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ANNEXE 4 – PIÈCES

« Sango Genesis Paper »
Document officiel de référence du projet Sango (en anglais)

Sango

GENESIS PAPER

Paving the way for a future of endless possibilities

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Abbreviations

AML	Anti Money Laundering
ABCI	Application Blockchain Interface
CAB	Central Africa backbone
CFA	Central Africa CFA franc
CBDC	Central Bank Digital Currency
dApps	Decentralized Applications
DLT	Distributed Ledger Technology
FIAT	Currencies used as legal tender not backed in gold or silver
GDP	Gross domestic product
KYC	Know your customer
Layer-2	Second layer
LN	Lightning Network
P2P	Peer to Peer
PoA	Proof of Authority
PCN	Payment channel network
UX/UI	User Experience / User Interface
TPS	Transactions per second
VAT	Value-added tax
Web3	Iteration for the world wide web which includes decentralization

Abstract

Sango is a trade language that belongs to the Adamawa-Eastern branch of the Niger-Congo family, it was widely used in western Africa. Nowadays, it can still be encountered in the northern part of the Democratic Republic of Congo and the southern part of the Central African Republic, along the Ubangi River.

In the heart of Africa, there is a region that was omitted during the previous industrial revolutions, hence an entirety of untapped potential for growth was forsaken. The whole of Africa appears the way it does due to the fact that its transition to the 21st Century has experienced a delay in several important sectors.

By 2030, the Sub-saharan region of Africa along with the rest of the continent, have the potential to make significant progress towards the future. The young demographic, in combination with the variety of untouched natural resources represent two very important pillars that will drive this leapfrogging. Technology can be considered the third pillar that would secure the realization of this progress.

Leapfrogging is the term used to refer to emerging economies which have underdeveloped technology and rapidly move forward to the adoption of new, modern technology systems without going through intermediary steps.

Through the democratization of resources located along the Ubangi River, access would be obtained to the necessary funding that is required to enable the region's full development. Employing the right technology is vital, in order to guarantee transparency and concurrently support a newly created, digital-first economy, in the exact manner that a blockchain would. This is another important pillar for paving the way to a brighter digital future.

In 10 years, the economy of the Central African Republic and neighboring regions can experience growth on a large scale. For example, it may have the most skilled workforce, use the newest technologies and build its entire infrastructure by employing contemporary principles such as being sustainable and reliant on renewable energy. Moreover, the democratizing of access to its mineral resources and the banking of the unbanked population would exemplify the array of high end solutions.

Mobile-first technology and cryptocurrencies are already being used worldwide and correspondingly have a presence in Africa as well. In fact, during the past few years, they have experienced a large growth in African countries, placing them in the forefront of growth in these fields. Due to the lack of access to banking and financial systems, Bitcoin has proven to be the most efficient solution for cross-border transfer of money.

FIAT money is problematic when referring to Africa. Very high inflation, lack of access and overseas monetary control, all are representative factors of an outdated system in search of change. Digital currency could represent the solution to achieving a better future.

The Central African Republic has adopted Bitcoin as a legal tender starting with the 21st of April 2022, and it is looking to build the first digital monetary system that is powered by

blockchain technology and backed by Bitcoin. By placing Bitcoin as the digital store of value, the Central African Republic is looking to open its borders and provide the Bitcoin legacy with further, tangible utility.

Executive summary

The Sango Project is a “Crypto Initiative” started by the Central African Republic National Assembly and supported by the President of the Republic. Sango represents the Central African Republic’s efforts in creating the necessary conditions for a digital-first blockchain based economy.

The future of the Central African Republic is represented by its youth and the country’s vision is to reform the entire economy based on young people and technology. The Central African Republic is looking to build a digital monetary system powered by blockchain technology and based on Bitcoin “digital gold”.

A blockchain is a distributed database or ledger that is shared among the nodes of a computer network. Blockchains are best known for their crucial role in cryptocurrency systems, such as Bitcoin, for maintaining a secure and decentralized record of transactions. There have been attempts to create digital money in the past, which repeatedly failed until Bitcoin led to the development of a new form of decentralized money called cryptocurrencies.

Blockchain has been referred to as one of the pillars of the Fourth Industrial Revolution. Using blockchain technology represents an opportunity for underdeveloped countries such as the Central African Republic to attain the same level of development as some of its first world counterparts, while implementing a digital monetary system. For a country with a mostly unbanked population, using the blockchain technology as the framework for their entire economic system represents the chance for leapfrogging into the Web3 revolution.

The Central African Republic is looking to create a complete legal framework that supports cryptocurrencies and crypto-related businesses. The first steps have already been taken with Bitcoin becoming legal tender in April 2022, as per the Bitcoin Law (Law no. 22 / 21st of April). In addition, the law also mandates the following:

1. Bitcoin Standard: Reference currency.
2. All exchanges of cryptocurrencies and related business are not subject to taxes.
3. The incorporation of the National Agency for Regulation of Electronic Transactions (Agence Nationale de Régulation de Transaction Électronique “ANRTE”).

The Central African Republic started its cryptocurrencies journey in 2020, with extensive research and studies, with the final aim of identifying the optimal best applications for the country’s institutions and population. These efforts have led to a straightforward plan designed to steer the country towards a digital monetary system powered by blockchain technology and based on Bitcoin as the digital gold.

The plans have been drafted by the Central African Republic, along with the Sango Initiative document. The main directions followed by Sango are described in the following points:

- Democratized and decentralized access to natural resources through tokenization.
- Creation of a Crypto City and a Crypto Island.
- Development of the African Crypto Hub.
- Development of Sango App: acting as a gateway between the citizen and the State.
- Facilitation of Bitcoin mining through renewable energy sources.

Hence, the purpose of this Whitepaper document is to accurately describe the Central African Republic Initiative, Sango, including the technical elements of the Sango blockchain and the business development plans.

1 Opportunities

Africa, a continent larger than China, India, the United States, Japan, and most of Europe combined, is becoming the next frontier market. With a rapidly growing population, increased urbanization, and what is projected to be the world's largest workforce in 2030,[1] Africa has the opportunity to transform itself into a global economic powerhouse. The Fourth Industrial Revolution represents the chance Africa has to become updated with the standards of the 21st century's global economy.

Africa is the world's youngest continent, with over half of its population under the age of 25. Its young and growing population will soon translate to being the continent with the largest workers number. By 2030, Africa will become home to a quarter of the world's population under 25. Coupled with urban expansion, the increase of the middle class will result in a higher educated population, easily able to adopt new technologies.

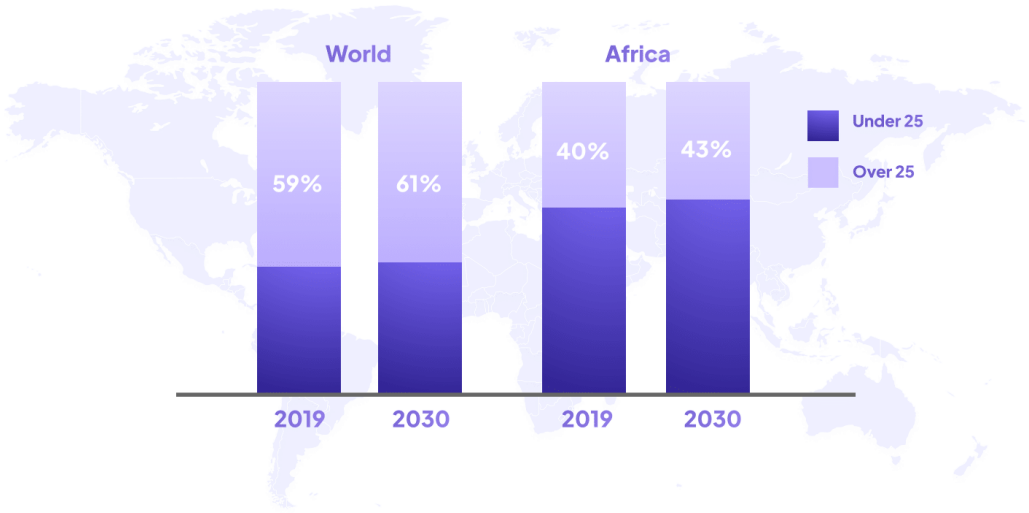

Figure 1, World and Africa population under and over 25 years, according to BMI data, UN Fintch solutions

Due to historical issues with colonialism, civil wars, and harsh conditions, African countries have been disadvantaged in terms of infrastructure and development for an extended period of time.

In spite of ongoing conflicts and underdeveloped nations that populate the continent, there has been commendable and accelerated progress made in the last century, indicating the extent of its existing potential.

Empowerment of the next generation to be connected, digitally skilled and educated will be possible as access to physical resources will no longer be restricted. Thus, the development gap between Africa and the rest of the world will also be narrowed.

