Potential Implementation of Blockchain Technology by Non-Governmental Organizations and the Legal Framework of the Tokenization for Donations

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Introduction:

The term non-governmental organization (NGO) is used as an umbrella term to cover different legal entities such as charitable funds, associations, foundations, funds, non-profit cooperation. In some countries NGOs have been regulated under corporate law however there are many kinds of NGOs whose aims are quite variable. The main motivation of NGOs is mainly not the generation of profit but to contribute to communities in certain fields. Nevertheless, to afford expenses or increase the funding, NGOs may have profit-oriented corporate structures as an alternative way of funding their operations.

Recent developments on the global communication and payment gateways make funding of international non-governmental organizations pretty easy. Donations play a significant role to decrease poverty and provide equal access the education, food, infrastructure, health so on. Based on the evidence currently available, it seems fair to suggest that monetary contribution has the biggest share amount among the charity activities.[1] Countries, where people are least likely to donate money, include both the very rich (Such as Japan) and the very poor (such as Mali).[2]

Since non-governmental organizations are becoming more professional and global day by day, the collected amount is increasing effectively. Nevertheless, there are several concerns of contributors about the management of their donations and effectiveness. Even though global non-governmental organizations regularly have audited either by a reputable private auditor or official bodies, transparency plays a significant role in the spending to avoid any corruption and misleading of the funds.

Just in the USA, $471.44 billion in 2020 has been paid on a charitable basis and 69% of total giving was from individuals. Other sources of the foundations are bequests, foundations, and corporations.[3]

Since individual donations represent the significant majority of the whole monetary donations, non-governmental organizations acting as mediators to reach individuals play a quite important role. Besides monetary donations, the creation of a blockchain-based structure for voluntary jobs can be used for NGOs. Norms of voluntary cooperation are difficult to use in a society of strangers unless they are mediated by some institution.[4]

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[1] Charitable Giving Statistics <https://nonprofitssource.com/online-giving-statistics/> accessed July 4, 2022
[2] A Global Pandemic Special Report.' (Charities Aid Foundation 2021)
[3] Giving USA Annual Report (2021)

[4] Camera, G., Casari, M., & Bigoni, M. (2013). Money and trust among strangers. *Proceedings of the National Academy of Sciences of the United States of America*, *110*(37), 14889–14893. http://www.jstor.org/stable/42713225

In this research, I first explain the basics of the cryptocurrency and blockchain working principles and then encourage debate on possibilities of coin creation for non-governmental organizations to increase donations and potential implementation of blockchain for non-governmental organizations' operations.

For the sake of discussion, I would like to argue that the legal definition of cryptocurrency defines cryptocurrencies as money, security, or goods. The underlying concept of token/coin will play a significant role in this definition. In the case of given representation right by tokenization, this token may be defined as security. Hence, besides KYC (Know your client) and AML (Anti-Money Laundering) compliance, a token provider should obey the security regulations too, which include mainly quite strict conditions. By security token, it is possible to give pre-emption rights or cast votes during the general assembly of the NGO.

The creation of coins/tokens for non-governmental organizations would be supported across the world and non-governmental organizations can use this coin to transfer the donees or pay the service/goods fees of the 3rd parties who are dealing with these non-governmental organizations. In addition, blockchain-based immutable systems enable donors to track their donations transparently and also observe the allocation of their donations to which wallets. It might be thought that potential disadvantage is that this system could deny the donee confidentiality. However, since donees will have just wallet codes, their privacy will be secured through the system while all payment allocation is transparent and under the following. Further research in this area will include the legal structure of this kind of coin offering, the creation of a blockchain platform, and compliance matters.

In the present study, the issue under scrutiny is, first a clarification of the differences between coins and tokens and their legal frames. Then the paper will discuss the potential implementation of blockchain for non-governmental organizations. Then in the case of creating a coin/token for a non-governmental organization, it will consider which legal conditions must be met during the processes of blockchain implementation and initial coin offering. In conclusion it will consider how feasible it is to use blockchain and cryptocurrency for NGOs.

