother, Rechel C. is a farmer(13.1). One of his brothers is an artist and lives in Nairobi, other two of them have casual

jobs in Mombasa, the rest of them are still at school, whereas he is a teacher in a school in Kwale. He explains that, since he is educated, he wouldn't find any job in Miyani that could reward him for his studies, reason why he had to move to Kwale, the capital of the county to work at a primary school. He says that in the week he lives in Kwale, but in the weekend he normally goes back to Miyani, where he trains the chama members and participates the meetings. His dream is to open a kung-fu gym, because he likes kung fu, and he likes to train the youths but, he doesn't have any equipment to do so. He would also like to open a club where he could teach how to write poems to the children both in English and in Kiswahili, and to sing. The youths nowadays, he says, are desperate due to the unemployment, and they take drugs and become alcoholic. With Sarafu, he believes they would have some alternative to leaving, or to become addicts, because they can now spend productively their free time. He points out that, for instance, many people would pay for services, such as a kung-fu gym, but the Kenyan Shillings are not enough to do so. Nowadays, the youths could instead get paid in Sarafu, and, therefore use their talents and become more independent from their parents, something that was extremely difficult before.

Alex T., while mentioning the diverse projects the chama is involved in, explained to me that they are cooperating with Miyani FDP, because they have a reciprocal advantage: they buy the pesticides for their fields from the group, and sell them to the Peku inhabitants. Moreover, the Miyani FDP gave them the chance to manage the Sarafu tank to distribute water, and profit from it. This network of chamas has the scope to "support each others" (7.1) in Alex's opinion, and, interestingly, the market interaction is fundamental for this purpose, but is also a medium to create an alliance among the two groups, it has, therefore, also a relational and political role.

They also started to buy maize from Shanga M., and sell it in Sarafu to the inhabitants of Peku to solve the food provisioning problems affecting the area, as Chizi M.'s case shows.

## **THE MIYANI FDP**

William Ruddick points out that originally the Miyani FDP was created as a cooperative business, and was not a savings and loans association, but they progressively expanded their business and started to perform also the activities that traditional *chamas* do, such as collecting savings and lending to the members.

Miyani FDP has different characteristics from the SILC and VSLA groups also due to the different purpose for which it was created, and because it was founded in 2011 (INM14.1), and, it has been operating for a longer time than most of the groups based on the other models. Miyani FDP was founded to implement a food insecurity relief program managed by Red Cross Kenya in the region. This project was implemented through cash transfers to over 4000 food insecure farmers, who were trained to start activities that could support the food security in the area (Darma, 2019). This project reportedly increased the harvests in the region, but "when the program funding from WFP began to run out Red Cross' ability to pay these farmers was coming to an end" (Darma, 2019), reason why the community in Miyani started to self-finance their projects through Sarafu.

Nadzua M., the chairlady of the Miyani FDP explains that (INM14.1) in 2011 the Red Cross Kenya created the group by contacting the *village elders* of 5 among the most food-insecure villages of the Miyani area: Miyani, Chigojoni, Kilibole, Peku and Yowani, who in their turn selected 5 members per village.

The chama members are 25, and they are mostly women, because men are usually outside the community for work, reason why they cannot attend the meetings every time, but unlike other chamas (INM4.1), if the next of kin wants to attend the meetings on behalf of the member, he or she is allowed to.

The *chairlady* points out that the *chama* kept running the income-generating projects they started with the funds of Kenya Red Cross without any financial support from the organization, and after this stopped reporting the impact of the projects, in 2017 (INM14.1). They also started new ones supported by Grassroots Economics. These projects are: the fish-shop run in the Office, the Posho mill, goat-keeping activity, the cultivation of a vegetable garden.

One of the major differences from the rest of the chamas is that saving and lending is not the main activity for the Miyani FDP, which, is, however, present.

The *chama* deposits the funds received from the income generating activity on a bank account, based on a branch in Mazeras, the closest town, reason why every time someone takes a loan the interest charged, which is usually 10% is partly used to pay the expenses of the journey to the bank and the way back. Most other *chamas*, instead keep the cash in a box. Either the *treasurer* or the *chairlady* is given the key to open the box, whereas the other one keeps the box, and the same can be said about the Pin of the sim card where the funds in Sarafu or in Kenya Shillings through M-

Pesa are deposited. All the accounting the *chamas* keep is written, but Sarafu and M-Pesa provide the chance to check the balances.

Shanga also points out that no interest rate is charged on the loans in Sarafu, since this operational cost is not present.

The group started using Sarafu when the Posho mill was donated by Greenworld campaign in 2017 (Cauvet, 2018), which, they positioned in a warehouse in front of the Office they had to build for the purpose (INGE2.1). The posho Mill significantly contributed to the circulation of Sarafu by accepting it as a means of payment, because the population could grind the maize produced from their own land and pay with a local currency. This system was in place even before Grassroots Economics digitalized it, when Sarafu was circulating as vouchers. The mill is the first electric mill in the area, which characteristic is important not only because it works faster than a manual one, but also because the manual mills are difficult to clean, which problem affects the quality of the flour. The mill is also advantageous for many people that before had to walk a long distance carrying their maize bags to other mills to grind them (INM1.2). Two members of the chama work at the Posho mill, who are paid 4500 Kenya Shillings per month each. The salary, however depends on the season and on the harvest, because the clients of the posho mill can range between 5 to 100 people per day. Due to the fact that they accepted Sarafu as a means of payment, the other mills had to decrease their prices to be competitive with the posho mill, therefore grinding maize has become less expensive to the population. Moreover, he points out that those using the Posho mill could save the Kenya Shillings they would use for grinding the maize. He explains that, since they had to pay for the electricity bill for the usage of the machine, which was a considerable expense, and also for the workers' salary also in Kenya Shillings, they could not accept payments that were 100% in Sarafu. His role in the Posho mill project as a member of the committee of Miyani FDP is to oversee, by making sure that the machine works, and that the workers are using it correctly.

The workers are compensated, even though they are also sharing the profits of the Posho mill, because a full-time employment is needed, which is not the case for all the projects. The members take turns, for instance, to work unpaid in the vegetable garden, that is a similar management as that owned by the Peku VSLA. Before they started the vegetable garden project, in contrast with the situation in Peku, the owner was cultivating the plot of land before the chama did, whereas now he benefits from a rent in Kenya Shillings, due to the agreement the group made with him to pay him

every three months a certain amount, and, since he is a member of the group, he is also entitled to his share of profits (INM14.1). The agreement is informal, because there are no property rights, but, as previously mentioned, the social ties are sufficiently strong for the members not to transgress the oral law which attributes ownership of goods to each group, individual or family within the community. The way in which the members decide to organize each project, therefore, varies and depends on its peculiarities, which are discussed with the members, and regarding which a decision is taken after a consultation.

The *chairlady* of the chama explained to me that on Friday December 6th the council communicated to the members their decision to make an "umbrella" chama out of the Miyani Food Distribution Point. This meant that from that day on, they would have allowed all the people that wished to do so, to become members of the chama, by virtue of the importance of the group to the community, and due to the need to expand their activities by involving the whole community. Interestingly, the Miyani Food Distribution Point had always had relations with the communities nearby for two main reasons: the political role of Miyani FDP, related to the way in which it was constituted by involving inhabitants of 5 villages, and to the fact that it has always been an intermediary between the community and the institutions, and also because the group was coordinating projects addressing specific issues, in which other chamas were involved, such as those run by the VSLA in Peku, or those related to the distribution of water, in which project the Miyani Food Distribution Point allowed some chamas to manage the water tanks donated by the Grassroots Economics foundation. The decision was taken because they realized that in such way, they would create a much wider network, from which all the businesses, both collective and owned by the members could benefit. Moreover, the success of the projects run by Miyani FDP, such as the fish-shop, or the vegetable garden, and especially the Posho mill was also due to the circulation of Sarafu, and for that reason some of the members of the Miyani FDP were also Sarafu agents, like Jacob M.

I asked him whether the introduction of the chama had changed the life of the community, and he responded: "Yeah, it changed, but not this size, because at that time there was no Sarafu... Now we want to involve even the non-members [of the chama] to become members of Sarafu." (INM14.1).

He points out that before the introduction of Sarafu, the inhabitants of the village were afraid that if they spent the few savings in Kenya Shillings they had, they wouldn't have for the emergencies, and this hindered the circulation of the Kenya Shillings. Nowadays, instead, everyone can both save and spend the Sarafu he or she has.

Nadzua points out that before the introduction of the complementary currency, when the chama started "it was difficult to get Kenyan money, you had to work hard. But now ... if you work hard to have Sarafu ... you can have everything, and you can still keep savings." (INM14.1).

The Miyani Food Distribution point, like all the chamas registered in the Sarafu network, can exchange into Kenya Shillings the Sarafu tokens on its account at the M-Pesa agent in Miyani, and Jacob explained to me that it has been extremely important for them to do so, because this has allowed them to buy products from the city, or in the towns nearby, such as Mazeras, which don't accept Sarafu, in order to supply the community with products that were not locally produced. He explained that if households harvest less maize than the amount they need to feed their families, the chama sends a member to Mazeras to buy maize, and then sell it to the chamas in exchange for Sarafu, which, in their turn, distribute it to the population (INM14.1). The fact that the Miyani FDP can exchange the Sarafu tokens for Kenya Shillings seems to allow the creation of a value chain that is beneficial for both the Sarafu users, because they manage to buy maize when their production is scarce and have the chance to do so partly without using their savings in Kenya Shillings, and for the chama itself, since it uses a part of the balance that would, otherwise, remain unused. This also allows the Sarafu users to grind the maize they bought from the other chamas at the Posho mill, therefore, returning Sarafu tokens to the Miyani FDP.

This is a clear example of how the circulation of Sarafu, and its connection to the national currency can enhance food security. This shows also how the Miyani FDP benefits from the cooperation with other chamas, and by helping each others the chamas build a wider network that allows the members to coordinate projects on a larger scale and which involve several actors.

Also regarding the fish-shop Shanga and Kombo point out that the possibility they have to change part of their Sarafu balance for Kenya Shillings is extremely useful for the business, since either directly or indirectly, the fish shop has relations to people who are not users of Sarafu, such as the owners of the boats, or the shops selling the products for fishing (INM3.1).