Lack of access to financial services is evidenced by the fact that 57% of African citizens remain unbanked. As a result, mobile-first financial inclusion has been a dominant subject of

discussion in African countries. Africa has started to close the gap with other continents by having the biggest rate of adoption of mobile technology and financial services. Nevertheless, the use of mobile phones and the Internet remains low, rendering its growth rate still not comparable to other continents.

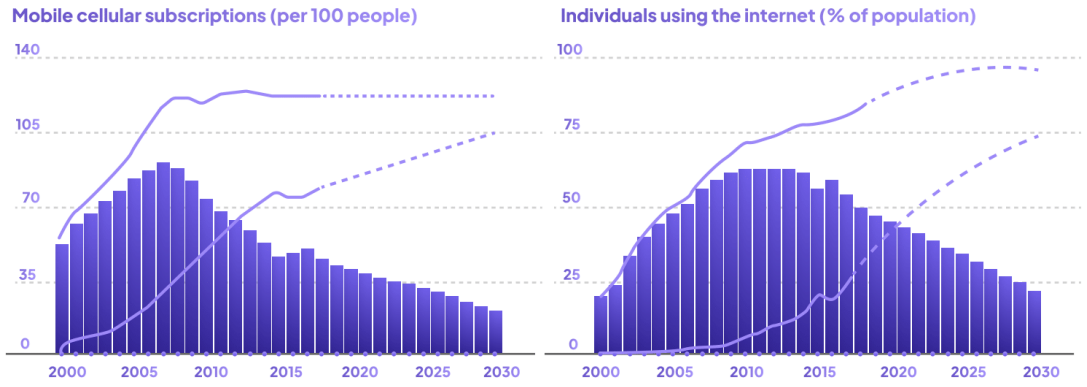

Figure 2, Closing the gap in mobile phones and internet access, according to Brookings Africa Growth Initiative, using data from “Mobile Development Indicators”, World Bank

Mobile-first financial inclusion also made cryptocurrencies adoption to grow faster than everywhere else. Many users are already using cryptocurrency as the best alternative to traditional banking, as the only hardware required is a smartphone. Because cryptocurrency solutions bypass traditional banking services by introducing decentralized peer-to-peer services, they are well-positioned to address a number of economic challenges in the region.

Although the African continent owns only 2% of the global value of all cryptocurrencies, the African cryptocurrency market grew by over 1,200 % in a single year (2020–2021) and that number is projected to rise exponentially, according to the Chanalysis report from 2021.

All these factors translate to a simple conclusion: Africa is starting to connect everyone and fill in the gaps with the rest of the world as this is its best opportunity to overcome the barriers of becoming a part of the growing digital world. Furthermore, embracing blockchain and cryptocurrencies is at hand for all developing economies, bringing the adoption of Bitcoin and development of legal frameworks on the daily agenda for all African countries. The Central African Republic is leading this change.

1.1 IT&C sector in Africa

Despite some preconceptions, African nations have an enormous capacity for adopting new technologies, growing their economy, and overcoming historically rooted obstacles.

This point is supported by the fact that over 39% of the population is already connected to the Internet, and that number is rapidly growing, year to year. The numbers vary from a region to another and from one country to the next but, by 2030, Africa is prognosed to have full Internet coverage and tens of millions of employees in the newly developed Information Technology sector.

According to Brooking's series, Foresight Africa 2020, in recent years, the information and communications technology (IT&C) sector in Africa has continued to grow, a trend that is likely to continue. Recently, mobile technologies and services have generated 1.7 million direct jobs (both formal and informal), contributed to $144 billion of economic value (8.5 % of the GDP of sub-Saharan Africa), and contributed $15.6 billion to the public sector through taxation.[2] Digitization has also resolved information asymmetry problems in the financial system and labor market, thus increasing efficiency, certainty, and security in an environment where information flow is critical for economic growth and job creation.[3]

The digitization driven by The Fourth Industrial Revolution will transform Africa into a global powerhouse. Improvements in Africa's ICT sector have been largely driven by expanding mobile digital financial services, and this makes access to the Internet one of the main topics to focus on.

The European Union is involved in aiding the development of Africa's digital economy by supporting a subsea cable between Europe and Africa[4] that will multiply the continent's network capacity by 20 and lead to an estimated 1.7 million new jobs by 2025, this digital transformation is funded by Google's $1 billion investment.[5]

The Central African Republic has also focused its efforts in laying the base for the digitization of the entire country. Beginning in 2018, the Central Africa Fibre-Optic Backbone project (CAB) [6]is programmed to be completed by the end of this year. The project consists of: laying 1,050 km of fibre-optic cable on the interconnection roads with Cameroon and Congo followed by the establishment of a local urban loop that comprises a National Data Center and a Digital Training Center in Bangui. The project's overall objective is to help diversify the economy of the Central African Republic as it will lead to digital opening for the entire population, including rural areas and the creation of job opportunities for young people in particular.

Hence, with the infrastructure layer being established, the digitalization of the country is enabled. The optic fiber network provides long term benefits which include high-speed Internet access and the expansion of telecom operations' coverage for the entire country.
The officials of the Central African Republic are looking to completely modernize the IT&C sector and are placing Sango Initiative in the middle of the efforts to transform the country's future.

1.2 Blockchain in Africa

Blockchain technology is revolutionary as it facilitates access for all to utilize a public, unalterable ledger.[7] Automatically, the need for trusted third parties or institutions is bypassed, this being the reason why it is regarded as an ideal trustless system where the

public ledger is permanently reliable.

Placing this definition at the start of this chapter is relevant since a region which is undergoing extensive development is being discussed. The absence of a digital infrastructure promotes the implementation of blockchain as an attractive option for African countries. The employment of a trustless system which eliminates intermediaries is valued in regions accustomed to political and social unrest. As previously mentioned, for African Nations, blockchain technology is an opportunity to attain the same level of development as other economies by embracing technology that permits leapfrogging to the future.

The role of blockchain in the Fourth Industrial Revolution is emphasized for its capacity of solving some of the world's biggest problems. “The main characteristics of blockchain technology - distribution, immutability and automation - can underpin both economic growth and social progress”.[8] The antecedently mentioned issue of financial inclusion, takes principal relevancy for project categories of blockchain usage in the African Sector.

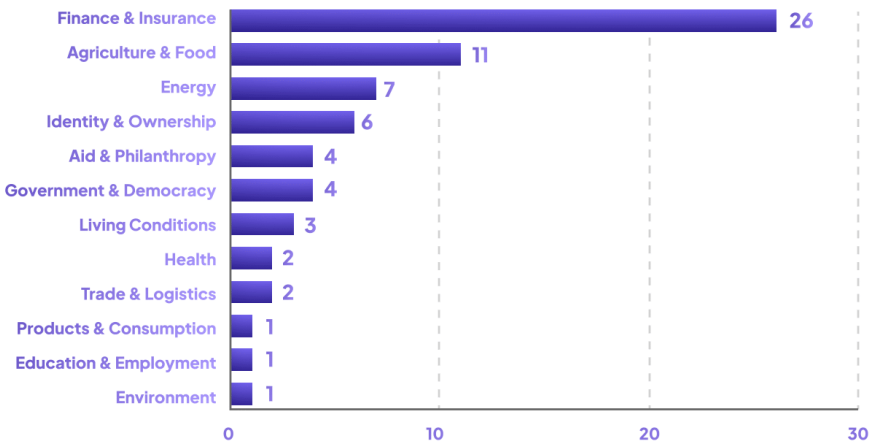

Figure 3, Blockchain Projects in Africa, according to PositiveBlockchain.io

According to the Blockchain in Africa report done by Smart Africa, digital payment infrastructures that enable financial solutions are the most prevalent type of project developed in the African blockchain space. Africa’s reduced access to financial services is contrasted by its prodigious adoption of mobile money; over half of the global mobile money service operators are located in Sub-Saharan Africa.[9] Hence, using blockchain technology to facilitate payments for remittance or other purposes through the use of cryptocurrencies will be transformative.
Furthemore, the establishment of digital payment infrastructures using blockchain may constitute the fundamental layer of the financial sector in emerging countries.

However, blockchain is not exclusively concerned with cryptocurrencies, considering that its characteristics can be leveraged within alternative industries as well:

- Public spending and governance.
- Peer-to-peer trading in off-grid scenarios.[10]

- Educational credentials.
- Land registration.
- Tracing agricultural supply chains.
- Trade facilitation.[11]

In addition to the introduction of the Central Bank Digital Currencies (CBDC) in Africa, which is formulated on distributed ledger technology (DLT), there are various blockchain initiatives that have been initiated across the African Continent. CBDC are essentially virtual money which is issued by a country's central bank. DLT refers to a distributed database that delivers transparency by expunging the use of a central authority and is instead regulated by various members. To put this in context, blockchains are a type of DLT which impose a specific set of features.