1. Legal Framework of the Cryptocurrencies and Tokens

The first distinction that must be made is between fiat currency and digital currency. The fiat currencies that are in daily circulation as US Dollar, Euro, Pound, etc. are backed by their national central banks. In some countries, they use some other countries' official currencies. (For example, the US Dollar has been used in 7 countries)

The fiat currency stored on the banks today as on online banking etc. cannot be described as a digital currency, but it is called electronic money, which is nothing but an electronic representation of national currencies. In other words, electronic money is not the currency itself as a digital currency.[5] However, it may be said that the majority of cryptocurrencies are digital

[5] David Evans and Richard Schmalensee, 'Paying with Plastic: The Digital Revolutio In Buying And Borrowing' [2005] 2nd ed. MIT Press.

currency. Digital currencies are stored electronically and transferred by electronic gateways. Bitcoin is released in 2009, the first decentralized digital currency while it is not the first digital currency. During the 1990s there were already some first examples of digital currencies such as E-gold, Liberty Reserves Dollars. The difference between these and cryptocurrencies was they were using centralized systems, which were easily shut down by the US government . In contrast, the main difference lies in that Bitcoin is a decentralized digital currency and states have not been able to shut down the system since 2009. These results provide confirmatory evidence that decentralized digital currencies are independently organized financial assets. Bitcoin is a pioneer and still holds the market leadership with 42.3% dominance of the whole cryptocurrency market.[6]

Bitcoin is a pseudonymous digital currency since every user is represented by a random, cryptographically generated string of digits, called an address, which does not reveal the user's actual identity in principle.[7]

Bitcoin was launched in 2009 by an unidentified programmer (or group of programmers) under the name of Satoshi Nakamoto. The technical explanation and details of Bitcoin have been indicated in the document, called a white paper. Since 2009, no government or institute has been able to shut down the system. However, when we discuss about legal frame of the cryptocurrencies we must consider the technical differences or promising of each cryptocurrency project in order to decide legal form of it. We will discuss more technical details in the following section of this paper about blockchain working principles.

2. Legal Form of Cryptocurrencies
Is It Money, Commodity, or Security?

There has been an inconclusive debate about the legal description of cryptocurrencies. In this section, I discuss the potential legal definitions of cryptocurrencies.

The first possible and most common description is money. Three main types of money are commodity, representative commodity, and credit money. For example, grains were used as commodity money for a while until metal coins. Representative money is little or unvalued money that is exchanged for silver, gold, or its silver equal value. By credit money or debt money, is meant any money, except representative full-bodied (commodity) money, that circulates at a value greater than the commodity value of the material from which it is made.[8]

The money we use in today's world is credit money. To accept cryptocurrencies as money, it must meet three main conditions. It must be used for transactions, be used as a unit of account, and able to store value and once for all funded behind by licensed fund institutions.

Cryptocurrencies meet the conditions used for transactions, the unit of account, and store a value despite their well-known high volatility. This accentuates the realization that

[6] "Cryptocurrency Prices, Charts and Market Capitalizations" (*CoinMarketCap*) <https://coinmarketcap.com/> accessed January 31, 2022

[7] Joshua Baron, A. O.. Technical Challenges to Virtual Currency Deployment National Security Implications of Virtual Currency. (2015) Rand Corporation, 44th.

[8] Stephen Goldfeld, *The Economics Of Money And Banking.* (New York: Harper & Row 1987).

cryptocurrencies have no institutional government-backed fund or money license yet. It is a reason that today we cannot describe cryptocurrencies as money. Nevertheless, in terms of taxation, cryptocurrency transactions can be ruled as currency exchange. The Court of Justice of the European Union has ruled that Bitcoin exchange services in exchanging Bitcoin for a fiat currency are exempt from VAT (Value Added Tax) based on the currency.[9] As a consequence, this rule can be used for other cryptocurrencies as well.

The most popular approach to typology of a cryptocurrency is as a commodity. Commodities have been described as economic goods or services that have full or substantial fungibility. Cryptocurrencies must be intangible commodities. In practice, cryptocurrencies and the majority of the tokens are accepted as commodities. For instance, in January 2018, US Commodity Futures Trading Commission ("CFTC") has been accepted Bitcoin as a commodity because Bitcoin is undisputedly traded in the futures markets.[10]

Security includes "an investment contract''.[11] An investment contract is an investment of money in a common enterprise with a reasonable expectation of profits to be derived from the entrepreneurial or managerial efforts of others.[12] Several decentralized autonomous organizations (DAO) and their tokens are accepted as security by different states.