## CHAPTER 5 - THE COMMUNITY

In the Miyani area, due to the scarcity of national currency considered as a standardized means of payment and unit of measure for market value, the variety of practices to determine and negotiate value is extremely wide. These various considerably depending on the context. Chizi M. for instance points out that, before the introduction of Sarafu, when she needed food to feed her family, she had to ask her neighbors for some flour, and she would have to return the flour when she was able to. In addition to the amount she had borrowed, she would have to pay an "interest" (INM10.1) by adding more flour. This proves that the need for a means of exchange lead the population to practice at least indirect barter trade (Mishkin, 2020). Interestingly at least for Chizi's neighbors the flour she would return was considered as a sort of commodity currency, whereas for her the commodity was needed for food provisioning. It also shows that in the community credit had a cost even though no formal currency was circulating. This indicates that the community traditionally implemented policies similar to those related to the cost of money in Western economies, which incentivized accumulation of capital. Moreover, it is important to notice that the interest rate Chizi's neighbors charged was one tenth of the flour she had borrowed, which is the same interest rate most of the chamas charge the members with. This is due to the fact that not only money is scarce, but also goods are, and food in particular in the community, due to its vital importance. In this case, the community naturally implemented a policy that fosters competition for resources instead of cooperation among its members, and this proves that communities do not necessarily implement cooperative policies. This is the case also with Sidi M., who points out that when she asks for a loan from her neighbors, she has to return the money with an interest (INM9.1). In other contexts, however, different policies are implemented. Bendera K. , for instance, points out that she received loans from her friends to pay the school fees, and she wasn't required to pay any interest on those loans. The same can be said about Saumu R. (INM17.1), and Nasika M. (INM18.1), who claim that they requested loans from their neighbors and friends, and they didn't have to pay any interest on such loans. What is not formalized in a market relation, however, can be implicit in a relation of friendship, or in one of kinship, and, therefore, sometimes, a donation can be more costly than a loan charged with a high interest rate. This is the case for instance with Kombo (INM3.1), who explains why he prefers to rely on market relations to obtain credit, and others, like Alex T. , Jacob M. , who express a similar point of view (INM2.1, IN-

M14.1) with respect to the *chamas*, claiming that *chamas* have formal and transparent rules. The fact that *chamas* are widespread is also due to the fact that the laws implied by market relations, such as the imposition of interest rate and fees can be less binding than those of the household economy.

All the interviewees who belong to a religious affiliation confirmed that within the solidarity network related to their religious group, the members make donations to those who are most in need, but this behavior is necessarily restricted to the most basic provisioning areas, such as those related to housing, water, food, clothes and healthcare.

Moreover, the elder population benefited from advantages that the youths didn't have, as the interviews with Mweru M., Mangale M., and Alex M. show. Mweru is considered to be very old for the local standards: he is 65, and works as a *mgema*, that is a person who climbs the palm trees to extract coconut milk, and makes coconut wine, the local brew. He explained to me that he never needed to ask for a loan, since he can live out of his work and the produce of his land (INM19.1), which is not the case, instead, for his sons and grand sons. Mangale, who is a farmer and a liquor vendor has 5 children, and 2 grandsons. He explains that his role in the family is to give advice to his sons and daughters, since he is the family elder. He points out that he could live out of the cultivation of his land since his parents died, until the needs of his extended family forced him to start selling *mnazi*. None of his sons will have such privilege, because his piece of land will be divided among them in equal parts, and, so the cultivation of that plot of land won't be enough to feed any of them (INM20.1). One of his sons started working as a *boda boda*, for which work he bought a motorbike after having saved for some years and taken a loan at a *chama*, but he explains that he is scared he won't be able to pay the loans back (INM21.1). This shows the importance of bottom up credit systems, that allow local communities to interact with one another as well as to coordinate social and political actions, as for instance those explained in Chapter 4.

## **THE KAYA**

During my stay in Miyani I realized that Kaya, besides being considered a place of prayer for the population is an extremely important centre for the community life.

The Kaya is administrated by the Council of the Kaya, which is an extremely important institution to the inhabitants of the area. The Council consisting of around 40 people, is formed by local people living in the surroundings of the Kaya, which is a fortified city inside the forest, which nowadays is being used as a shrine where the religious ceremonies take place. The council of the *elders* has diverse functions for the people of Miyani and the nearby villages, because they are religious leaders of the Duruma traditional animist religion, they administrate the forest, and they also administrate justice: if a crime is committed, the inhabitants of the area can decide to report the case to the kaya elders, who judge according to tradition (INM22.1).

Some of their functions, therefore, overlap with those performed or that should be performed by the local government. This is also because the Kaya officials' council, belonging to the Duruma culture, was probably performing such functions for a larger part of the population, and the local government was less present in the past, before the monotheistic religions started to spread in the area.

Mwanaidi, one of the members of Kaya forest council explains that when crimes such as thefts, murders and rapes are committed and reported to the council, they are asked to express a verdict. When someone is judged to be guilty of theft, for instance, the punishment consists in forcing him to remedy the damage by asking the spirits of the forest and to the person from whom the goods were stolen for forgiveness, as well as returning the goods (INM22.1). This shows that property rights exist in oral law, and the Council is a tribunal for such law.

This situation shows that the Kaya forest council benefits from a closeness to the community, unlike the local government, which allows to settle disputes and maintain peace within the community. It is, therefore, a self-governed institution which manages resources that are spiritual, social and material, namely the forest, justice and the sacred shrines which affect economy society of the community. Furthermore, it has major importance to the inhabitants of the area, because they build many of their houses out of the wood collected in the Kaya forest. More specifically, the Kaya official points out that in order to collect enough wood to build a house with 4 rooms, the person must pay 2600 Kenya Shillings.

Chigamba points out that he had to pay an amount of 300 per each day he went to cut wood to build his own house out of that wood (INM23.1). The council uses the donations to buy traditional

clothes, to maintain and purify the Kaya, and to compensate the victims of crimes, as well as to plant new trees (INM22.1).

The planting activity is, however, not sufficient to compensate the major deforestation taking place in the area.

The *village elder* of one of the villages near Miyani whom I interviewed explained to me that even though the county government is now, through a decentralization policy, improving the quality of life in the region, they have several issues that hinder the political action in the region. He explains that each village elects its village elder, who are 18 in the Mnyenzi sub-location (INM24.1). These refer to an Assistant chief in charge of coordinating the whole Sub-location, and in his turn refers to the Chief of the Kasameni location. He points out that the main difficulties he faces in performing his activity efficiently as a village elder are related to transportation issues, and connectivity issues, since he must always be reachable from the villagers, in order to report security issues that might occur to the *assistant chief*, who in his turn must report it to the *chief*, before action is taken. He points out that in the area very few crimes were reported recently, and that often, even though he belongs to the same community as the people living in his village, they hide from him any sensitive topic he could possibly report to the authorities, which is one of the reasons why the area is considered to be extremely secure by the County Government. When asked about the judicial role of Kaya forest council, he responds that he thinks they are corrupt, because they allow the deforestation of the area they are appointed to protect.

The Kayas are also Unesco world heritage Sites ([whc.unesco.org](http://whc.unesco.org)), and, therefore, the massive deforestation taking place in the area is reportedly considered to endanger the Heritage Site, and to contribute to the destruction of a natural reserve (Cella, 1996). This allows us to consider some peculiarities of this conflict between institutions.

The self-organized group that manages the forest as a commons considers best allowing the members of the local community to construct their houses with the wood of the forest than endangering the villages affected by overpopulation and poverty. The global and national institutions consider the Kaya forest extremely important, are aimed at preserving a Heritage Site from being disfigured, and at preventing global warming, which occurrences would damage also the local community.

These institutions, however, probably fail to address the real cause of this problem, that is poverty and economic marginalization of the community, which in its turn is caused by the economic marginalization and isolation of the area surrounding the forest.

This dilemma regarding the coordination of diverse communities with competing global and local interests and stakes and different governance systems, having different systems of incentives is at the core of Sarafu credit, and it is one of the issues it is aimed at addressing.

### **THE IMPACT OF SARAFU NETWORK IN MIYANI**

William Ruddick explains that Grassroots Economics, in deciding the amount of tokens that each new user would receive after completing the registration, based its choice on the cost of a basket of goods and services for a family, amounting to roughly 400 Ksh. The first communities where the tokens were implemented were urban, but the amount was kept equal in the countryside because of interoperability with the other tokens (INGE3.1). Since the introduction of the monetary network in February 2019 until December 2019, 4598 users registered, which means that 1839200 tokens were minted.

These tokens were spent by the local businesses for a total volume of 13882248 Sarafu (without considering the initial injection of liquidity), which means that every token was spent on average 7,5 times among businesses and consumers within the Sarafu network in that time period. This means that the tokens, allowed the members of the communities to buy goods and services from one another for the same amount of Kenya Shillings being the token priced 1:1 with national currency. Many businesses accept a part of the payment in Sarafu and the rest in Kenya Shillings, which amounts are often negotiated at every transaction between the seller and the buyer depending on the amount of Sarafu each of them has on his or her balance, and the need to buy products that cannot be bought in Sarafu. All the Sarafu users running local businesses whom I interviewed priced their products the same as before the introduction of Sarafu.

Moreover, a large portion of the population living in the Mnyenzi sub-location registered in the Sarafu network. Sarafu users by December 28th were roughly 33% of the overall population in the area, that amounts to 13898, as is evident from table 5.1 and chart 5.1.



Chart 5.1 Users: 32,96% Non Users: 67,04%

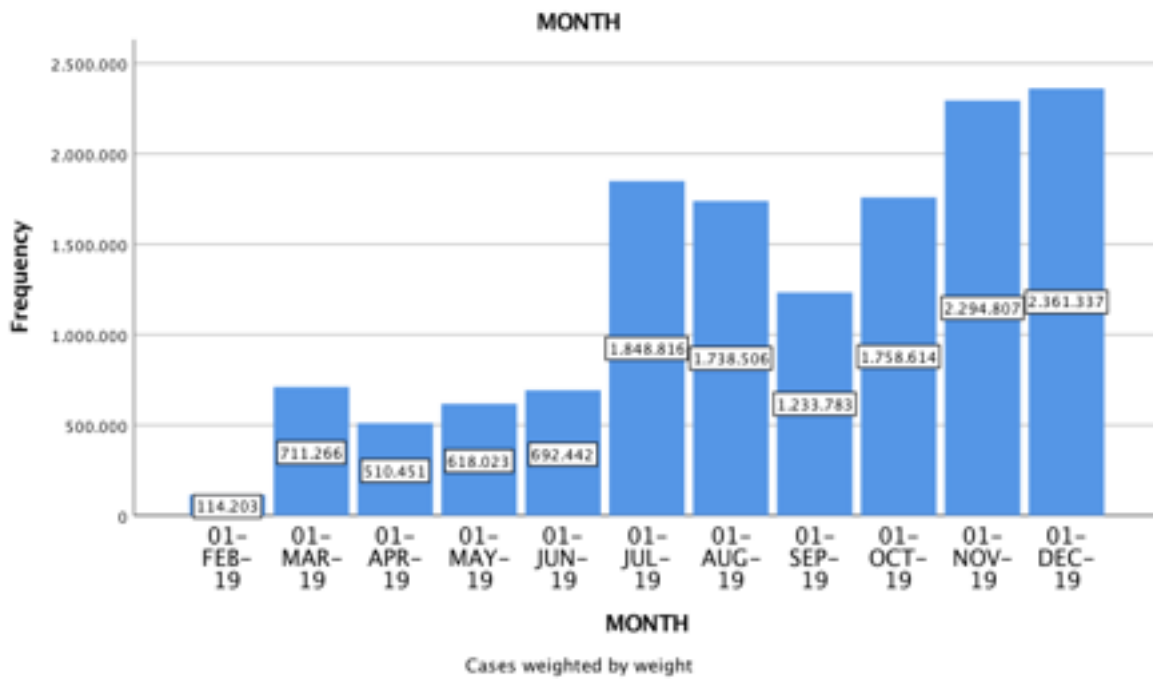


Chart 5.2 This chart shows the monthly transaction volume over the period February 2019-December 2019

Furthermore, the table 5.1 shows that the three tokens (MIYANI, ZENI and YENI) were adopted by women in larger number than by men in the area.