Here are some examples of the various blockchain initiatives mentioned above:

- Ethiopia, agricultural supply chains - tracking coffee shipments and other areas of agriculture.[12]
- Ghana, land registration - register lands on a blockchain.[13]
- Rwanda, natural resources supply chain - track tantalum from the pit to refineries.[14]
- Sierra Leone, digital identification system - issuing unique national identity numbers.[15]
- Uganda, land titles registration - registering land on a blockchain.[16]

The Central African Republic is establishing the Sango blockchain, a sidechain to Bitcoin, as the foundational layer for the country's digitalization and for its digital monetary system. All of the subjects mentioned above are topics included in the Sango Initiative. This subject will be expanded upon in the following chapters of this Genesis Paper.

1.3 Adoption of Bitcoin and cryptocurrencies in Africa

Over 60% of the global mobile money transactions flow through Africa, demonstrating the ambition of the populace to adopt new technology. This is clearly attested by Nigeria being the world's second-largest Bitcoin market after the USA.

Crypto can solve financial inclusion problems in African countries by aiding their digital transformation and simultaneously offering accessible and cost-efficient cross-border payment solutions.

According to the latest research by Chainalysis Insights, this made cryptocurrency markets scale up each year, with an increase of over 1200% by value received in between July 2020 and June 2021.

The countries Kenya, Nigeria, South Africa, and Tanzania are ranked in the top 20 of the Global Crypto Adoption Index, suggesting high grassroots adoption. Africa is the third-fastest growing cryptocurrency economy, and detains a 7% share of retail-sized transfers in its overall transaction volume compared to any the global average of 5.5% transaction volume made up of retail-sized transfers than any other region at just over 7%, versus the global average of 5.5%.[17]

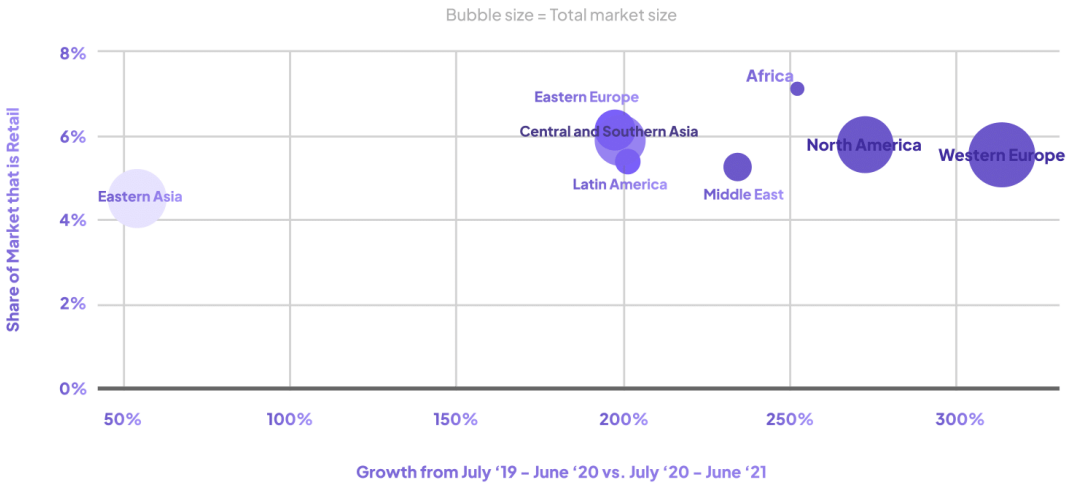

Figure 4, Market growth vs retail share of market vs Total Market size by region, Jul 20 - Jun 21, according to Chainalysis

Africa's need for cryptocurrencies is legitimized by a number of compelling reasons:

- Unavailability of financial infrastructure for a majority of the population.
- Instability of FIAT money due to inflation.
- Underdeveloped financial transaction and settlement infrastructure.

The same Chainalysis report states that these factors instigate an additional trend in Africa which is the stable growth of peer to peer (P2P) cryptocurrency exchanges over recent years. The usage rate of P2P platforms by African cryptocurrency users is so far unsurpassed by other regions as it accounts for 1.2% of the African crypto transaction volume and 2.6% of the total volume for Bitcoin specifically.

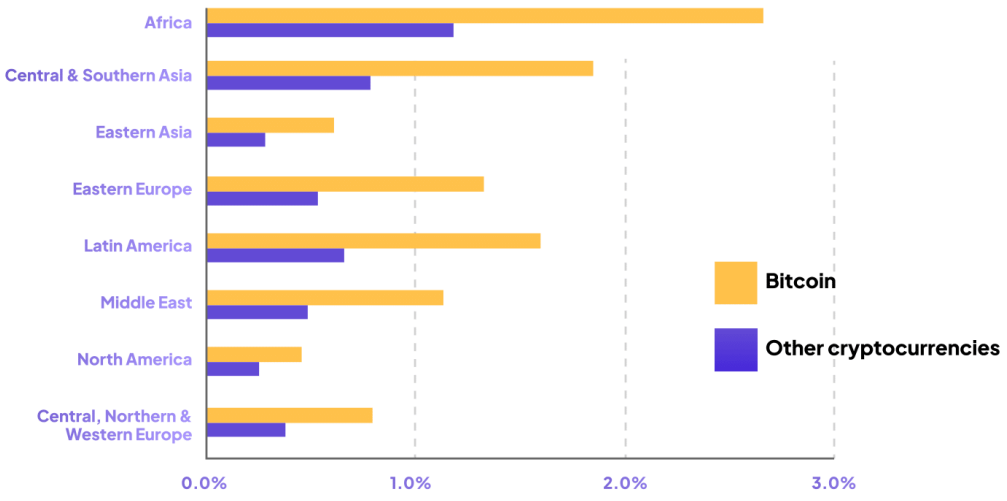

Figure 5, P2P share all transactions volume by country, according to Chainalysis

Transfers between and outside of borders remain complex topics and transactions are effectuated by users that range from: institutional to large institutional, professional, large retail or small retail. The absence of financial infrastructure is exacerbated by the absence of a legal framework, with banks disallowing facilitation of cryptocurrency transactions in countries such as Kenya and Nigeria.

Remittance payments and payments for goods and services are also predominantly effectuated using cryptocurrencies. The instability of African FIAT money and their limited use, make the proposition of cryptocurrencies transactions and holding cryptocurrencies to counter inflation, considerably attractive.

The aforementioned topic of CBDCs requires elaboration as it exemplifies the rising need of digital money in Africa.

CBDCs are pegged to the value of that country's FIAT currency, therefore inheriting its fundamental flaws. FIAT money is a government-issued currency that is considered legal tender. Traditionally, FIAT money is encountered in the form of banknotes and coins, but now governments and financial institutions can supplement physical FIAT money with a credit-based model in which balances and transactions are recorded digitally.

The introduction and evolution of cryptocurrencies together with blockchain technology has promoted interest in cashless societies and digital currencies. Nigeria has issued the eNaira, which to an extent can be considered successful in view of the fact that its adoption is projected to add $29 Billion to the country’s GDP over the next 10 years. [18]

Kenya, South Africa, Tanzania, and Uganda are among African countries that intend to reshape their financial environment through cryptocurrencies. Despite cryptocurrency regulation momentarily remaining ambiguous, many countries are working on providing regulated environments, which will further encourage wide adoption.

Nevertheless, cryptocurrencies are seeing significant usage regardless of the presence of CBDCs, with Bitcoin evidently excelling in terms of reliability and recognition amongst cryptocurrencies. The largest number of P2P Bitcoin transactions are made in Africa, more than any other continent.

It can be asserted that in a general sense, cryptocurrencies excel in their function of a reliable store of value for African nations as opposed to FIAT money due to their continuous devaluation and inflation.

1.4 Democratization and tokenization of resources

Africa possesses an abundance of natural resources and minerals, which are rendered inaccessible as a result of corruption, illicit activity, and elitist circles. Owing to the fact that exploitation projects are deficient in transparency and credibility there are multiple social, economic and environmental issues that arise.

Blockchain implementation provides solutions to many issues such as these. The transparency provided by a public ledger, would potentially improve issues within the supply chain, keep track of inventories and identify appropriate buyers for exploitation rights. [19]

Democratizing access to resources is the next organic step as it would promote transparency in the supply chain, subsequently forcing participants to take accountability.

Moreover, blockchain omits intermediaries from these processes and sustains the capacity to ensure ethicality and transparency in the supply chains, while additionally examining the methods that are being used to obtain resources.[20]

By reducing environmental damage, implementing transparency of the supply chain, sanctioning complete control and subsequently allowing international investors to assist in the mining of resources, Africa would be intelligently taking advantage of its natural resources.