In the following sections, the discussion will point the focus on the creation of tokens for non-governmental organization activities and clarify the legal definition of future tokenization. More details about types of tokens and coins will be shared.

3. Blockchain Working Principles

Blockchain has 3 main premises immutability, a decentralized nature, and transparency. However, blockchains are divided into different categories as permissioned and permissionless. Under these two categories, there are public, private, consortium, and hybrid blockchains. Public blockchains allow anyone to join the chain and give equal rights to all nodes while enabling users to create and validate blocks of data and permissionless. In contrast, to join and create, or validate any nodes on permissioned blockchains, participants need permission from one authority or consortium. Bitcoin, Litecoin and Etherium there are examples of public blockchains. Private blockchains are also referred to as managed blockchains. On private blockchains, authority does not necessarily grant equal performance rights to each node. These are partially decentralized due to limited participation right. Ripple and Hyperledger are some examples of private blockchains. While data validation of new data on the public blockchain takes more time, private blockchains offer faster but are more vulnerable to fraud and bad management. This leads to the development of consortium and hybrid blockchains.

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[9] "The Exchange of Traditional Currencies for Units of the 'Bitcoin' Virtual Currency Is Exempt from VAT"<https://curia.europa.eu/jcms/upload/docs/application/pdf/2015-10/cp150128en.pdf>

[10] 'Press Releases | CFTC' (*Cftc.gov*, 2018) <https://www.cftc.gov/PressRoom/PressReleases/pr7678-18> accessed 30 January 2022.

[11] Us Securities Act, Under Section 2(a)(1) and Section 3(a)(10) of the Exchange Act. See: 15 U.S.C. §§ 77b-77c

[12] See *SECURITIES AND EXCHANGE COMMISSION v EDWARDS* (2004) 540 U.S. 389, 393., and *SEC v WJ Howey Co* (1946) 328 U.S. 293, 301.

The difference between private and consortium blockchains is that while private has been controlled by a single entity/group/person, consortium blockchains are governed by a group of organizations. This leads to consortium blockchains having more decentralization with higher security. Nevertheless, may have several challenges among organizations. Some outstanding examples of consortium blockchains are Energy Web Foundation, Hyperledger, Enterprise Etherium Alliance, R3, IBM Food Trust.
To avoid permissioned procedures, hybrid blockchains offer public blockchain verifications for certain transaction validations. It is a combination of both private and public blockchains. The system has the advantage of fast and cheap transactions that are more scalable than those on a public blockchain. However, it has less transparency.

For the sake of our future discussion, it would be important to identify some implementations of these different blockchains. Etherium is one of the most popular blockchains, which is decentralized and permissionless, and its cryptocurrency is Etherium (ETH). Etherium provides infrastructure for decentralized applications such as Decentralized Finance (Defi) apps and Non-Fungible Tokens (NFTs). While Bitcoin is the most popular decentralized peer-to-peer kind of payment system, Etherium aims to enable peer to peer everything as a platform, which is possible to build on many applications. Based on the infrastructure currently available, it seems fair to suggest that Etherium may be the platform for humanitarian blockchain projects.

Solano is one of the most popular blockchains, recently gained popularity, and is called a big competitor of the Etherium Blockchain. Before giving more details about Solano, first, the concepts of proof of work, proof of stake, and proof of history must be clarified.

4. Blockchain Concepts

Proof of Work-Proof of Stake and Proof of History

The functionality of technology has significant importance to sustain its promise. Without functionality, even a system which provides perfect solutions, would not be used by end-users. There are several relevant issues. In the case of Bitcoin and Etherium, it is energy consumption. The first decentralized cryptocurrency Bitcoin has been designed to use a proof of work mechanism (PoW). One of the main promisings of blockchain is verifying transactions on the chain without the involvement of any 3rd party. Bitcoin blockchain works based on the consensus mechanism called proof of work, in which the validity of all transactions must be agreed upon by network of stakeholders cryptographically on cryptocurrency networks. The computational task of complex mathematical problems is rewarded by newly minted crypto coins. This transaction is called mining. While PoW secures data on the chain and stores it onthe system safely, it is profoundly inadequate in terms of expenditures. The system consumes a massive amount of energy. According to the Cambridge Centre for Alternative Finance (CCAF), 110 Terawatt Hours per year, which is equivalent to 0.55% of global electricity production has been consumed by just the Bitcoin blockchain.[13] This expenditure is almost 3 times greater than the amount of annual energy generation of Hungary in 2020.[14] The second most popular blockchain, Etherium, which currently uses a proof of work protocol, also