	<i>NON USER</i>	<i>USER</i>	<i>Total</i>
Female	4780	2664	7444
Male	4537	1917	6454
Total	9317	4581	13898

Table 5.1 Gender and usage of Sarafu contingency table. institutional accounts were not included in the statistics

According to the statistics (knbs.or.ke), the total female population of the region is roughly 53,6% of the total, whereas the female population of the Sarafu users amounts to 58,1%. These women saw an increased purchasing power, and could take part in a wider network of businesses.

The chart 5.2 shows the monthly volume in the time period. The first transactions from the Grass-roots Economics system sending the initial 400 tokens to the wallet of the new users were excluded, leaving, therefore only the transactions actually made by the users themselves in the time period considered. It can be observed that the volume tends to grow over the time period, influenced by the rapid growth of the users, but it clearly has its relative peaks in correspondence with the end of the dry seasons, namely in July-August (1848816 and 1738506 respectively) and March (711266).

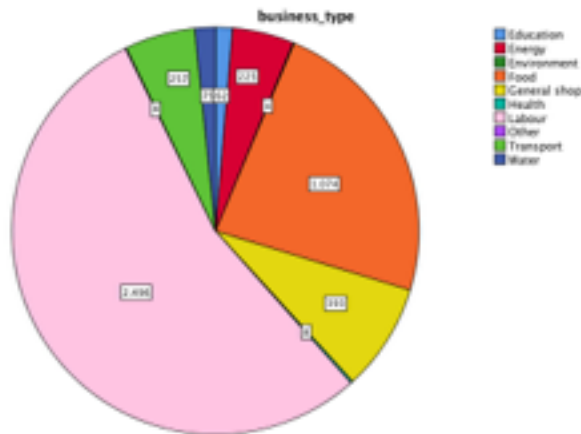


Chart 5.3 This chart shows the frequency distribution of the business type categories among the users of Sarafu network.

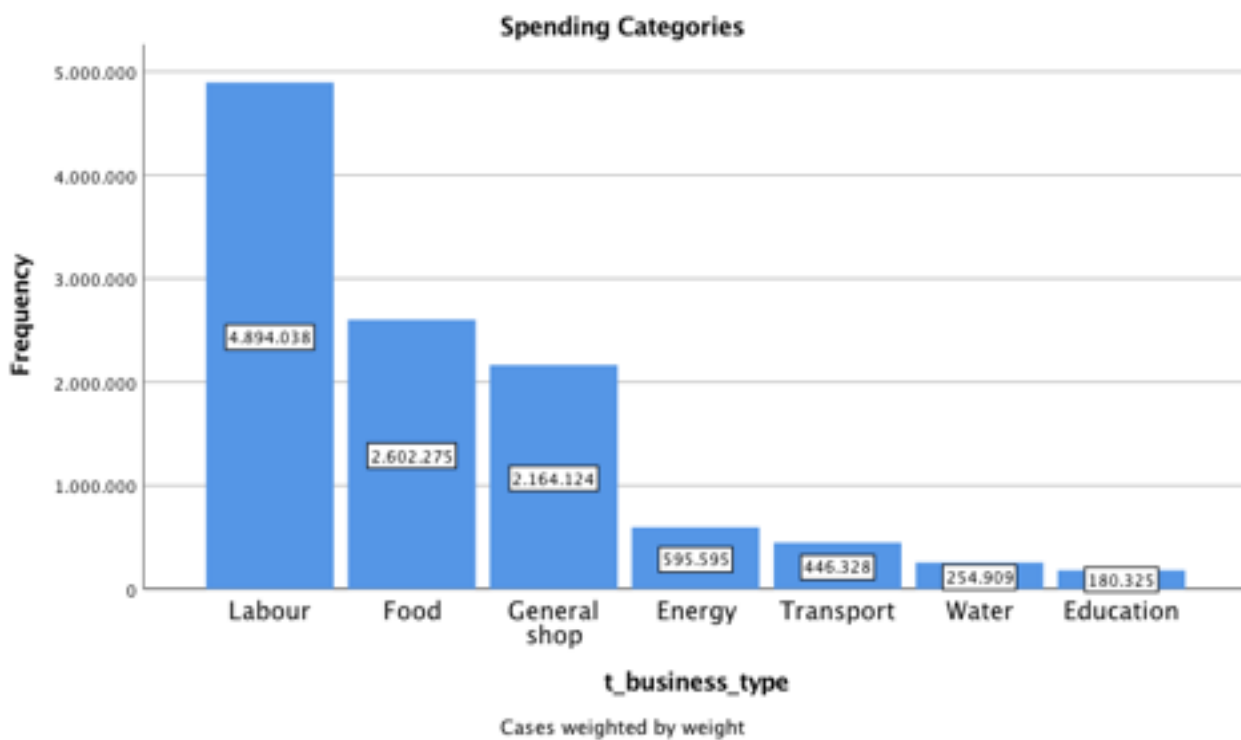


Chart 5.4 This chart shows the main spending categories classified according to the business\_type class of the target on the Sarafu Database.

Chart 5.4 shows the main spending categories, and the relative volume. The category Labour is the one with highest volume, amounting to 4894038. This category, however is not representative,



because it is a macro-category, and is composed by the following sub categories: farmers (1078 users), workers in constructions (17 users), wood sellers, tailors, shepherds, barbers, artists, fishermen, *mgema*<sup>4</sup>, mechanics, greengrocers.

Moreover, many of these categories, are part of the supply chain of food production, which is the second largest category.

In the *directories* categorized as related to food, instead, the users usually often specify the product they sell, which shows that many businesses are specialized even in producing one single product. This is probably due to the fact that most of these are home-businesses, and they sell a few specific products the owner, usually a woman, prepares from home. This is the case for instance of Karuwa B., who cooks home-made *samosas*, and her clients usually go to her habitation to buy such products. The goods of this kind that are sold the most are: *Bhajia*, *Chapati*, chicken, dry fish, eggs, mandazi, tobacco, coffee, beans. There are also categories, such as holeli ( the equivalent of a restaurant or a tavern for the village standards), which include businesses that provide a service.

Karuwa B. (INM25.1) explains that she took advantage of Sarafu, because she could expand her network, and, because of this, more people buy her products now. She also joined a second chama after the introduction of Sarafu to save the money she doesn't spend. Maku C., who is a fish-seller in Miyani points out that when they were using only Kenya Shillings, they had to work harder than they do nowadays(INM26.1).

As regards the General Shop category, it consists of 393 users running kiosks, phone shops, pharmacies and shops selling any kind of utensils.

The Energy category groups 201 users selling firewood, 5 users selling kerosene, which is used to light the houses at night, and two selling petrol.

The users categorized as related to transport are mostly *boda boda* riders, that is a taxi driver who carries the clients on a motorbike. Only 11 people work as car drivers.

A person working as *boda boda* rider is, for instance, Khalid T. (INM5.1), who points out that, one of the main difficulties of his work as a *boda boda* for him was to buy fuel in Sarafu, because few

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<sup>4</sup> Palm-wine producer. Palm wine is the local brew in the Mnyenzi sub-location, and one of the few alcoholic beverages sold in the area.

shops selling fuel are registered in Sarafu, but he could benefit from Sarafu, because he increased the number of clients.

Kahidja M. (INM27.1) explains that Sarafu changed her life, because in case of emergency, she can use her Sarafu tokens to send *boda boda* riders to the nearby villages to buy water, which, as previously mentioned in Chapter 3, in the dry season is one of the most problematic issues for the population.

The users falling within the Water business type are 75, and most of them most probably manage the Sarafu tanks. It is interesting to notice that in March and April, which are the two months at the end of the driest season of the year, the transactions to Water as a target business type had a peak. They amounted to 442 in March, when the users reached only 669, whereas they were much lower in the months after that period. This shows that Sarafu was used to target water provisioning issues by the population, and that the donation made by Grassroots Economics probably helped the population in doing so.

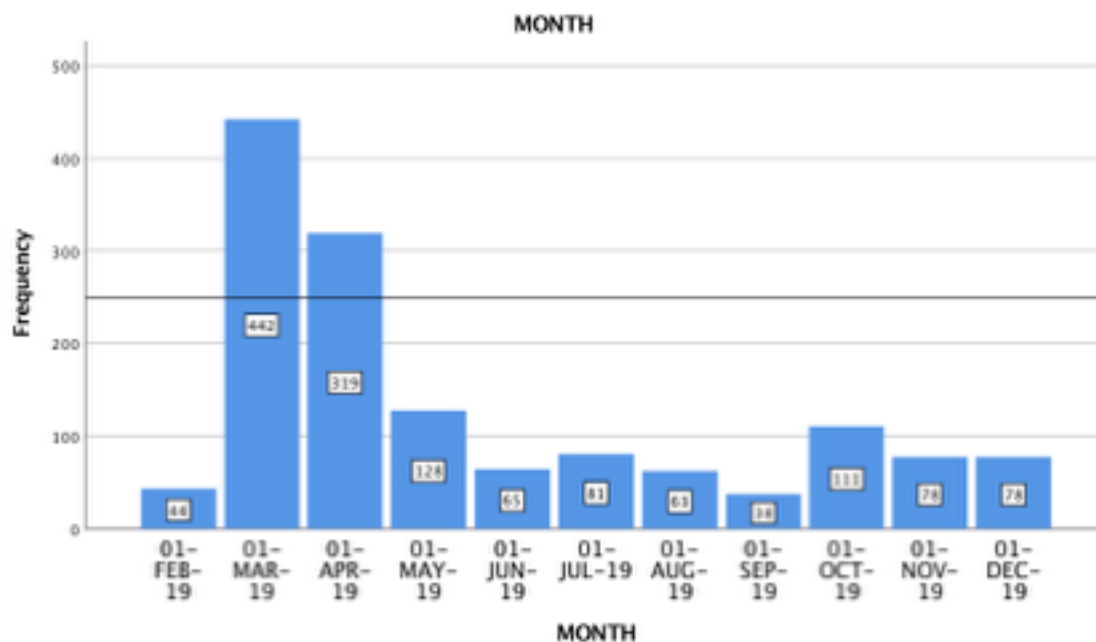


Chart 5.5 displays the transactions directed to the businesses belonging to the Water category.