Nonetheless, the resource extraction process remains intricate and is preoccupied with aspects such as: selecting the correct partners and organizing the supply chain whilst avoiding complications like the negligent intoxication of communities or the damaging of ecosystems. The solution may be constituted in blockchain technology.
Therefore, democratizing access to resources through tokenization and the utilization of blockchain technology is an appropriate solution.

With the influx of wealth and new technology, the low yields on agricultural crops can be elevated, bringing increased land under cultivation. As noted in a recent Foresight Africa report, with 200 million hectares, sub-Saharan Africa holds almost 50% of the world's uncultivated land which can be brought into production. On top of this, Africa uses only 2% of its renewable water resources compared to the 5% global average.

The prospective opportunities include: improvement of government institutions and policies, reduction of risks for exploration companies both political and contractual, and reduction of the lead time between discovery and production.

These goals are aligned with policies and institutions that are essential in order to exploit the natural resource abundance for economic development. Improving the quality of government and market institutions will reduce discovery and production lead times.

The Central African Republic is amongst the richest nations in natural resources from the region, with proven reserves of gold, iron, diamond, limestone, lithium, cobalt and rhodium.
The combination of abundant resources, cost-efficient labor and a solid legal and regulatory framework is promising. The topic of resources is expanded upon in Chapter 2.8.

The democratization of access to resources is one of the main concepts of the Sango Initiative and a fundamental part of the Central African Republic's vision for the future. Developing a blockchain-based tokenization solution, providing access to international investors and in parallel developing transparent supply chains from extraction to delivery, is important for the future development of the country. The Sango Project will facilitate the tokenization of Central African Republic's resources for worldwide investors.

2 Sango Initiative

The Sango Project is a “Crypto Initiative”, started by the Central African Republic National Assembly and supported by the Presidential Office. It highlights the Central African Republic’s efforts in creating the adequate conditions for a new digital monetary system.

The Sango Initiative expresses the Central African Republic government’s desire to focus on the development of future infrastructure, by enabling the use of Bitcoin and blockchain technology, thus triggering the total transformation of the African continent and providing numerous benefits.

The first of its kind, the Sango Initiative paves the way for a brighter future, employing Bitcoin and blockchain technology. Sango is a Bitcoin Layer-2 solution, powering a new digital monetary system, representing a step forward in the evolution of digital currency. It is a system backed by both the legitimacy of the State and Bitcoin. Unlike stablecoins, there are no risks of de-pegs and it is partially decentralized, unlike CBDCs.

The Central African Republic believes the future of all monetary systems must respect both the legitimacy of State laws and assets, as well as the decentralization and security provided by Bitcoin and blockchain technology.

2.1 Objectives

Sango comprises the multiple paths of development pursued by the Central African Republic, in order to become a digital-first crypto economy. The future of the Central African Republic is represented by its youth - the vision to reform the country is based on the current demographics and potential technological advancements. Financial integrity, digitalization of essential services, access to technology and creation of new jobs and opportunities for the population, as well as the opening of new industries supported by renewable energy, and the sustainable exploitation of the country's resources are among the short and medium-term objectives.

The Sango Initiative represents the development pillar established by the Central African Republic’s authorities. The main dimensions of the program are:

- Legal Framework for cryptocurrencies: Initiated by Bitcoin becoming the Legal Tender - Law no 22 / 21st of April.
- Building the African Crypto Hub: Leading the transformation of the country through a hub financed and constructed by the national authorities. This represents the primary factor for the creation of new jobs and stimulating the educational system for the native population.
- Crypto Island and Crypto City: The Central African Republic government is the largest landowner of the country. Land purchases will be facilitated directly in BTC and SANGO. The Crypto Island will be the host of the Crypto Hub, serving as a “Crypto Economic Zone”. The program will cause a wave of new developments,

enhancing local industry, while also improving living conditions and introducing new amenities for the population of the capital city, Bangui.

- Tax Free environment for Crypto related activities, including businesses: The tax free initiative is complementary to the legal framework. Attracting crypto-related businesses will create new opportunities for growth in the Central African Republic. Furthermore, this measure highlights the full support the State expresses for cryptocurrencies.

- E-residency and Citizenship Programs: The e-residency and citizenship offering are integral components of the high-level strategy of the country. With the majority of the population being young, there is huge potential for a sustainable workforce. Attracting foreign citizens, investment and residents would have a spillover effect locally, sustaining the aforementioned growth potential.

- Resources democratization and tokenization: The Central African Republic benefits from a wide array of resources, yet most of them are currently unexploited. This would change through the Sango Initiative, as most of the resources would be tokenized, meaning that they would be publicly available through blockchain.

- Financial Inclusion - “Banking the Unbanked”: A practical solution for a pressing issue of the country. Currently, the lack of access to the financial system stems from the low accessibility to the Internet. Once this issue is solved (the Central Africa Fibre-Optic Backbone Project is bound to be completed this year), the next step is to facilitate mobile access to financial solutions, more specifically involving cryptocurrencies.

- Digital Identity and Ownership with virtual representation in Metaverse: Building the first metaverse, backed by real-life assets might look unrelated to the Sango Initiative, but constructing such a digital representation in a metaverse would enable faster implementation of the other practical use-cases. Land registration, digitalization of the citizen-State relationship, digital identification system or even urban planning can be easily achieved through the implementation of the aforementioned solution.

2.2 Leapfrogging: Blockchain and renewable energy

In African countries, basic financial activities such as money transfers are a massive challenge. Furthermore, authorities, governments and industries alike have not passed through a digital transformation process, leaving Africa behind in several essential development indicators.

Technology leapfrogging has been already proven in Africa, through the rapid adoption of mobile phones. The spread of smartphones creates the digital backbone of the continent, stimulating growth in other sectors too. Highlighting the widespread potential for technology adoption so that the unbanked population can benefit from a mobile-first financial system. This enhanced adoption of Bitcoin and crypto on the African continent opens a new path for Africa.

Nevertheless, further adoption must be aided by a solid legal framework. While other countries encounter problems due to antiquated political mindsets and a slow adoption of disrupting technologies, the Sango Initiative is fully supported by the National Assembly, creating the proper environment for a thriving digital-first economy in the Central African Republic.

Besides encouraging financial inclusion through mobile-first blockchain-based technology, facilitating fast and costless payments, there are further implications. The entire Central African Republic's vision comprehends three other priorities, aiding the future development of the country:

1. Transparent actions and processes through blockchain and unobstructed access for supporters of the Sango Initiative. These are the principles that stand at the foundation of the Sango Ecosystem - Modernization and digitization of government interfaces using blockchain technology.
2. Implementing a clean and sustainable energy grid sustained by renewable sources. One of the key points is facilitating and supporting the creation of energy infrastructure from renewable energy sources: hydro power and solar power, which could be utilized in the process of Bitcoin mining.
3. Democratization and tokenization of natural resources via blockchain, allowing unrestricted access for international investors.

These high level concepts represent the key milestones and priorities of the Sango Initiative and the Central African Republic. Fulfilling them is only possible by implementing the right technological solution and by finding the optimal partners. The necessary steps for achieving the goals of the Central African Republic are included in the Sango Initiative and are already underway such as the development of the legal framework.

2.3 Legal framework: Bitcoin Legal Tender

The Central African Republic is the second country in the world, following El Salvador, and the first in Africa to support Bitcoin as legal tender. Law no. 22 / 21st of April was approved, marking the incorporation of the National Agency for Regulation of Electronic Transactions (ANRTE). For enhancing crypto adoption, all crypto exchanges will be allowed to operate tax-free.

Nonetheless, there is still work to be performed concerning the legal framework. By the end of 2022, the Central African Republic has pledged to publish dedicated legal guidelines for crypto. With the proper regulation and financial incentives, the Central African Republic is planning to attract a wide range of international investors.

Furthermore, there are multiple other key points that need to be reviewed and included within the new legal framework:

1. E-residency program support.
2. Citizenship through investment.
3. Online business registration.
4. Income tax of 0%.

5. Corporate tax of 0%.
6. Digital Identity.
7. Digital ownership: Real Estate transactions with cryptocurrencies
8. Crowdfunding framework: Crypto crowdfunding for infrastructure projects (public-private partnerships).
9. Tokenization framework.
10. Creation of the Digital National Bank: “Banque Nationale digitale de la République Centrafricaine" - BNDRC.
11. Privacy and Data Protection.
12. AML & KYC.

2.4 Digital infrastructure: Digital Identity and Ownership

A digital economy is built on classical Internet infrastructure. Therefore, the entire Sango Initiative, the Central African Republic’s vision to implement a digital infrastructure, is reliant on Internet connectivity and accessibility in the country.