[13] 'Cambridge Bitcoin Electricity Consumption Index (CBECI)' (*Ccaf.io*, 2022) <https://ccaf.io/cbeci/index> accessed 20 December 2021.
[14] 'Hungary: Electricity Generation 2020 | Statista' (*Statista*, 2020) <https://www.statista.com/statistics/450420/hungary-electricity-generation/> accessed 24 December 2021.

consumes quite significant energy. One Etherium transaction consumes 209.13 kilowatt-hours while 100.000 Visa Transactions consume 148.63 kilowatt-hours.[15]

A closer look at the energy consumption data of the proof of work blockchains indicates that to make functional the system, there would need other protocols, consume less energy and make faster transactions. In this part proof of stake (PoS) came into practice in 2012, with the claim of less energy consumption. The biggest difference between PoS and PoW is instead of using computer power based on the mining, the PoS concept works based on the existence of a verifiable stake in the respective blockchain ecosystem. The PoS system validates the transactions based on the number of crypto assets they have staked. In case of bad faith, these stakeholders can lose whole assets on the chain. System trust is built based on the validation for asset protection instead of more tangible computer power as in PoW. Stakeholders keep their assets on this crypto, not for mining reward but transaction or network fees, etc.

PoS protocols are far more scalable than PoW, while transaction approval is much faster. Notwithstanding, the system may be subject to the dominance of significant token holders, who are founders, early adopters, or stakeholders who have bigger monetary power. In terms of security, it may be claimed that the PoW mechanism has more advantages while in terms of scalability PoS plays a better role. Blockchain's main promises of immutability, lack of dependency on traditional intermediaries, and distribution methods require proper consensus mechanisms. Since PoS has no track record of the transactions, security lies at the heart of the discussion on PoW and PoS competition. Business models that need more security may tend to use more PoW systems.

One other protocol is proof of history (PoH). Nodes on the system cannot trust the external times or any submitted time stamp on the data. For instance on the PoW method, to time stamp the data on the chain, every added chain back to the network and asks to sign and timestamp, and at least the majority of the network permission data is registered and timestamped. However, it takes plenty of time and energy. PoH claims that instead of asking for majority confirmation, the system can simply trust the timestamp of the encoded data and prove that rather than to say an exact time, the system creates a timestamp based on sometime before and after the event. Technically the system creates a historical record that a particular event has occurred at a specific moment in time.

For deeper understanding of the process of tokenization for non-governmental organizations, and using blockchain, smart contracts must be evaluated very well. Smart Contracts were first so called during the 1990s by Nick Szabo, who was also the founder of the virtual currency Bit Gold. The difference between Bit Gold and Bitcoin was Bit Gold was not digital money itself as Bitcoin,but it was backed by another currency, and works as a kind of reserve currency. Both currencies are working on the PoW protocol. It can be said one of the first attempts on the way of decentralized systems. Another important feature was timestamping of the transactions. It was how smart contracts were born. Nick Szabo describes smart contracts as the combination

[15] 'Ethereum Energy Consumption 2022 | Statista' (*Statista*, 2021) <https://www.statista.com/statistics/1265891/ethereum-energy-consumption-transaction-comparison-visa/> accessed 8 December 2021.

of protocols, interfaced by users to formalize and secure the relationships over the computer network.[16]

Today's smart contracts have been developed very much since the first concept was propounded by Nick Szabo. In the very basic description, smart contracts are the combination of the codes that have been designed for automatic execution of certain actions under certain conditions without a 3rd party interface such as vending machines, not by hardware, but software.