The Education *business type* users amount to 62, and they are teachers of different schools, from the Early Childhood Education to the secondary school or college.

The Healthcare business type includes only 8 users, registered as doctors(5), nurses(2), and 1 veterinary.

Moreover 777439 Sarafu were saved in the same time period have been saved into chama accounts.

## **CORRESPONDENCE ANALYSIS**

The correspondence analysis aims at displaying the dependence between variables of a certain dataset on a low-dimensional space (Di Franco, 2017) named perceptual map. Due to the nature of the data considered, I conducted this type of analysis on the set of variables regarding gender and the type of business run by the Sarafu users. The analysis performed on the user-database shows which businesses tend to be mostly run by men and which by women within the Sarafu network in the Mnyenzi sub-location.

As regards the database of transactions, the correspondences between gender and business type attributes of each couple of buyers and sellers was investigated through two analyses. The purpose of the first analysis was to understand whether evident patterns emerged regarding the tendency of users of a specific gender to trade mostly with male or female users, or with those belonging to the Other category. The Other category regarding gender is especially used by the users to define group accounts, such as *chamas* as is evident from the relative *directories*.

Likewise, the second analysis was performed to assess whether strong connections among business types emerged.

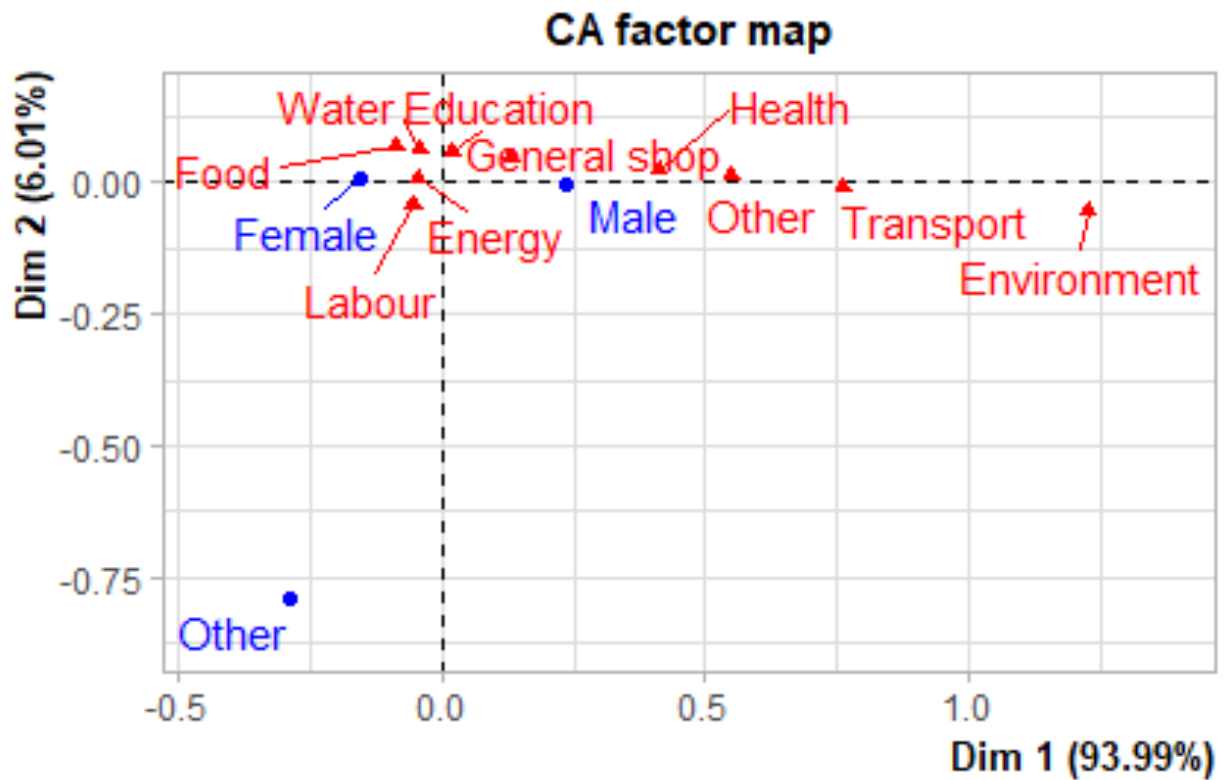


Chart 5.6 CA perceptual map – Sarafu User dataset- business\_type-gender categories.

business_type * gender Crosstabulation					
		gender			Total
		Female	Male	Other	
business_type	Education	37	25	0	62
	Energy	136	88	1	225
	Environment	1	3	0	4
	Food	688	386	0	1074
	General shop	211	181	1	393
	Health	3	5	0	8
	Labour	1486	997	13	2496
	Other	1	1	2	4
	Transport	57	200	0	257
	Water	44	31	0	75
Total		2664	1917	17	4598

Table 5.2 Crosstab gender business\_type-user database.

The analysis performed on the Sarafu-user-dataset shows a clear juxtaposition between male and female categories on the horizontal axis (Chart 5.6). On the left-hand side of the chart, closer to the female category there are points representing the business categories that are mostly run by women, such as those related to food, energy and labour. On the right-hand side of the chart, instead, the businesses that are usually run by men, such as those related to the environment, including tree planting, and tree-selling activities, such as that performed by Shanga, or professions related to healthcare. Transport includes mostly men, whereas Education has more balanced frequencies of male and female users, which is confirmed from the fact that it is close to the middle between the male and female points. The General shop category, instead, is closer to the Male point.

These results confirm that most productive activities that can be carried out from home, such as those involving cooking or the management of water tanks, or those related to farming or other labours, like the *salonist* profession, are typically carried out by women more than by men. The Energy category including also the businesses related to the firewood collection, seems to have higher frequencies of female rather than male users.

Moreover, it is important to notice how the horizontal dimension of the CA explains most of the total inertia (roughly 94%), whereas the second dimension explains only 6%.

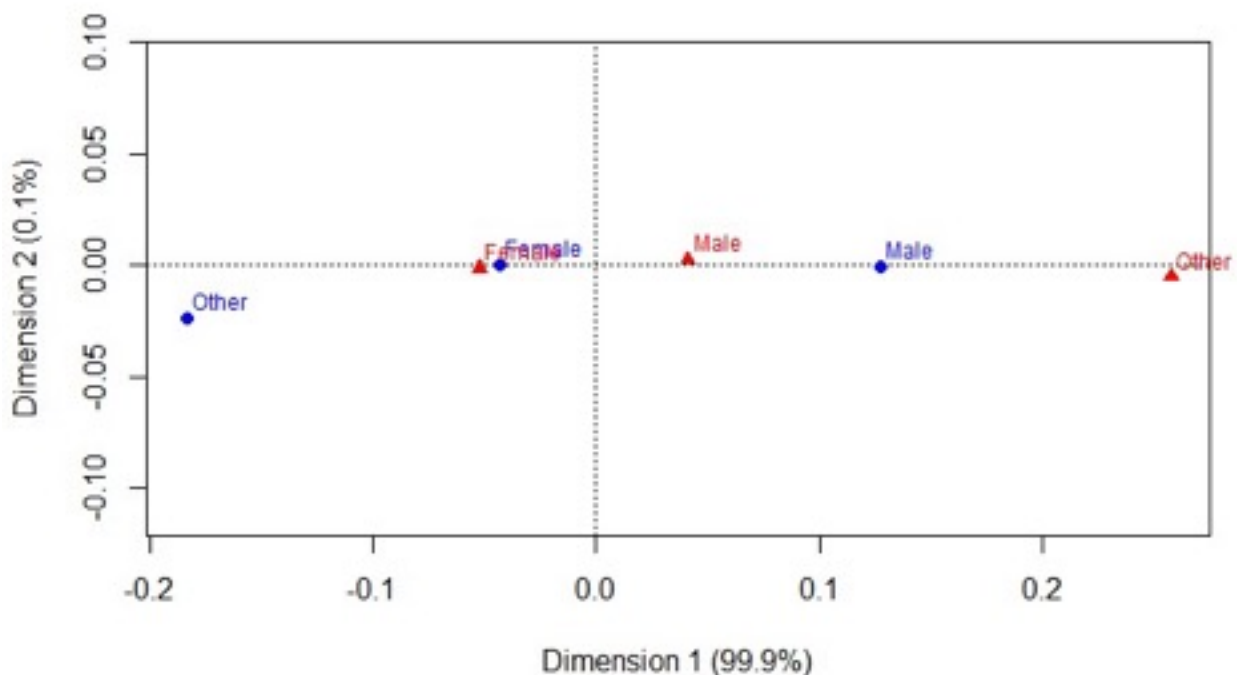


Chart 5.7 Perceptual map of the CA between  $S\_gender$  (gender of the buyers in red) and  $t\_gender$  (gender of the seller in blue) in the transaction dataset.

The perceptual map of the CA reported above shows that female users tend to trade with one another with higher frequencies than the expected ones, as is visible in the contingency table reported below (Table 5.3). Moreover, by further examining the data, it can be noticed that the total amount of transactions to and from the female population is 66,97% of the total amount, whereas that to and from the male population is only 33,02% of the total. This considerable difference is not only due to the fact that the female part of the population using Sarafu is larger than the male one, because, the former is only 58% of the total, and, if the transactions per user were the same in the two groups, those performed by the female users should be 58%. It can, therefore, be concluded that the female population trades more frequently than the male one, and one of the potential explanations for this is that men work outside the community more often than the women do, which implies that they have less chance to use Sarafu in their productive activities. The total inertia is almost completely explained by the horizontal axis.

s_gender * t_gender Crosstabulation						
		t_gender				Total
			Female	Male	Other	
s_gender		0	1616	1056	180	2852
	Female	1104	31333	9970	395	42802
	Male	675	19512	7645	199	28031
	Other	201	2553	1534	15	4303
Total		1980	55014	20205	789	77988

Table 5.3 Contingency table: s\_gender-t\_gender (gender of the buyer, and gender of the seller respectively), Sarafu transaction dataset relative to the population of the Mnyenzi sublocation. Empty spaces refer to system transactions.