Based on the Central Africa Fiber-Optic Backbone Project (CAB) – Central African Republic Component, by October 2022, the country will benefit from having high-speed optic fiber Internet connection. The phase 1 benefits will be full Internet coverage for urban areas, with 100% for the Capital Bangui, continuing with a phase 2, with connecting all rural areas too as the main objective.

In addition to the expansion of its infrastructure, the launch of the “Young People Initiative”, a program that gives mobile phone terminals to the young people in the Central African Republic, will also benefit the implementation of Sango. The second part of the plan, the “Young People Initiative” is mentioned in the digital infrastructure chapter for its purpose of enabling the Central Africans Republic’s citizens’ access to the Internet and digital services.

Furthermore, all these development programs will be sustained by public campaigns with the express goal of providing technical education to Central African Republic’s residents.

Financial inclusion is amongst the most important objectives for the entire Sub-Saharan region. Mobile phone adoption is a tested precedent for the African continent, with these efforts resulting in the implementation of a verified and successful model. With Internet coverage solved and followed by the distribution of mobile phones to the population, the next logical step for achieving financial inclusion is setting the ground for a mobile-first financial system.

The Sango blockchain represents the backbone of the entire digital monetary system. The first module with direct application for the end-users will be the Sango App, which will allow the Central African Republic’s population instant access to financial services. Within the App, later detailed upon Chapter 3.2, residents will have their own non-custodial wallet that supports both Bitcoin and Sango, enabling fast worldwide payments.

Sango enables the entire State’s financial infrastructure to be built directly on-chain, allowing people to have a digital identity and manage their relationship with the State digitally, ensuring enhanced security provided by the decentralized ledger.

2.5 Physical Infrastructure: Crypto Island and Crypto City

Physical infrastructure is also an important pillar of the Sango Initiative, with Crypto City and Crypto Island as prime examples of it. The Central African Republic has established the first steps towards planning and building a high-tech city and island as part of the Sango Initiative.

It should be known that in Africa, governments are still the largest landowners. Furthermore, land ownership is not as defined or decisive as in other areas of the world, due to underdevelopment and inadequacy of general authorities.

In the Central African Republic, the above mentioned situation remains relevant. Nevertheless, the government is looking to decentralize ownership and welcome diversified international investors to purchase land in the capital area for which extensive development has been planned over the next few years.

The Crypto City will be an extension of the capital Bangui and will have its own main attraction, the Crypto Island, located on the Ubangi river, at the edge of the capital.

Prior to their construction, the Crypto City and Crypto Island will have a direct 1-to-1 representation in Metaverse. There are implications that both investors and virtual explorers are able to capitalize on the Crypto Island and Crypto City immediately.

The mirrored Metaverse will allow residents and citizens to manage their properties, identity, interactions with the State and even business relations, while also being able to digitally explore the entire area and meet all of its remote citizens.

The Metaverse aspect of the Sango Initiative will innovatively fill the gap between the digital ecosystem and the actual construction process. Access to a 1-to-1 virtual representation of the Crypto City in the metaverse allows citizens and residents to easily understand the applicability of blockchain technology in real life.

The comprehensive picture includes land registration on blockchain. Land ownership has represented a certain use case for the blockchain since its inception, signaling the clear next step in the evolution of land registry technology, more so in developing nations.

The Sango Initiative encompases the vision of decentralizing land ownership, enabling the infrastructural development of the entire country. The physical infrastructure section contains the following clear milestones of the Central African Republic's vision: building 25,000 new homes, welcoming 50,000 residents to the Crypto Island and Crypto City along with 30,000 m^2 of retail and commercial buildings being constructed.

2.6 The African Crypto Hub

In support of the Sango Initiative, the Central African Republic is setting up a Crypto Hub, with full political support from its National Assembly, aiming to welcome businesses and attract crypto-enthusiasts globally. The Crypto Hub will be the engine behind the entire

project, with government support through legal regulation, grants and active managerial involvement.

By adopting Bitcoin as legal tender, the Central African Republic is the optimal host for Africa's first Crypto Hub and becoming an important regional Crypto Power.

The main focus of this governmental task-force will be to support innovation, especially in the technological sector. Internationally, the Crypto Hub will act as the Sango Initiative's liaison office with countries and legal entities. Internally**,** its activity will focus on the digitalization of the Central African Republic, onboarding new users, and providing education on how to utilize the new Sango Ecosystem.

Included objectives for the African Crypto Hub will be to:

- Spearhead the country's digitization program.
- Become the main promotive organization for cryptocurrencies adoption in Africa.
- Develop projects for investing in clean and renewable energy sources (solar PV, green hydrogen, battery storage).
- Research and enable sustainable food production supply chains (greenhouses, aquaculture, alternative meat, sustainable packaging).
- Collaborate with the necessary governmental entities in order to support the development of the entire Sango roadmap.

The Sango Initiative's vision is to contribute to the development of the entire African continent, with the Central African Republic leading the transformation.

2.7 Central African Republic: Natural Resources

The Central African Republic's resource endowment includes a total of 32 minerals and metals, distributed over more than 470 encounters, including limestone, uranium, cobalt, gold, rock salt, coltan, zinc, iron, diamond, lithium, rhodium, copper, graphite and hydrocarbons.

Some of the resources have been assessed and proven, while others have been just partially studied and estimated. The most important ones are gold, iron, diamond, limestone, lithium, cobalt, and rhodium.

Gold

Distributed throughout the entire country and has been mined since its discovery in an artisanal manner.

- Proven Reserves: 300 tonnes
- Proven Value: $18 billion
- Estimated Reserves: 1000 tonnes
- Estimated Value: $60 billion estimated value

Diamonds

Main exploited mineral resource today.

- Proven Reserves: 56.4 million Central African Republicats
- Estimated Reserves: 57 million Central African Republicats ($285 billion estimated value)
- Average Grade: 0.5 carat/$m^{3.}$

Iron

Two iron ore deposits have been assessed and proven, Bogoin and Topa.

- Bogoin Proven Reserves: 35 million tonnes (60-74% iron)
- Topa Proven Reserves: 1 billion tonnes (70% iron)
- Estimated Reserves: 150 billion tonnes
- Total Estimated Value: $2.2 trillion

Limestone

- Bobassa Proven Reserves: 262.000 tonnes
- Bobassa Unproven Reserves: 30 million tonnes
- Fatima Proven Reserves: 680.000 tonnes
- Fatima Unproven Reserves: 8 million tonnes

Graphite

- Proven Reserves: 300.000 tonnes at 13.25% Central African Republic on content
- Estimated Reserves: 2 million tonnes
- Total Estimated Value: $600 million

Uranium

- Proven Reserves: 35.000 tonnes
- Estimated Reserves: 120.000 tonnes
- Total Estimated Value: $15.4 billion

Copper, coltan and cobalt

- Copper**:** Significant evidence was found at Ngadé in the Birao region in the north of the country. Studies revealed a concentration of 5.72% copper.
- Coltan: Colombo-tantalite: contents of up to 100g/t were found in the Bozoum area. Indications were also reported in Bangui by the ORGEM.
- Cobalt: Geochemical analysis of a sample taken from a superficial formation in the plateau above the magmatic amphibolites 40 km east of Ouadda Djallé gave a cobalt content of 0.64%.

Oil potential

The Central African Republic has a vast area of sedimentary formations, adding up to more than 160,000 km^2, representing almost a quarter of the national territory.

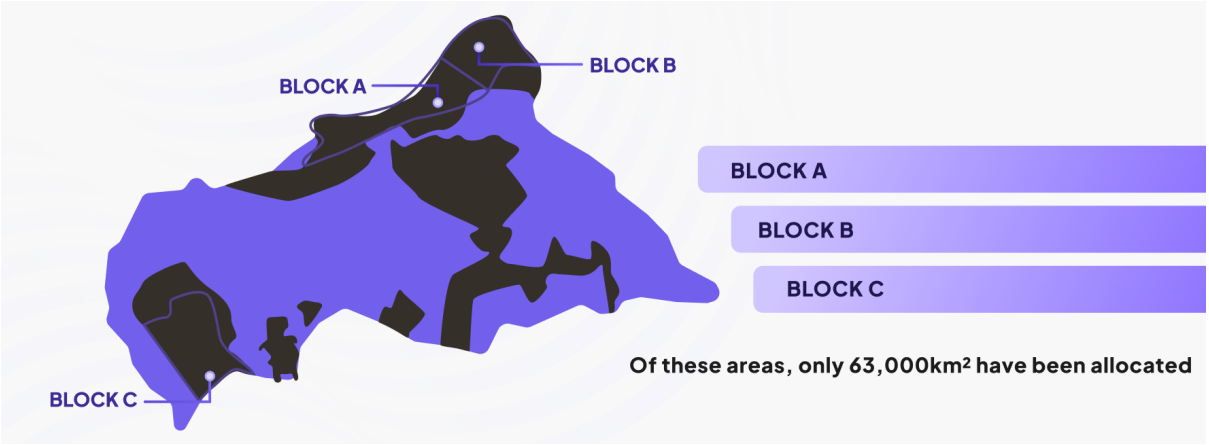

Figure 6, Oil formations in the Central African Republic

The Central African Republic is an unexploited country, with its resources waiting to be explored. Sango Initiative represents the catalyst for tokenizing the country's resources. An entire technical module will be developed within the Sango App for supporting the issuance of tokenized securities for the country's resources: digital subscription platform, investor portal with support for dividends distribution, marketplace as a service.