Ethereum was the first blockchain, which offered services to launch smart contract functionality. The difference between Ethereum and the concept of Nick Szabo was that Ethereum is based on a decentralized nature. It creates a perfect match for the concept of smart contacts and trustless execution of the advanced conditions. In the last 6 years, technical research has provided ample support for the assertion that different blockchain platforms may be one of the main streamlines of the new model of applications. These applications have been called decentralized applications (Dapps). On the one hand, Dapps have significant potential due to their capability of creating multiple services. On the other hand, Ethereum is not the only blockchain infrastructure to create Dapps. On these grounds, we can argue which blockchain platform would be better for the creation of non-governmental operations and tokenization. In this sense, blockchain platforms, which enable us to build smart contracts will be our focus.

5. Top Blockchain Platforms for Smart Contract Creation

1- Ethereum

Ethereum is the top and most used blockchain platform. It has the highest market valuation among other smart contracts' tokens with a valuation of €425,118,518,343.[17] Ethereum has its cryptocurrency, Ether. Ethereum uses a proof of work mechanism, which hosts Ethereum Virtual Machine (EVM). On EVM, developers create applications with the programming language of Solidity.

One of the biggest downsides of Ethereum is the gas fees. Gas refers to the unit that measures the amount of computational effort required to execute specific operations on the Ethereum network and is paid in Ether, which is the native currency of the Ethereum Network.[18] Since Ethereum uses a proof of work mechanism, all transactions must be confirmed by all nodes of the network, which claim high amount of energy.

The gas problem is partly addressed by Ethereum 2.0, a new Ethereum Proof of Stake (PoS) network that may be launched at end of the 2022. Ethereum plays a significant role in the creation of Dapps (Decentralized Apps), at the moment it hosts 2.894 Dapps on the Ethereum among the total of 3.825 Dapps on the market, which is over 75% of all Dapps.[19] [17] If Ethereum PoS network change happens, Ethereum may be the perfect platform to host non-governmental organization projects. If not, still it seems the most possible blockchain platform

[16] 'View of Formalizing And Securing Relationships On Public Networks | First Monday' (*Firstmonday.org*, 1997) <http://firstmonday.org/ojs/index.php/fm/article/view/548/469> accessed 30 November 2021.

[17] 'Cryptocurrency Prices, Charts And Market Capitalizations | Coinmarketcap' (*CoinMarketCap*, 2021) <https://coinmarketcap.com/> accessed 25 December 2021.

[18] "Gas and Fees" (*ethereum.org*) <https://ethereum.org/tr/developers/docs/gas/> accessed January 31, 2022

[19] "DAPP Statistics" (*State of the DApps - DApp Statistics*) <https://www.stateofthedapps.com/stats/platform/ethereum,> accessed January 31, 2022

to able to create blockchain services on it. In this context, it is worthwhile to consider that choosing blockchain, which also provides smart contract infrastructure would be better and to have wider service options for non-governmental organizations.

2- Solana

Solana is a project which has been launched with the claim of solving Ethereum's trilemma, like decentralization, security, and scalability. Ethereum is the leader Dapp blockchain platform with a well decentralized and secure platform. Nevertheless, everything has a price and for Ethereum it is a low speed and high cost of operations. PoS platforms provide faster and cheaper infrastructure. Solana's difference is using PoS and PoH together and providing much faster infrastructure than Ethereum.

3- Polkadot

Polkadot is an interoperable blockchain infrastructure that empowers multiple blockchains to interact with each one of them, with the purpose of decentralized web creation for user sovereignty under the control of the users. Decentralized web, which may be achieved by Polkadot in the future can facilitate the transfer of different types of data between any kind of blockchains.It is possible to create decentralized apps, decentralized finance apps, even private blockchain on a public blockchain and support data transfer across permissionless, private, permissioned, public, or open blockchains on Polkadot blockchain. It may be a convenient solution to create a private permissioned blockchain with data transfer to public blockchain for non-governmental organization activities to create transparent transactions.

4- Binance Smart Chain (BSC)

Binance smart chain (BSC) is a decentralized smart contract ecosystem created by Binance cryptocurrency exchange, which is a centralized platform. BSC runs in parallel with the original Binance Chain but enables users to create smart contracts and features compatibility with the Ethereum virtual machine (EVM). The system uses PoS consensus. It is an affordable blockchain, that enables developers to port Ethereum decentralized apps to Binance Smart Chain. The underlying argument in favor of the Binance Smart Chain is that centralized blockchain may be chosen by some non-governmental organizations due to legal compliance reasons.