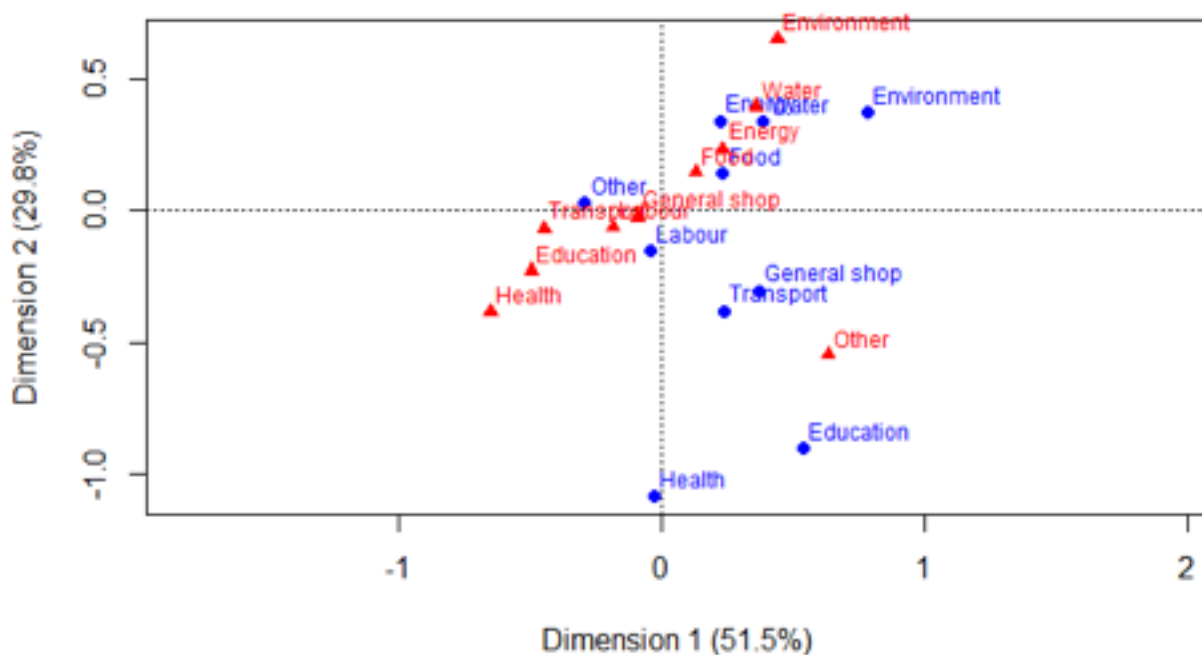


Chart 5.8, Perceptual map of the business\_type categories of users (buyers in red and sellers in blue) within the Sarafu transaction dataset regarding the communities in the Mnyenzi sub-location.

A possible interpretation of the perceptual map reported above (Chart 5.8) suggests that some categories, such as those related to food, water and energy form one cluster in the top-right portion of the chart. The points in such portion of the space refer to both transactions to and from the above mentioned business categories, which suggests, firstly, that these categories, being in the same portion of the space, have similar *chi square distances* from the rest. This indicates that these business categories have similar frequency distributions, which means that the usage the owners of such business is similar with respect to the proportion in which they trade with each other category. Secondly, it shows that that the owners of such businesses tend to buy from businesses belonging to the same categories as those they sell their products to.

Thirdly, what is most evident is that these three businesses seem to trade with one another more frequently than they do with the rest of the market, which is presumably the case because value chains related to local food production can easily result from the interactions of such types of business.

The categories Labour and Food are close to the origin both as targets and as sources of transactions, which means that all the businesses interact similarly with such categories, which is due to the centrality of these business types in the local economy, and to the large amount of these businesses among the Sarafu users, which was previously mentioned.

The businesses categorized as General Shop, Education, Health and Transport appear to make a different use of Sarafu from those previously mentioned.

The frequency distributions of the transactions to and from these businesses indicate that their owners spend the tokens among different kinds of businesses from the ones that buy their products and services. This is shown by the distance between the red and blue points relative to these specific business types, and the relative isolation from the rest of the points of the outflowing transactions.

Healthcare and Education are among the less present business types in the area, and in neither of these areas Sarafu is adopted systematically, as it was explained in Chapter 3, since they mostly depend on the county government. With respect to Transport and General Shop, instead, this difference is less present, and a connection among the two types of business seems to be present.

With respect to the category Environment, due to the fact that only 4 users belong to it, the distribution of its transactions cannot be considered representative.

It is important to notice that the cumulative inertia explained in the last correspondence analysis by the two dimensions of its perceptual map is lower than in the previous cases, but still considerable (81,5%).

S_B T	T_BT	crosstabu- t busin											
			Ed	E n	Envir	F o o	G e	Heal	L a b	O t h	Transp	W a	Tota
s_busi		0	32	150	1	697	594	16	1 2 1	10	95	45	2 8 5
	Educat	22	57	6	0	166	58	14	184	979	25	12	1 5 2
	Energy	110	8	507	30	1 2 2	327	0	700	1 2 0	88	156	4 3 5
	Enviro	0	0	28	0	128	2	0	15	58	3	23	257
	Food	492	1 8	125	101	7 2 7	115	5	3 9 4	7 1 2	403	707	2 2 6
	Genera	445	55	336	6	1 6 8	537	5	1 6 3	3 0 8	130	141	8 0 5
	Health	10	5	0	0	3	4	3	49	116	2	0	192
	Labour	803	2 1	980	22	5 6 2	122	47	7 4 0	1 1 6	404	357	2 8 7
	Other	26	2 6	141	27	1 4 1	775	26	1 2 7	395	281	112	4 7 3
	Transp	42	23	81	0	305	116	0	234	1 6 0	156	14	2 5 7
	Water	30	10	169	26	834	102	0	215	521	20	113	2 0 4
Total		1980	8 6	365	213	1 9 3	489	116	1 6 8	2 6 7	1607	168	7 7 9

Table 5.4 Contingency table s\_business\_type- t\_business\_type. Sarafu transaction dataset.



## COMPARATIVE ANALYSIS OF SARAFU AND TRADITIONAL FORMS OF E-MONEY (AVANZO, 2020)

A comparative analysis (Avanzo 2020) of Sarafu and traditional forms of e-money<sup>5</sup> suggests that the usage of Sarafu produced a countercyclical effect on a sample of 6 users, living in the Miyani area (4 men and 2 women), who disclosed their transactions both in Kenya Shillings through traditional forms of e-money, and in Sarafu for the time period between February 2019 and December 2019, when both usages could be observed.

All the individuals considered used both traditional e-money and Sarafu. The data show that the 6 users analysed, conducted 578 transactions through Sarafu worth a total volume of 185666, and, 685 through E-money, worth 148757 Kenya Shillings.

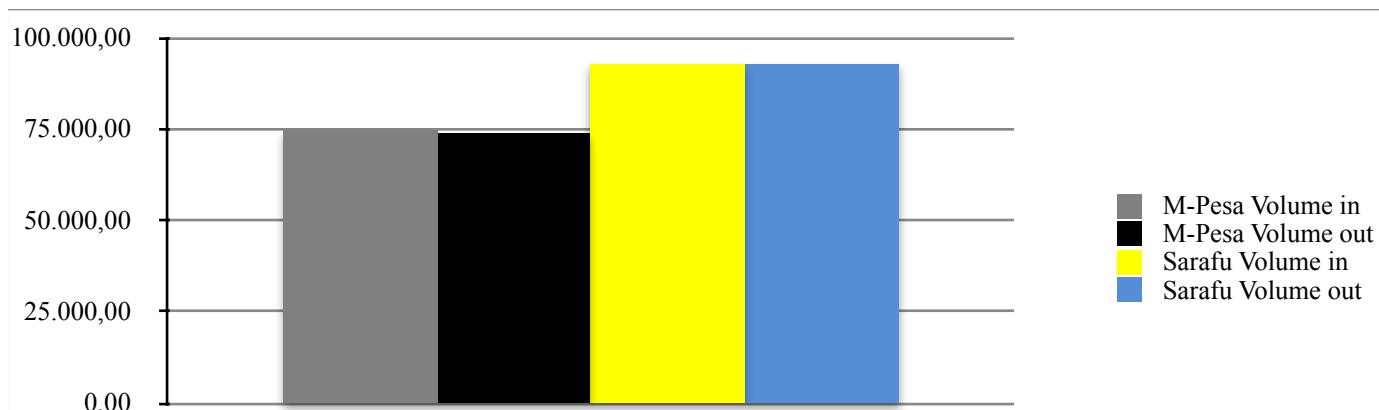


Chart 5.9 Comparison between M-Pesa and Sarafu Volume among the sample considered of 6 people.

<sup>5</sup> The term e-money here indicates each digital means of payment which can be used through phones, which service is extremely present in Kenya, as it was mentioned in Chapter 1. In particular the service provided by Safaricom, whose name is M-Pesa is extremely widespread in the region.

Sarafu Volume	V-in	V-out
June	1873	3365
July	10901	9219
August	4895	4963
September	9396	10911
October	22215	21355
November	14974	13045
December	28894	29660
Total	93148	92518

E-Money Volume		
	V-in	V-out
June	6661	6884
July	7677	7501
August	15127	15287
September	5964	5982
October	9500	9474
November	24996	24461
December	4699	4544
Total	74624	74133

Tables 5.5 and 5.6. Sarafu and Emoney Volumes over the time period February-December 2019

As it is evident from the chart above, over the whole time period transactions in Sarafu produced a volume roughly 24,8% higher than those in Kenya Shillings.