3 Sango Ecosystem

African countries are facing prodigious difficulties in accessing basic financial services, due to the banking systems' low penetration.
Technology-wise, the coverage is also the lowest out of all continents, but has shown signs of recovery in recent years. Blockchain technology allows underdeveloped countries to leapfrog directly into the future.

The Sango "Crypto Initiative" is the first attempt to build a new digital monetary system fully powered by blockchain technology, with Bitcoin as the digital store of value at its core. The Sango Ecosystem is built around 3 major verticals: legal framework, digital infrastructure and physical infrastructure.

1. Legal framework

A legal framework designed to become the foundation for a digital-first society in the center of Africa. The starting point was the adoption of Bitcoin as legal tender and reference currency for the Central African Republic. All Central African Republic Bitcoin payments are considered legal and have the same status as the main FIAT currency, CFA franc.

2. Digital Infrastructure

Building on top of the Bitcoin blockchain, a new generation of digital infrastructure that will power e-Gov services, stimulate economic activity - banking the unbanked and empowering people to connect and create beyond borders in the Metaverse.

3. Physical Infrastructure

Physical infrastructure with technology at its core: this is the vision to transform the Central African Republic into the oasis of the future. Reshaping the transportation and urban infrastructure are the main objectives.

Such a digital-first monetary system can only be built around Bitcoin, the new “digital gold”, which is placed in the center of the Sango Ecosystem. Sango is built as a Layer-2 infrastructure, a sidechain to Bitcoin, complementing it. Sango will enhance utility by implementing a robust infrastructure enabling new use-cases specific to extensive usage by the entire nation.

Furthermore, with Bitcoin centered as the digital store of value, the Central African Republic’s citizens are given full democratic control over the new digital monetary system. As opposed to CBCDs, which are only digital representations of FIAT money issued by Central Banks, if the value of a newly created digital currency is backed by Bitcoin as the digital store of value, then the Central African Republic and its citizens are endowed with full democratic control on the digital monetary system, without interferences from the banking sector.

3.1 Sango Architecture

A sidechain is a mechanism that allows one to move your Bitcoins to another, completely independent blockchain, trade them there and move them back to the Bitcoin mainchain. Intrinsically, a sidechain consists of a blockchain network tied to the mainchain via a two-way peg.

Capitalizing the power of Bitcoin is one of the fundamentals of the Sango Ecosystem. Building a new economic infrastructure without using the Bitcoin blockchain as a foundational layer is utopic and prone to manipulation. That is the reason why Sango is developed as a sidechain to complement Bitcoin's characteristics.

3.1.1 Bitcoin sidechain

The need for a Bitcoin sidechain derives from the Bitcoin network’s properties. Building an infrastructure backed by a government that should serve as the main layer of a digital monetary system directly on the Bitcoin blockchain would have had the following issues:

1. A Nation-wide e-government infrastructure is not feasible on a completely public blockchain due to some of the modules requiring privacy protection.
2. Scalability - Bitcoin is designed for large transfers, but not daily operations, so Bitcoin’s capacity to support 5-7 transactions per second is not sufficient for daily usage. Africa is unbanked at this moment, onboarding the millions of users to use such a system would go over the support that TPS Bitcoin has at this moment.
3. Smart Contracts and dApps - Since Bitcoin does not support Turing complete smart contracts and Sango is developed as the center of the to-be-built digital framework for a country, in order to support use cases from different industries and allow the expansion of the ecosystem, the Sango blockchain will support smart contracts.

The main advantage of the sidechain is that it has access to Bitcoin’s entire liquidity. The sidechain interacts directly with the Bitcoin mainchain and allows users to bridge transactions directly from SANGO to Bitcoin.

In the model, Sango serves as a blockchain on which financial institutions and fintech

companies can innovate and create layered payment services to enable broad use cases for SANGO. At its core, the model encourages inclusiveness, innovation and interoperability, which are baseline requirements for solving all the nuisances and potential issues stated in this paper.

3.1.2 Cross-Institutional Layer-2 Bitcoin infrastructure

Bitcoin is most advantageous through its digital store of value, but in order to enable the creation of a digital monetary system the full potential of Bitcoin needs to be unlocked through the creation of the Sango sidechain.

There are also other Layer-2 infrastructure projects created on top of Bitcoin, including 2 widely used and popular networks:

1. Lightning Network (LN) - a “Layer-2” payment protocol layered on top of Bitcoin.[21]
2. Liquid Network - a Bitcoin “Layer-2” enabling the issuance of security tokens and other digital assets powered exclusively by the Liquid Federation.[22]

While the Lightning Network is clearly unsuitable as it is only a Payment Channel Network (PCN), the Liquid Network is a federation-based network totally dependent on the Liquid Federation composed of private companies located in multiple jurisdictions, making it conceptually unsuitable for any governmental infrastructure.

Sango Bitcoin Layer-2 solution has a custom Proof of Convention consensus based on Tendermint Core that is powered by institutional validators represented by official entities. We believe this innovative approach is more suitable for being the first one to be implemented by a nation-state actor.

Similar to the Liquid Network, Sango Layer-2 infrastructure has built-in Bitcoin interoperability via the two-way peg mechanism: bitcoins are custodied by the validator set, collectively called the Institutional Quorum. These validators are responsible for verifying the sidechain rules and processing transfers to and from Bitcoin by signing transactions on the Bitcoin blockchain. This method requires no changes to Bitcoin’s code base, since the peg is enforced by the means of a threshold signature scheme. It does require a quorum to exist, and for participants of the system to trust that a supermajority of the validator set is acting honestly.

Since the peg is enforced by the Institutional Quorum, there is no additional loss of security by requiring that this set of validators also sign the blocks of the sidechain. Due to the fact that blocks in Tendermint are final, sidechain reorgs are impossible, so we avoid complexity around the peg mechanism. In addition, users of the sidechain benefit from the deterministic finality property enforced by the Tendermint consensus.

On this account, a review of the definitions regarding the two-way peg mechanism is necessary. A peg-in is a transfer from Bitcoin onto the Sango sidechain: a user deposits Bitcoin to the Institutional Quorum custody and will receive newly minted s-BTC (s-BTC is backed 1 on 1 with BTC); the process is called lock-and-mint. Similarly, a peg-out is a transfer from Sango back onto the Bitcoin blockchain: a user burns s-BTC and receives

BTC; the process is called burn-and-release. The operation of the peg mechanism is fully deterministic, based on the node's view of the networks.

In order to streamline daily operations, the peg-in and peg-out processes will involve an automated market maker (AMM) to convert between s-BTC and SANGO for a simplified end-to-end flow: users deposit BTC to receive SANGO and the opposite.

3.1.3 Proof of Convention

SANGO will be issued by a quorum of nodes controlled by Central African Republic institutions, collectively known as the Institutional Quorum with democratically elected members, including the presidency, ministers and National Assembly.

The consensus engine is based on Tendermint Core, but modified with a customized Proof of Convention. Proof of Convention derives from proof of authority (PoA), but slightly modified for governamental usage, with the validators being the quorum of institutions. There will be a total of 21 nodes validating transactions in the Sango sidechain. The validator set will remain independent from other integrated modules.

By definition, the Tendermint Core is the leading Byzantine Fault Tolerant engine for building blockchains: it ensures that the same transactions are recorded on every machine in the same order. Since it features the Application Blockchain Interface (ABCI) protocol, it allows state machines written in any programming language. Furthermore, we envision a completely modular design, translated into enhanced extensibility to enable the addition of various layers such as privacy, required by official entities.

There is ongoing research and development of the technical aspects regarding the sidechain and this section might suffer changes in the future based on state-of-the-art advances in the field.

3.1.4 Benefits

The main advantages of a sidechain are evidenced through a higher number of transactions per second, requiring no confirmation time, thus resulting in fast transfers with very low fees.