5- Cardano

Cardano is an open-source blockchain platform, that has been designed decentralized applications and systems, which use proof of stake consensus protocols. Cardano blockchain aims to have the best features of Bitcoin, Ethereum, and Litecoin into one cryptocurrency. These blockchain platforms compete with Ethereum and aim to take over its throne of it.

Cardano already hosts many Dapps, Defis, and NFT projects.

6- Ripple

Ripple is also one of the pioneers of the blockchain platforms, which claims that it is using less energy than Bitcoin blockchain. Ripple uses its own cryptocurrency XRP and is working on an

XRP ledger, permissionless, and decentralized open-source blockchain. The difference between Ethereum and Ripple is Ripple's focus is on a payment network while Ethereum is more on a dapp infrastructure.

Besides these 6 blockchain platforms, there are other blockchain projects such as Avalanches, Hyperledger Public, Stellar, Neo, Tron, and much more. A closer look at the data of these blockchains indicates that the creation of tokens for non-governmental organizations may be built on one of the above blockchains at the moment. Despite the cost, Ethereum still is the most popular choice.

6. An Alternative Way for Non-Governmental Funding

How May it be Possible to Create a Token for Non-Governmental Organizations?

Before discussing token creation for NGOs, it is important to categorize tokens. There has been an inconclusive debate about the legal framework of token creation. There is no clear and official categorization of crypto-assets in use neither in the European Union nor at the international level. Commonly used classification comprises four main categories of crypto-assets such as payment/exchange/currency tokens, investment tokens, utility tokens, and hybrid tokens.[20]

Payment tokens (If these are working on their own blockchain, they also can be called coins) are used as means of exchange for the services/goods from someone else rather than the token issuer and can be used for investment purposes such as in Bitcoin, XRP, or Litecoin. In addition, the new term of stable coins as USDT (Tether) is used for the tokens typically backed by real assets, funds such as any fiat currency (as USD), government bonds, by other crypto-assets, or algorithmic combination of all of the different assets to stabilize the high volatility in the value of the tokens/coins. These have been categorized as a payment tokens.

The second option is the investment tokens, which enable owners to hold rights related to companies or projects such as ownership-related rights, dividend expectations, capital raise rights, etc. This category mostly is regulated under the security laws of the respective countries.

The third category is utility tokens, which carry out two main functions as enabling access to a specific existing or prospective service or good as vouchers or reward purpose for validation and recording of the transactions on the distributed ledgers such as on proof of stake mechanism. And the last category has been called hybrid tokens, which have featured under all these three categories.

Besides this categorization, today's blockchain ecosystem also describes tokens/coins under their business promise. There are exchange tokens/coins such as Binance Coin, decentralized exchange tokens (DEX) such as Uniswap, lending tokens such as Aave, layer 2 tokens such as Matic, cross-chain tokens such as Atom, Web 3 tokens such as Link, NFT tokens such as Sand, insurance tokens such as Sure, Gamefi Tokens (combination of gaming and decentralized

[20] For instance, "EBA Report on Crypto Assets – Europa <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/2545547/67493daa-85a8-4429-aa91-e9a5ed880684/EBA%20Report%20on%20crypto%20assets.pdf> accessed January 31, 2022

finance) such as AXS, stable coins such as Tether and Memes Tokens (for a joke or maybe serious project too) such as DogeCoin.[21]

Unregulated crypto assets contain risks for consumer and investor protection risks as limited access to adequate information about the project, risk of losses from fraudulent and deceptive activities, and operation risks due to service providers such as hacker attacks, software errors, non-transparent fees, etc.[22]

The EU Markets in Financial Instruments Directive (MiFID II) describes the scope of the financial instruments, which are equities, commodities, debt instruments, futures and options, exchange-traded funds, and currencies.[23]

In case of qualification of any crypto-asset/token/coin as a financial instrument under the (MiFID II), this token/coin issuer is more likely to have the obligation of complying with the full set of European Union financial rules, which are the Prospectus Regulation, the Transparency Directive (TD), the Market Abuse Regulation (MAR), the Short Selling Regulation (SSR), the Central Securities Depositories Regulation (CSDR) and the Settlement Finality Directive (SFD).[24]

There are other regulations for some service providers such as cryptocurrency wallet providers and cryptocurrency exchanges while for coin/token issuers must comply with anti-money laundering (AML) and countering the financing of terrorism (CFT) or know your client (KYC) regulations may be applied for different crypto-currency related services.