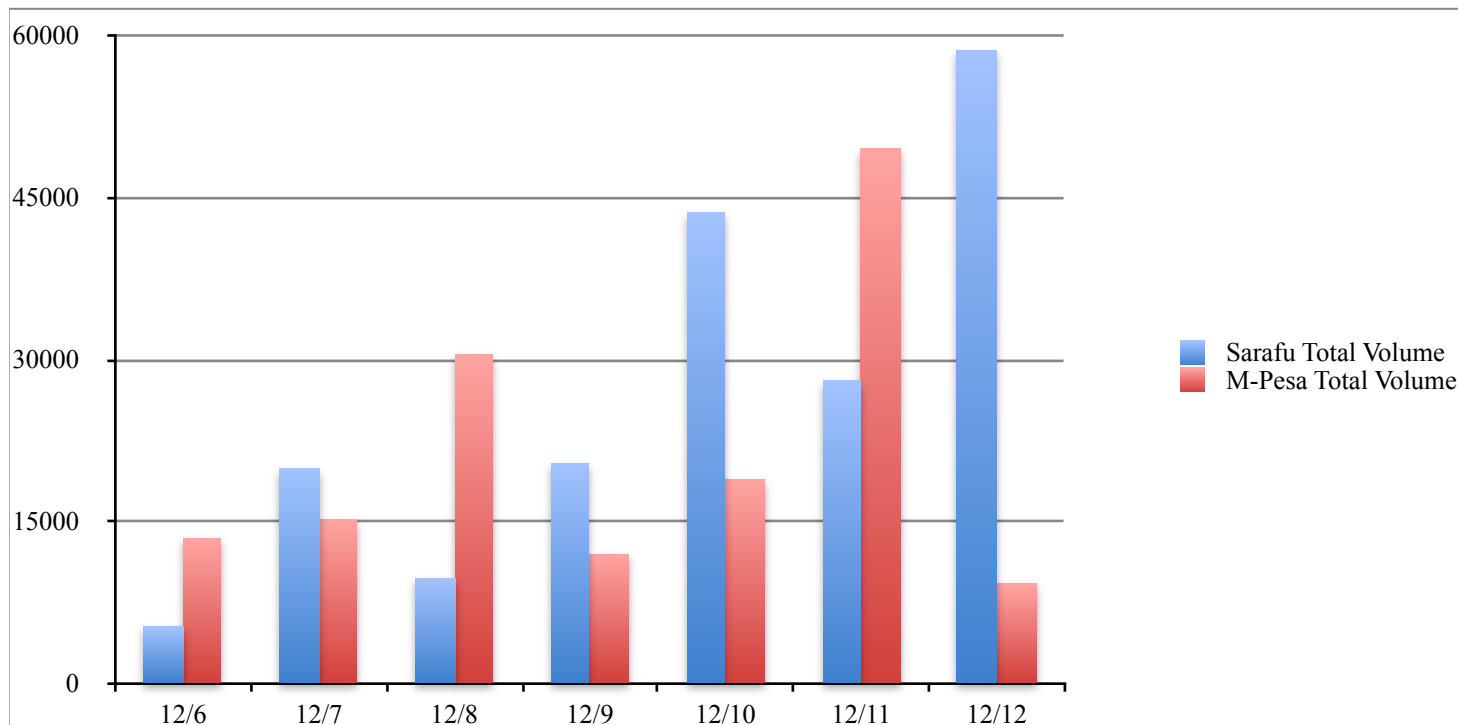


Chart 5.10 Volume of transactions in Sarafu and E-money in the period February 2019- December 2019.

Moreover, it can be observed that, during June, August and November more Kenya Shillings were exchanged through e-money than Sarafu, whereas in July, September, October and December it was the opposite. The maximum volume exchanged in one month through Sarafu was 58554 (December), whereas the maximum amount exchanged via E-money in the period observed was 49457 (November). The standard deviation of the monthly volume exchanged in Sarafu is 9553,958855 Sarafu, whereas that of the volume of Kenya Shillings transactions is 14214,05, whereas the total standard deviation of exchanges both in Sarafu and Kenya Shillings, amounts to 21600,17471, which is lower than the sum of the other two (amounting to 23768,01553). This shows us that the presence of Sarafu stabilizes the economic system, working as a buffer in the months when the national currency is scarce. It is moreover worth to notice that both the Kenya Shillings and Sarafu grew over the period. This is evident if it is taken into account that the sum of volumes in June,

July, August and September , amounting to 71043 for e-money and , is inferior to that in the last 3 months, worth 77680. The same can be said about the volume exchanged in Sarafu, amounting to 55433 and 130143 respectively.

By analysing more in detail the e-money transactions, moreover, it can be noticed that the overall outflow consists of: 26744 Ksh. transferred to other accounts, 33823 Ksh. withdrawals and 12456 Ksh. used to pay bills.

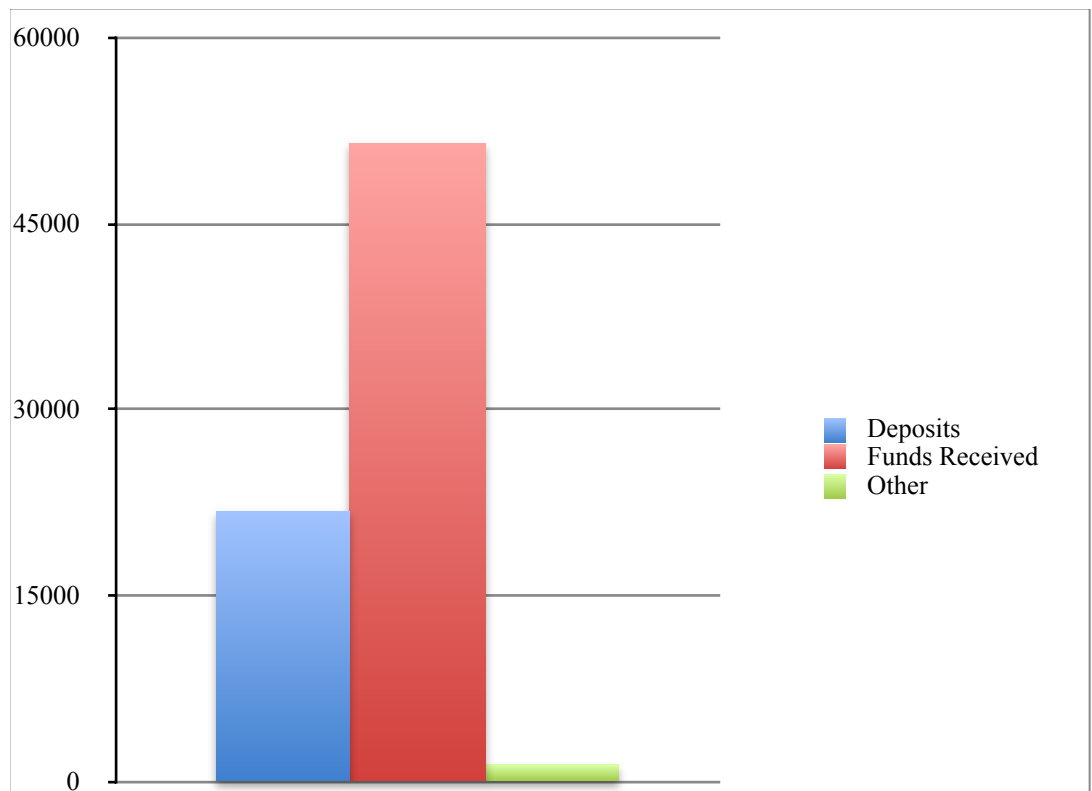


Chart 5.11 E-money inflow volume

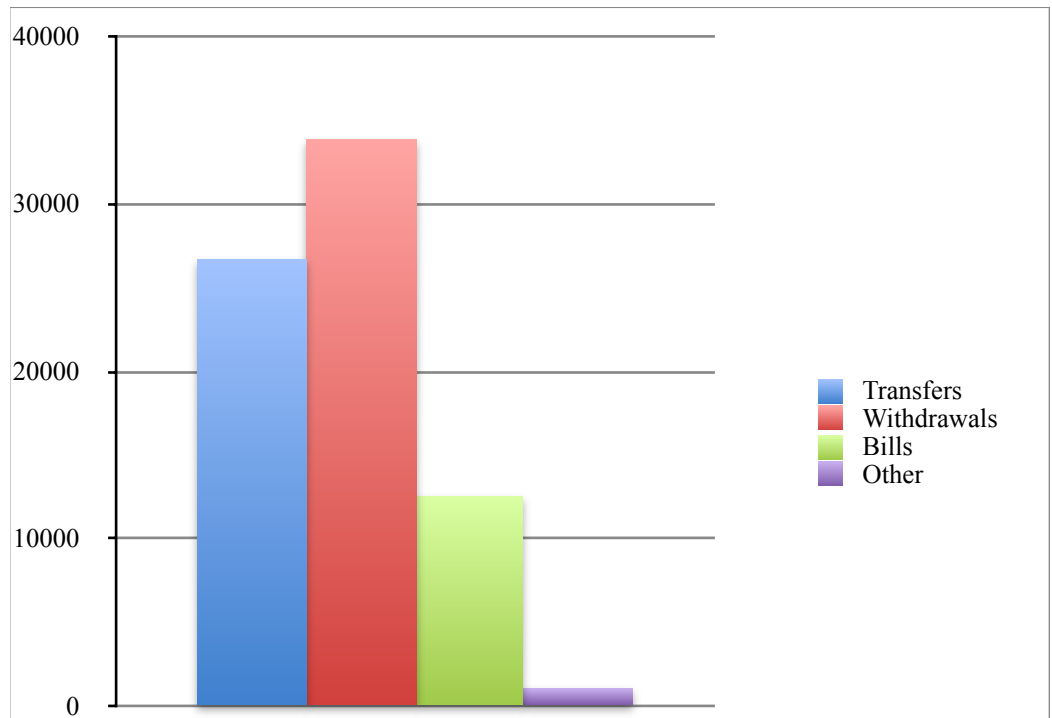


Chart 5.12 E-money outflow volume

Conversely, in the same time period, Sarafu were mainly spent among local businesses for buying farm produce(42221), fish(36626), vegetables (30295), water (27321), to save or to take loans from the chamas(26600) (Avanzo, 2020).

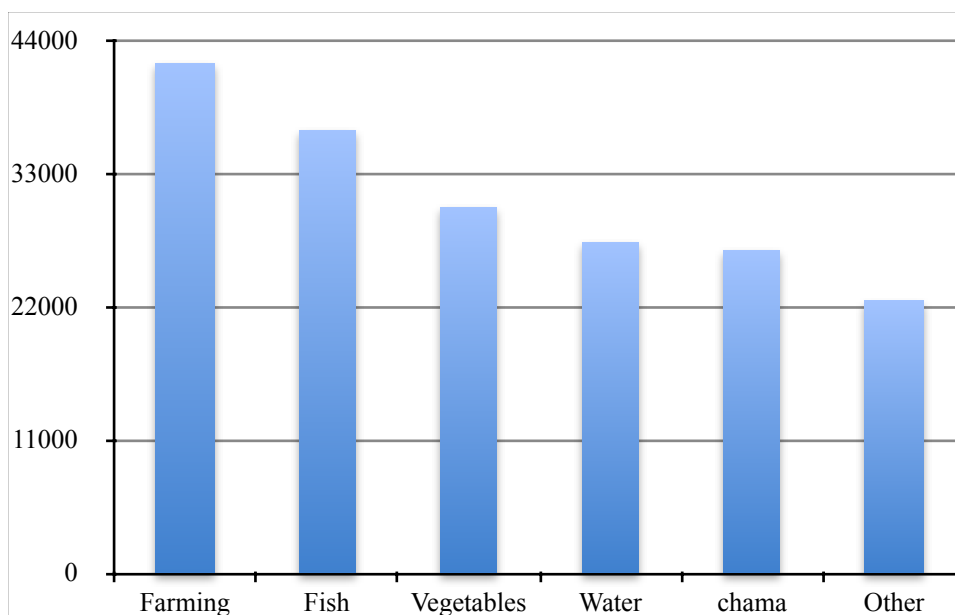


Chart 5.13 Spending per category in Sarafu of the sample of 6 people over the time period February 2019- December 2019.