Creating a blockchain framework to support a new digital monetary system for a country comes with theoretical restraints. However, Sango provides a multitude of high-end solutions, enabling a series of highly quantifiable benefits:

- Fast transfers: this allows the citizens of the Central African Republic to access blockchain supported financial inclusion, also facilitating cross-border payments.
- Access to Bitcoin liquidity: the sidechain interacts directly with the Bitcoin blockchain, allowing the complete usage of the Bitcoin network.
- Smart Contracts: the Central African Republic's vision is to place the Sango blockchain as the framework that creates a base for various use cases in various industries, including issuance of security tokens.
- Confidential Transactions: the use of a public blockchain, such as Bitcoin, is not suitable for governmental activities, thus a privacy layer is required.

- Increased reliability: the network nodes are managed by the quorum of institutions democratically elected.
- Micro-fees: will be minimal and are implemented to deter spam and prevent useless data to be recorded on the blockchain.

Nevertheless, such a solution can have several perceived drawbacks, amongst them being the apparent centralization. Sango employs the best of both worlds, perfectly balancing the adequate level of decentralization and privacy, while also leveraging the power of the Bitcoin blockchain.

3.2 Sango App

The first project to be created in the Sango Ecosystem is the Sango App. Sango App will have a wallet compatible with SANGO and BTC.

The three main functionalities of the Sango App are in line with the initiative's verticals, serving the following purposes:

- Ownership: in-app digital identity and ownership of digital assets.
- Governance: in-app voting.
- Transfer of value: sending and receiving BTC and SANGO.

The Sango App will have an accessible UX/UI and will solve major infrastructural and financial issues native to the African continent, including the fact that most citizens are unbanked.

The Sango App will help anyone with an Internet connection to be able to access the global financial ecosystem.

Sango, as a government initiative, will represent the simplest and most effective way to interact digitally with the government. Sango aims to eliminate the need for any in-person interaction with the government for administrative reasons.

The Sango App will have multiple functionalities:

- Financial and payment functionalities
    - Users will be able to send and receive money worldwide and instantly.
    - Contactless payment system.

- Digital identity management
    - Metaverse identity will be available for every citizen.
    - Every wallet will require an active account.
    - Remote Citizenship.
    - E-residency management.
    - Automatic tax (VAT) collection for purchased goods and services.

- Asset management
    - Purchasing land from the government directly in-app.
    - Protection of purchased assets.
    - Preservation of land resources through government tokenization.

    - Linkage of properties and assets to digital identity.
    - Property tokenization, enabling multiple owners.
    - Property with virtual representation in the Metaverse.
    - Automotive registration.
    - Transfer, renewal or cancelation of ownership for assets and properties.
    - Manage and track invoices, salaries, expenses in a fast, secure and compliant way.

- Business Management
    - Online company registration will be performed with a maximum 24 hours approval time (fast tracking the company incorporation process).
    - The legal entity will be linked to your digital identity.
    - Full interaction with the State will be managed within the app.

3.3 Applications and future developments

There are multiple basic functions that are currently unavailable for much of the African continent, including some that seem commonplace for other parts of the world. Adopting blockchain technology from the early stages of the digital transformation phase of a country can serve as a very important pillar for the future.

Blockchain has found many use cases in various industries. The Central African Republic's vision for a blockchain-based economy includes multiple future developments:

- Tokenization of natural resources - the emission of Security Tokens and other digital assets on the Sango Blockchain.
- Creation of fully transparent supply chains for agriculture and natural resource exploitation.
- Blockchain-based land registration framework.
- Creation of a Digital Identity and Ownership System.
- Healthcare monitoring System.
- Public Auctions System.
- Nationwide insurance management system.

4 SANGO: The Coin

Issuing the SANGO Coin represents the Central African Republic opening up to the world with the objective of paving the way to a digital future.

The SANGO Coin is a multidimensional asset, mainly used for: ownership, transfer of value and governance.

1. Transfer of value: Instant and secure cross-border payments, powered by blockchain technology.
2. Governance: Every citizen has a voice and the chance to shape the future.
3. Digital identity and ownership: Putting citizens in control of their digital identity and assets, secured by blockchain technology.

The SANGO will be the central mechanism within the Sango Ecosystem and Sango Blockchain. All the interactions with either the blockchain or the State will be performed solely through SANGO.

4.1 Vision and Concept

The SANGO Coin is the national digital currency that stands at the base of the newly created digital monetary system of the Central African Republic.

All the projects of the Central African Republic will be deployed through the Sango Blockchain and using SANGO coin.

At the genesis of the Sango blockchain, the Central African Republic will propose 3 different utilities, obtainable through locking SANGO Coin for a predefined amount of time:

- e-Residency, tax-free environment for cryptocurrency related activities. It will be available by locking SANGO for a period of 3 years.
- Citizenship, full rights attached including a passport. Following the developed countries model, the Central African Republic will attract global talent to contribute to the country's development. It will be available by locking SANGO for a period of 5 years
- Land**,** located in the locations of the Crypto Island and Crypto City projects - part of the long term physical infrastructure development planned for the country. The Central African Republic Government is currently the biggest landowner in the country, offering the necessary land for building the projects. It will be available in parcels of 500 m^2 obtainable through locking SANGO for a period of 10 years.

With Sango blockchain as the technological layer of the entire digital framework, the Central African Republic is launching a transparent investment environment.

The resources tokenization will be achieved through a dedicated module built on top of the Sango blockchain. The digital subscription platform will be available only for SANGO Coin holders, with access to the digital assets through it. Tokenization of resources will be further detailed in a separate forthcoming section of this paper.

4.2 Utility of SANGO

SANGO is the coin used through the Sango Ecosystem, built on the Sango blockchain.
Based on its governamental backing, SANGO has the following utilities:

- Citizenship will be available through SANGO.
- E-residency will be available solely through SANGO.
- Company Registration is available solely through SANGO.
- Access to the country's resources (Diamonds, Gold, Lithium etc.) will be available solely through SANGO.
- Access to government infrastructure (Public Auctions) will be available solely through SANGO.
- Tax payments will be performed through both SANGO and BTC.
- Access to the new Metaverse will be provided through SANGO.

- Buying Land from the Government will be available through SANGO and BTC.

4.3 Coinmetrics

There will be a total of 21 billion SANGO issued. The allocation and release schedule are explained in the following table:

Allocation Type	Allocation Type	%	Tokens	Release Schedule
Country's Treasury	Country's Treasury	20.00%	4,200,000,000	4 years cliff, 6 years linear unlock - yearly
Foundation	Foundation funds	10.00%	2,100,000,000	2 years cliff, 8 years linear unlock - yearly
Ecosystem	Rewards & Incentives	15.00%	3,150,000,000	2 years cliff, 8 years linear unlock - yearly
Liquidity	Liquidity	5.00%	1,050,000,000	16,67% at Public Launch, 16.67% every 6 months
Country Offering	Market Coins	20.00%	4,200,000,000	
	Land Offering	10.00%	2,100,000,000	10 years locking period
	Citizenship Offering	10.00%	2,100,000,000	5 years locking period
	E-Residence Offering	10.00%	2,100,000,000	3 years locking period
	Total	100.00%	21,000,000,000	

The following figure illustrates SANGO distribution and includes the 3 benefits offered by the state for SANGO holders:

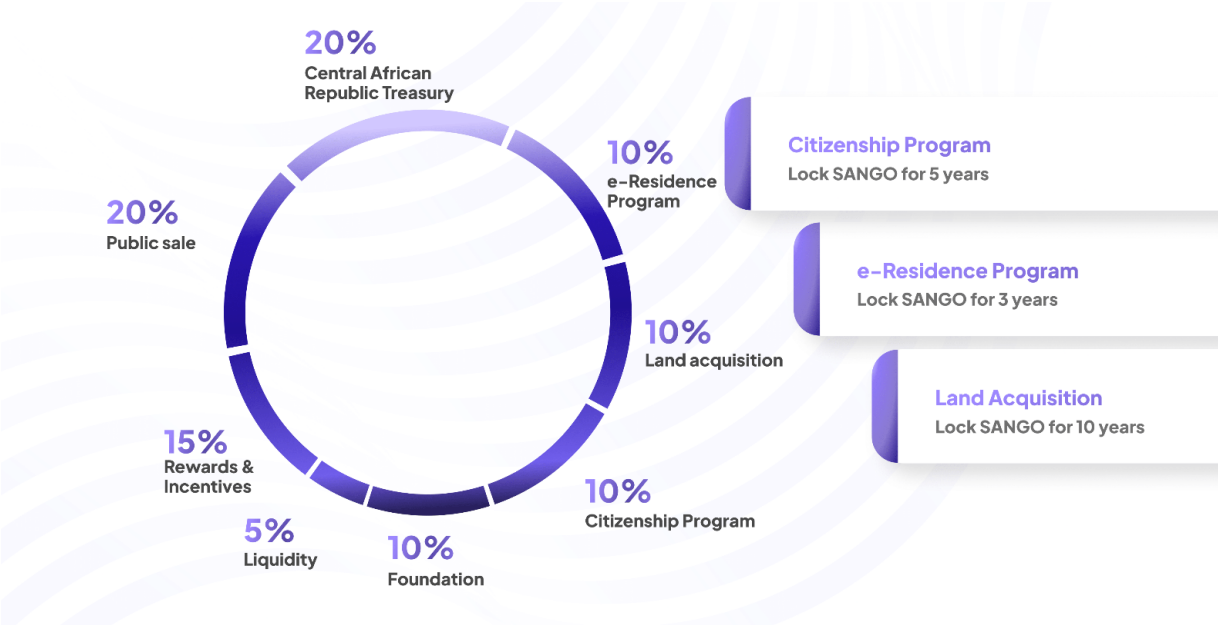

Figure 7, Proposed coin distribution

4.4 Sango Implementation Roadmap

The roadmap for the Sango project will be focused on the aforementioned 3 verticals. The following proposed roadmap touches on key development points for the Central African Republic's Sango project for the first 2 years. The order might undergo various changes based on internal and external factors.