In this context, the creation of tokens for non-governmental organizations should avoid complex legal obligations due to their efficiency. Since non-governmental organizations are not able to issue any security in different legislations due to general non-profit logic behind their foundation purpose, much of the current debate revolves around the possibility of creating memberships or promising based on the income of non-governmental organizations such as real estate incomes or dividend incomes from some private company shares, which has been donated to the organizations.

Nevertheless, in some jurisdictions, it would be possible to borrow money and issue in exchange issue notes, bonds, and other pieces of evidence of indebtedness under the falling security definition. Along similar lines, Samuels argues that it would be defined as a security in case of creation of membership in the example of golf, swimming club to enjoy all of the facilities and benefits of membership under the membership fee and enable members to redeem their shares or membership, then-current share or membership price, or book value, either of

[21] To see more coins/tokens under these categories: "Cryptocurrency Rating, Bitcoin Rating, Ethereum Rating, Defi Rating" (*TokenInsight*) <https://tokeninsight.com/> accessed November 31, 2021

[22] Commission Staff Working Document Impact Assessment Accompanying the Document Proposal for a Regulation of the European Parliament and the Council on a pilot regime for market infrastructures based on distributed ledger technology, European Commission, Brussels, 24.9.2020, P: 15-17 <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=SWD%3A2020%3A201%3AFIN#footnote21> accessed November 31, 2021

[23] Directive 2014/65/Eu Of The European Parliament And Of The Council of 15 May 2014 On Markets in Financial Instruments And Amending Directive 2002/92/Ec And Directive 2011/61/Eu, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0065> accessed October 31, 2021

[24] Id.

which may be higher or lower than their purchase price.[25] He argues this example under the New Hampshire and American Security Laws. As Samuels discussed here, the creation of security options through investment tokens for non-governmental organizations would be also an interesting discussion.

Non-governmental organizations may create lending tokens as Aave. Lending tokens work as users deposit funds they wish to lend at the system, which is then collected into a pool and borrowers may then draw from those pools when they take out a loan and also these tokens can be traded or transferred as a lender wishes.[26] With a lending coin, users can claim quick loans and payback to the pool with interest, and non-governmental organizations may get an alternative channel of funding. The legal frame of this lending operation lies at the heart of the discussion that it will depend on where this non-governmental organization is located and for what purpose borrowers can use this loan.

This paper is concerned with the issue of new tokens/coins for NGOs. In this respect demand of the NGO plays a significant role. If NGOs have focused on monetary contributions rather than creating a social network (as golf club example above) then payment coins would be sufficient. Tokenization may attract different sources of income while donators can follow up their donations where it has been spent to which purpose. In case of monetary funding by NGOs to individual donees, they may have personal cryptocurrency wallets and the donator can follow up his/her donation until the end donee account while the end donee id is confidential through hash technology. In addition, relief payments can be designed to be spent on particular purposes such as food, medical expenses, transportation purchases. Then these providers may get a cryptocurrency wallet as well and NGOs can track relief payment whether it has been spent correctly or not. In the example, one NGO may create a campaign to get donations for the help of certain sicknesses in certain regions and ask for a donation.

Donators can contribute to the campaign through cryptocurrency purchase (Purchasing NGO payment token from any exchange or directly from the NGO) either with fiat currency or swap with any other particular cryptocurrency and the NGO can transfer this particular donation to the donee's account and then follow up until donee uses this donation on medical expenses at particular hospitals, pharmacies, etc. It brings several advantages as donations are more transparent while donations reach the correct hands under designed conditions. Another possibility may be the creation of utility tokens that can be used for designed purposes besides payment purposes. There should be careful descriptions to avoid security regulations. Today as we will check some examples, many NGOs offer utility tokens.

In the following section, I will discuss potential implementations of Blockchain to the NGO operations besides token creation.