Moreover, as Ruth Njau points out, since April 2019, Grassroots Economics, through the M-Pesa agent of the Miyani village, Mary T. (INM28.1), allowed the owners of Sarafu tokens to exchange 10% of their Sarafu balance per month into Kenya Shillings (INGE2.2). The chama moreover, as previously mentioned, could withdraw up to 50% of their balance. This allowed the population to benefit from the bonding curves based conversion mechanism, whereby they could withdraw the reserve of their token that was virtually deposited by Grassroots Economics. This further contributed to empowering the population, who could benefit from a monthly revenue in Kenya Shillings given by the conversion of Sarafu tokens, backed by Grassroots Economics, and the chamas, because they had more resources to engage in their collective projects more freely than they could have in case this wouldn't have been possible.

The choice to allow chamas to have more freedom to withdraw Kenya Shillings reserve shows that the foundation understood the potential of the peer-to-peer, commons oriented governance of the chamas, which allows them to manage the funds both in Sarafu and in Kenya Shillings in a way that is beneficial for all the users, and that in the long run facilitates the expansion of Sarafu network.

## **FUTURE PERSPECTIVES**

It is interesting to notice that at the beginning of my fieldwork, I thought that the object of my research would be the Miyani pesa, as well as the Mnyenzi, and Yeni pesa tokens, since they are categorized as three separate tokens on the blockchain database. When I started interviewing, however, I realized that the respondents didn't name the tokens in such way, but they were all defining them *Sarafu*.

Moreover, I realized that some of them didn't really know what token they were using, nor the exchange rate, but they knew how to trade and they traded much in some cases within the Sarafu network. The reason why this happened is at the core of the conception of a network of complementary currencies itself. As the senior field officer of Grassroots Economics, Ruth Njau explains, the foundation, which at the initial stage of the project had to decide the boundaries of the community currencies, adopted geographical boundaries in order to delimit the perimeter of circulation of each token. This was done because, perhaps, in their opinion the users would have perceived it more as the *earmarked* token of their own village or surrounding area within the sub-location of Mnyenzi, whereby they created three tokens each corresponding to a specific location. The fact that this didn't

happen shows that probably the population didn't need to earmark the tokens to create a symbolic boundary between Mnyenzi (ZENI token) and Miyani (MIYANI token) for instance, to assign to the token that property influencing such aspects of their identity. They were probably more interested in another function of the *relational work* which could be performed with the currency: the capacity to establish connections. The monetary network for them was more beneficial as a means that facilitated interaction, instead of separation between the communities, reason why it spread extremely rapidly within the region.

Moreover, the geographical boundaries, don't necessarily determine the boundary of a community. For this reason, the foundation has recently started (on January 27th, 2020) to implement a new model that is closer to the final goal of the foundation, and expresses the full potential of the Bancor protocol and of the bonding curves system.

As Ruth Njau points out, the communities should be able to self-determine their own boundaries (INM2.2), through the creation of a token that they "own"(INGE2.2). The accomplishment of the final goal, for which the Sarafu network project was implemented, is to allow every community to create its own token, backed by its own assets, which will be instantaneously interoperable with every other currency (INGE3.1).

William Ruddick explains that Grassroots Economics since the digitalization of the first community currencies in the urban slums until December 2019, was just "bootstrapping the capacity" of the communities to create and manage their own tokens (INGE3.1). The founder of Grassroots Economics explains that the role of the foundation and its staff in the implementation of Sarafu network was to provide the security by creating and improving the technologies that allowed decentralization. The smart contracts they have been implementing and improving, in his view, are the key to provide such security and trust the communities need to facilitate circulation rather than accumulation. The foundation is considered in this respect as an infrastructure piece, which should become cheaper as the system scales up to more communities. In that moment, he explained, the blockchain infrastructure had capacity for supporting 20000000 users, therefore, the dimensions of the network can grow enormously without overloading the system.

I asked the founder, even though every group will be able to potentially create its own token and connect it to the network as long as it can back it, which actors he sees to be more likely to perform such function in a community such as that of Miyani. He responded that he considers the *chamas* as

such potential actors, because they would benefit from the capacity to leverage the credit issuance constraining them at the moment, and also because they are already trained on how to manage credit, as well as on self-governance. Moreover, for Ruddick, businesses could easily benefit from such credit issuance capacity as well. It is evident that he doesn't see any juxtaposition, but the opportunity for interoperability and integration between markets and the commons.

In Ruddick's opinion it is important the users have the perception that in order for them to maintain the value of their tokens, there has to be reciprocity and circulation of such currency. He thinks that metrics are needed for the capacity to maintain reciprocity within a community through circulation rather than accumulation. (INGE3.1).

The metric the Sarafu network is aimed at providing is the value of each currency, inextricably connected to the trade deficit of each community, so that there is no chance that a group can overissue tokens increasing supply, without having an adverse market effect, due to a change in the exchange rates.

He explains that the Sarafu network would have enormous benefits for society as a whole and for the financial system in particular:

William Ruddick: we are increasing regulation on credit issuance, and we are decentralizing it at the same time, so we are making it safer, and we are making it available to everybody. Right now it is risky, and there is a small amount of people making a huge amount of money off of issuing credit, like private banks, and they are doing it in ways that cause a lot of collapses.

Therefore, from Ruddick's point of view, the regulation is fundamental to protect the community from bad actors, and what makes Sarafu different from many other is that there are clear rules regarding credit issuance. In his opinion a complementary currency without credit issuance policy is like a commons where none of the members has a stake in (INGE3.1).



## CONCLUSIONS

The focus on a group of three families considered in Chapter 1 allowed me to study in detail the economic interactions of each member with the rest of the community. From this perspective, I had the chance to explore the numerous economic relations of diverse forms present among individuals belonging to the same community. This was also important to present the formal markets as the result of complex interactions of cultural and social factors, which confirmed Zelizer's *relational work* approach.

The results concerning this group, due to its specificity are not meant to be generalized, but are aimed at presenting an account as precise as possible of the impact Sarafu had on many aspects of social life as well as on more intimate relations.

This showed that these individuals could address their basic needs by taking advantage of the monetary network, which they perceived as helping them to overcome the constraints imposed by the scarcity of national currency. Moreover, due to its characteristic of being a local means of exchange, which can only be spent within the network of users, Sarafu seems to have fostered interactions with other community members that wouldn't have been possible before, by creating trade opportunities.

The economy of the community, which is still in large part based on household self-production, seems to have become more market-oriented, which characteristic appears to have strengthened the social ties among its community members. This interdependence also made the families capable of partly overcoming challenges that before they struggled with, such as the one related to food security, which Jacob and Kombo described.

What Chapter 3 showed is that people with different socio-economic backgrounds perceived the implementation of the blockchain-based token as beneficial to them, as it results from the personal accounts of Shanga, Mary, Katana, Jacob and Kombo, and from their description of its impact on the community life.

It showed also that the expansion of the community currency was due to social factors as well, such as the presence of the *chamas*.

These were created to address specifically the credit provisioning issue, but seem to affect every aspect of the lives of families and of the community, by directly or indirectly influencing the way

the population deals with education, healthcare provisioning, food and water provisioning problems.

This facilitated Sarafu's spread for three main reasons: firstly, these *chamas* are commons-oriented structures, which characteristic implies that the members can easily coordinate as a group to assess their priorities and needs effectively. This directed their action towards what they believed to be the real needs of the community, such as to expand trade in the area, and to tackle the issue of lack of national currency by adopting the local currency.

Secondly, the *chamas* seem to have fostered social cohesion, due to their peer-to-peer structure, which element has enhanced reciprocal trust, essential to the expansion of a community currency network.

Thirdly, the fact that these brought about a change in relations, by introducing a new system of rules and roles that integrated into those present in the household economy. In this respect Sarafu was a necessary means to support the implementation of this new structure.

Another element which seemed important to the social cohesion derives from tradition: the contemplative practices, which were practiced in the area before the monotheistic religions, namely Christianity and Islam partly replaced, partly integrated with the animistic Duruma religion. These seemed to foster the creation of solidarity networks, which helped the members of the community to mitigate the risks their life entails. These risks, because of their condition of extreme poverty, in some cases, such as in Kombo's son's or in Mary's could even endanger life of the individuals, which is safeguarded by the community through the development of life skills.

The Interviews with Kombo display a case of relative isolation, due to the fact that he is not a member of any of the *chamas*, since he is a fisherman, and an outcast of the religious solidarity networks for his beliefs. The man is involved in a market relation with the Miyani FDP that in its turn benefits from Sarafu, which, however, is not sufficient for him to meet the basic needs of his family.

In Chapter 4 I analysed the peculiar structure of the *chamas*, and how they spread in the region, as well as their connection to the complementary currency ecosystem. These structures seemed to have fostered changes in society, such as empowering the most marginalized actors, who are youths, women, and in general people with difficult economic situations. By adopting this social innova-

tion, the community created a social space which is different from that of informal interactions. The rules and the policies of the *chamas* are meant to create a separate social context, where each member is equally empowered, and in part they surely succeed in doing so, by forcing collaboration and cohesion to achieve shared goals. The *chamas*, however, were apparently constrained by the scarcity of national currency, which lead them to necessarily reproduce to some extent in that specific social space inequalities that were present in society outside the *chama* itself. Sarafu in this context seemed to be effective in empowering this part of the population. This is particularly evident if the inequalities related to the generation gap are considered. In a society where the elders are dominant in the economic and in the political life, the market relations that substituted the household economy in some cases allowed people of all ages to benefit from a stronger interdependence among the community members, as in the case of the diversification of the crops, or the possibility for everyone to buy fresh fish at a short distance at the Miyani FDP shop.

This radical change seems also to generate new opportunities for a transition towards commoning, and to services, which, however are not widespread yet, as the interviews with Alex T. show.

Moreover, the absence of formal property rights offers an important insight on how the individuals naturally use a pragmatic approach to solve organizational problems, and, therefore use commons, and market-oriented approaches depending on the situation. The *chama* cannot be defined completely as a commons based organization, due to the fact that high interest rates are applied, but it surely facilitates the creation of social ties between the individuals that go beyond those of market interactions, because the group members share resources and skills for the common good and with a peer-to-peer governance. This pragmatic approach allows the *chamas* to employ either pure commoning, as is the case with the vegetable garden of the Peku VSLA, or hybrid forms of commoning and market relations, such as those relative to the management of the Posho mill, fish-shop, and the field projects run by the Miyani FDP, and all these projects were enhanced by the circulation of the community currency, which created for them a new market.

These groups had as only goal to find the most effective way to address specific issues by which the members were affected. A specific focus on credit constraints shows that the *chamas* managed to overcome the strong credit constraints of the individuals, only by incentivizing saving through a market approach, which penalizes its weaker members by imposing high interest rates on them, as the case of Chizi M. shows.