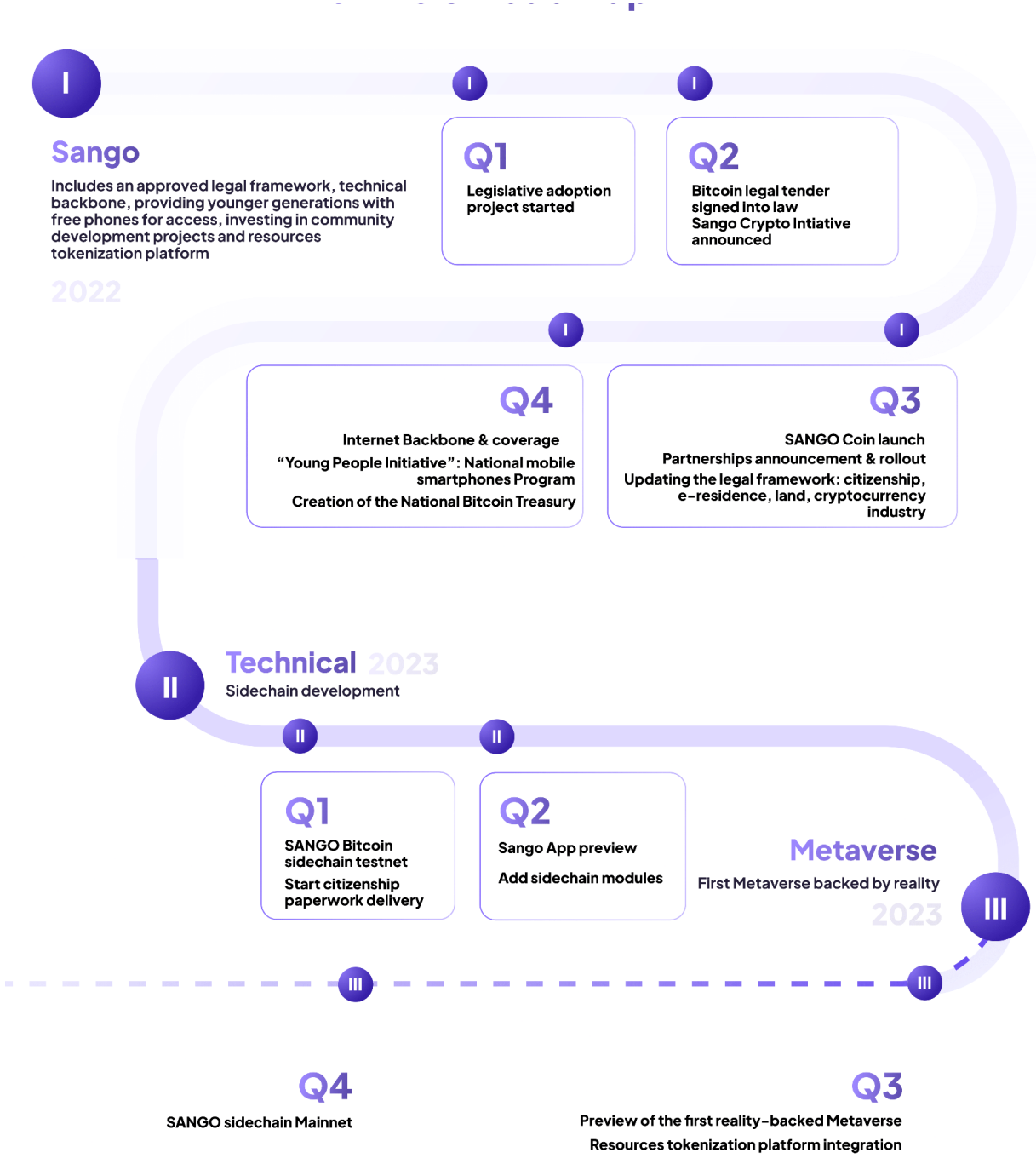

Figure 8, Proposed roadmap for Sango Project

In order to achieve the required milestones for Sango, the Central African Republic began setting an agenda years ago, its focus being on planning the development of a digitalized

country without overlooking the improvement of its citizens' quality of life. The milestones set up by the Central African Republic concurrent with Sango are:

- Central Africa Fiber-Optic Backbone Project (CAB), Central African Republic Component: The Republic's optic fiber network is currently under construction, enabling high-speed Internet access starting with October 2022.
- The Public Sector Digital Governance Project: The project seeks to (i) improve efficiency and transparency of public financial management and (ii) lay the foundation for digital governance in order to provide public services that foster confidence and inclusion.
- The Investment and Business Competitiveness for Employment Project: The project is for supporting climate investment reforms, improving access to credit, and supporting SMEs and young workers.
- Electricity Sector Strengthening and Access Project: Increase supply of, and access to clean electricity services in Central African Republic.
- Health Service Delivery and System Strengthening Project (SENI-Plus): Increase utilization of quality essential health services and improve infrastructure in the health sector.
- Young People Initiative: Launched at once with the Sango Initiative, the project seeks to increase access to the internet, by giving mobile phone terminals to the young people from the Central African Republic.

On the physical infrastructure part, there are plans for improving the entire transportation infrastructure in the upcoming years. The Central African Republic is making every possible effort in each sector in order to pave the way to a better future for its young generation.

References

[1] PWC, Workforce of the future 2030: Global trends challenged by African Realities (PWC, 2019)
[2] GSM Association, The Mobile Economy: Sub-Saharan Africa 2019 (London: GSM Association, 2019)
[3] The Brookings Institution, Foresight Africa 2020 (The Brookings Institution, 2020)
[4] European Council on Foreign Relations, Network effects: Europe's digital sovereignty in the Mediterranean (ECFR, 2021)
[5] Google, Our $1 billion investment in Africa's digital transformation (Google, 2021)
[6] African Development Bank Group, Central African Republic - Central Africa Fibre-Optic Backbone Project (CAB) – CAR Component (AfDB, 2015)
[7] Investopedia, What is Blockchain? (Investopedia, 2022)
[8] The Smart Africa Secretariat (SAS), Blockchain in Africa: Opportunities and Challenges for the next Decade (GIZ, 2020)
[9] Mckinsey & Company, Mobile financial services in Africa: Winning the battle for the customer (Mckinsey & Company, 2017)
[10] Deloitte, Peer to peer energy trading (Deloitte blog)
[11] African Centre for the Study of the United States, Blockchain technology: A tool to accelerate free trade in Africa - Part I (Africaportal, 2021)
[12] Sujha Sundararajan, Ethiopia Is Exploring The Use Of Blockchain Technology To Track The Supply Chain For Its Largest Export,Coffee (Coindesk, 2018)
[13] The World Bank, Project Performance Assessment Report: Ghana Land Administration Project (The World Bank, 2013)
[14] UNCDF, The Fintech Landscape In Rwanda (UNCDF, 2019)
[15]The Republic of Sierra Leone State House, Sierra Leone Gets Africa's First Blockchain National Digital Identity System (The Republic of Sierra Leone State House, 2019)
[16] Economic Development Board, EDB Issues Regulatory Sandbox Licences To Fintech Companies For Their Innovative Projects (Economic Development Board, 2019)
[17] Chainalysis, P2P Platforms, Remittances, and Savings Needs Power Africa's Grassroots Cryptocurrency Adoption (Chainalysis, 2021)
[18] Central Bank of Nigeria, eNaira Design paper (CBN, 2021)
[19] Briter Bridges, Blockchain in Africa:Assessing opportunities and feasibility (Briter Bridges, 2018)
[20] Samantha Radocchia,Why The Extraction Of Natural Resources Needs A Blockchain Solution (Forbes, 2018)
[21] Wikipedia, Lightning Network (Wikipedia, 2022)
[22] Blockstream, Liquid: A bitcoin Sidechain (Blockstream, 2020)