The chama members seem to have used Sarafu as a savings-buffer, since they saved the higher quantities of local currency than of national currency.

Moreover, being these table-top-banking groups extremely widespread in the area, since nearly all the families have at least one member who is part of one or more *chamas*, they most appear to have facilitated the acceptance and circulation of the local currency.

Furthermore, Grassroots Economics, by making the community currency exchangeable for Kenya Shillings, and allowing *chamas* to exchange up to 50% their balance per month, enabled the community to target issues that were difficult to solve by using only community currency. In particular, the need to consume goods and services that are produced outside the community can be particularly critical for an economy which is not diversified, and of relatively small dimensions, like the Miyani area, such as food provisioning during a drought which most likely affect most households' self-production. In such situation, the abundance of complementary currency wouldn't be sufficient to overcome the constraint imposed by the scarcity of goods, which the Miyani FDP, for instance, targeted through the conversion mechanism, which allowed the *chama* to buy specific products in Kenya Shillings that could not be bought in Sarafu. Interestingly, the conversion mechanism also prevents the *chamas* and the individuals from accumulating tokens that cannot be spent.

In Chapter 5 I showed how the economic system traditionally in place in the community doesn't allow the community to overcome food, and water scarcity, because it doesn't incentivize local production and solidarity among its members. This in its turn had major effects on the social structure, because the most marginalized individuals, such as the youths of the community are often forced to leave the place where they grow up for precarious conditions in the cities. It was drawn attention to the fact that measures that the community traditionally adopted to overcome this issue proved to be insufficient.

Moreover, the population appears to have a loose contact with the national institutions and authorities, and faces environmental challenges related to the overpopulation which also the Kaya Council, even though managed by the community in a way, which has characteristics of commoning, doesn't succeed in addressing effectively through its system of disincentives to deforestation of the sacred forest. This is because the deforestation of the sacred forest, that is a UNESCO Heritage Site, provides wood for the major need for housing, which the population as a whole faces.

This shows how the same resource can be object of diverse actors' interests, both local and global, and these actors can have different governance systems, such as, in this case, the national govern-

ment, the Kaya Council, or the UNESCO. The major improvement that a network of complementary currencies such as Sarafu could generate in the future, is to facilitate coordination and dialogue between actors with competing interests and integrating them through the use of the same protocol, which could make these different worlds interconnected through market relations.

The potential of the Sarafu project is related to its capacity to overcome the dichotomy between national and alternative currencies, between local and global, which lead to the failure of many of such projects, by allowing the creation of currencies at each level of the spectrum between local and global.

This analysis also draws attention to the fact that the boundaries of a community are never completely self-determined, and that complete self-determination is not necessarily positive for a community when it entails isolation. A community is, in fact, never strictly local nor global, but should consider itself as both, because the implications of its choices can, and in many cases do affect the members of other communities.

Moreover, the research showed that the members of the community analysed actively took part in the transformation of its economy from one of subsistence to one based on markets and on commoning.

They didn't do so because they lacked norms, but because they considered these new social protocols more effective in overcoming constraints they experienced caused by the implicit but rigorous rules of the traditional household economy, considered as informal by conventional economics.

The norms belonging to the old and the new systems, however, coexist among the same of individuals, because they address diverse aspects of their social life. Likewise, alternative monetary and economic models shouldn't aim at replacing the ones currently in place, but at integrating with them to meet the unmet needs of society.

The data present on the Sarafu database, even though limited to a short time period, seem to provide evidence confirming that the circulation of the complementary currency facilitated the circulation of local goods and services among the community members. The actors that seemed to benefit the most from such circulation were those more dependent on the local market, such as the activities related to the value chains of food production, as the correspondence analyses performed evidence. Also due to this reason, in the Mnyenzi sub-location, women seemed to take more advantage than men of the implementation of the community currency.

Moreover, the analysis comparing the usage of Sarafu and that of other forms of e-money indicates a countercyclical effect on the economy, showing that Sarafu worked as a buffer by offering the users additional purchasing power in the driest periods of the year, and so stabilized the market, which seems to be confirmed by the analysis of the volume of trade within the whole community, which displays peaks in the months the qualitative data confirmed to be for most of the users interviewed the months when droughts and food crises occur. In these months, therefore, both national currency and food are scarce within the community. These results, however, due to the fact that they are context-specific cannot be generalized to any implementation of such technology, they provide, instead, an account of how a community interacted so far with such technology, and aspects regarding its implementation in diverse contexts, as well as the development of the community currency project after the end of the pilot stage in January 2020, which entails radical changes in the usage of the network need to be further investigated.

## APPENDIX

### GENERAL QUESTIONS

- Who do you live with?
- What's your main occupation?
- What's your family members' occupation?
- Who uses your Sarafu E-wallet?
- Do other members of your family use Sarafu?
- Who are the members of your family that earn money? How was the situation before you joined Sarafu?
- How do your family members get the water they need? How was the situation before you/they joined the Sarafu network?
- How do your family members get the food they need? How was the situation before you/they started using Sarafu?
- Are you able to pay the school fees for your children? How was the situation before you started using Sarafu?
- In case someone of your family gets sick or injured, what do you do?
- if you need to borrow money, whom do you ask?
- Are you part of a chama? if so: how many are its members?
- Do you use Mpesa? If so: how long have you been using it for?
- Why did you decide to become member of Sarafu network?
- which is the price of your product in KSH/ S?
- How much of it do you sell per week?
- Did Sarafu change your life? How?
- Which is the hardest season of the year for you/ your family?
- Was there a year that was particularly bad for you/ your family?
- How did your family meet its basic needs then?
- Are you the owner of the house in which you live? if so: how did you build or buy the house where you live?
- If someone asks you to help him/her in your free time (example), do you accept? at which conditions?

- Tell me one talent you have. Are you using it in your community?
- How do you imagine you could use this talent?
- Are you religious?
- Do the people from your church/mosque help each others in case of need?
- If the person is religious: does faith help you to overcome the difficulties?

#### **QUESTIONS RELATED TO THE CHAMAS AND ACCESS TO CREDIT**

- When you don't have enough money to run your business, what do you normally do?
- What do you normally do if you don't have enough money to pay the school fees for your children?
- What happens if you don't have enough money to buy food and you need to buy food because the crops are not sufficient?
- How many chamas are you part of?
- Who introduced you to such chamas?
- Which was the last loan you received from the chama?
- Which was the last loan or help you received outside the chama, from family or friends?
- were these loans in Sarafu or in Kenya shillings?
- Did you have to pay an interest?
- And are you saving?
- Do you use cash or M-pesa for transactions in Kenya Shillings in the chamas?
- Why did you join the Chamas that you're part of?
- When can you withdraw your savings? How do you use them?

#### **QUESTIONS RELATED TO CONTEMPLATIVE PRACTICES**

- Which mosque/church/ shrine do you usually pray to?
- Have you have you been helped by the community gathering at that church?
- And have you helped a person in need?



## PEKU VSLA ACCOUNTING BOOKS

The accounting books in picture A.1 and A.2 were used to perform the analysis of the transactions regarding the chama Peku VSLA. These show the savings collected by the group both in Kenya Shillings and Sarafu.

NAME	1	2	3	4	5	6	7	8	9	10
1. DINA	50	0	100	100	50	50	50	100	0	0
2. KALISA	50	50	50	100	100	100	100	0	0	0
3. DINA	50	50	50	100	50	100	0	0	0	0
4. DINA	50	50	0	100	0	0	0	0	0	0
5. DINA	50	100	100	200	100	0	0	0	0	0
6. DINA	50	0	0	50	0	50	200	0	0	0
7. DINA	50	0	0	100	0	50	100	50	0	0
8. DINA	50	50	100	200	100	0	50	50	0	0
9. DINA	50	0	50	100	200	0	50	50	0	0
10. DINA	50	50	50	100	200	0	50	50	0	0
11. DINA	50	50	50	100	100	0	50	100	100	0
12. DINA	50	50	50	100	100	0	50	50	0	0
13. DINA	50	50	0	100	0	50	0	0	0	0
14. DINA	50	0	50	100	0	0	0	0	0	0
15. DINA	50	0	50	100	0	0	0	0	0	0
16. DINA	50	50	0	100	50	50	50	0	0	0
17. DINA	50	50	0	100	0	100	0	0	0	0
18. DINA	50	50	0	100	0	100	0	0	0	0
19. DINA	50	50	50	100	100	50	50	0	0	0
20. DINA	50	0	0	50	100	0	0	0	0	0
21. DINA	100	100	100	500	100	100	100	100	0	0
22. DINA	50	100	50	200	100	0	200	0	0	0
23. DINA	50	50	50	100	50	100	0	0	0	0
24. DINA	0	0	0	0	0	0	0	0	0	0
25. DINA	0	0	0	0	0	0	50	0	0	0
TOTAL	1200	950	1050	4350	1400	850	630	1350	1250	900
PERCENTAGE	100	79.17	87.5	35.83	116.67	70.83	52.5	109.17	104.17	75

Picture A.1 Savings Book, Peku VSLA, Savings in Sarafu, Photograph: Sowelu Avanzo

Sl. No.	NAME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Diana	0	50	0	50	50	0	50	0	0	50	0	0	0	0	0	0	0
2	Grace	50	50	50	200	0	0	0	0	0	50	0	0	0	0	0	0	0
3	Elizabeth	0	50	0	50	0	0	0	0	0	100	0	0	0	0	0	0	0
4	Janet	0	50	50	100	0	0	0	0	0	50	0	0	0	0	0	0	0
5	Maria	0	50	50	150	50	0	0	0	0	50	0	0	0	0	0	0	0
6	Margaret	0	100	50	0	0	0	50	0	0	0	0	0	0	0	0	0	0
7	Paul	50	0	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Rose	0	0	0	0	150	150	0	0	0	0	0	0	0	0	0	0	0
9	Samuel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	Miriam	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	Miriam	50	50	50	150	50	0	0	0	0	0	0	0	0	0	0	0	0
12	Miriam	50	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Cynthia	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	Rachel	50	50	50	240	0	0	0	0	0	0	0	0	0	0	0	0	0
15	Sarah	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	Wendy	0	50	0	50	0	0	0	0	0	0	0	0	0	0	0	0	0
17	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
27	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
31	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
35	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
36	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
37	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
38	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
39	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
41	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
43	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
44	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
45	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	Wendy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL		700	1100	1550	3000	800	350	950	570	600	1400	650	6700	500	700	550	15400	960
DAILY CUMULATIVE		750	1800	3050	3400	3900	4150	570	570	570	6150	6250	6750	7200	7900	13400	23400	2850
PERCENTAGE %		50%	18%	19%	18%	6%	15%	10%	6%	10%	8%	11%	9%	7%				

Picture A.2 savings book, Peku VSLA, Savings in Kenya Shillings, Photograph: Sowwelu Avanzo

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