7. Potential Implementation of the Blockchain for NGO Operations

[25] Samuels Director RA, "Financing of Not-for-Profit Organizations and Securities Laws" (*McLane Middleton*October 24, 2021) <https://www.mclane.com/insights/financing-of-not-for-profit-organizations-and-securities-laws/> accessed January 31, 2022

[26] "What Is AAVE?: AAVE Crypto" (*Kraken*) <https://www.kraken.com/tr-tr/learn/what-is-aave-lend> accessed January 31, 2022

Blockchain is a technology that enables parties to proceed with any transactions without the need for mutual trust with its immutability. In addition, timestamp technology, instant transactions, different transparency options while confidentiality is important to enabling users to create a wider scope of services.We can check existing business models are already in use. The first case example is NgoExchange, which is an exchange project, that utilizes smart contracts, and real-time funds traceability of donations, expenses, or contracts with suppliers, avoiding the possibility of fraud/corruption and simplifying donor/foundation compliance regulation.[27] According to their findings just in the US the Non-profit sector has $ 2.2 Trillion revenue[28] while $53 billion is spent on financial services [29] and they claim that their exchange can save by reducing fees from 3% to 0.15% from the revenue.

The Bitgive Foundation and its donation platform for non-profit organizations, Givetrack claim to provide transparency and accountability to donors by sharing financial information and direct project results in real-time with lower fees, faster transactions, precise tracking of donor funds from beginning to end, and removal of misuse of funds.[30]

Commit Good is another platform that has stakeholders as a charity, charity coordinator, donor, volunteer, and NFT creator. The System supports NFT creators to publish their NFTs on the platform for charitable projects and create an income with their $GOOD token while some percentage goes to charity. The system also awards volunteers with a $GOOD token. On the website, it has been indicated several times that the $Good token is not a security, just a utility token that can be used only on the Commit Good platform and is not intended to be used as an investment.[31]

One other example, Disperse was founded to enable the aid industry to move donations around the globe for the greatest impact and to address four key problems of the aid industry namely transparency, speed, efficiency, and mismanagement.[32]

The company, Aid: tech has developed several blockchain implementation case studies for NGOs. One of the examples was the project to combat maternal deaths. The company has developed a blockchain infrastructure for PharmAccess Foundation. The system provides a digital ID that links their newborns' data to mothers. The personal medical profile of mother and child is automatically recorded with every visit they make and every treatment they receive. Hence there is a lifelong and irrefutable connection between the mother and child to avoid any missed treatments. With blockchain, the health data of the parties, which is sensitive data according to GDPR is stored safely and in an immutable way while the medical supply chain has complete transparency and stakeholders can see how funding is being utilized, with the details on supplies, equipment, or treatment.[33]

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[27] NgoExchange, Blockchain for Non Profits <https://www.tenzingstartup.com/inv_deck_ex.pdf> accessed January 31, 2022

[28] The Nonprofit Sector in Brief (Center for Nonprofits 2015) rep

[29] Based on research findings that 80% of nonprofits' revenue incurs 3% finance fees, page 3,<https://www.tenzingstartup.com/inv_deck_ex.pdf> accessed January 31, 2022

[30] BitGive®@BitGiveOrg·01.25.22 Our amazing NGO partner @f_forough was featured in @BusinessInsider and explained how and others, "Revolutionizing Global Philanthropy" (*BitGive Foundation*January 1, 1970) <https://www.bitgivefoundation.org/> accessed January 31, 2022

[31] Commit Good White Paper - Charity on the Blockchain" <https://commitgood.com/docs/commit-good-white-paper.pdf> accessed January 31, 2022

[32] Currion P, Östlund N and Joakim B, "On the Right Track Lessons Learned from Launching and Running a Financial Technology Startup in the Aid Industry, 2016-2020" (November 1, 2020)

[33] "Tech - Digital Identity for Finance" (*AID*) <https://www.aid.technology/> accessed January 31, 2022

Blockchain can be executed automatically during disasters. During the disaster, it becomes harder to utilize public reliefs due to procedures and complexity. In this case study, blockchain technology was deployed for the U.S. Department of Homeland Security (DHS) and The Federal Emergency Management Agency (FEMA) for disaster relief and forecast-based financing. In the event that a defined disaster occurs, a pre-coded smart contract based on the blockchain will execute pre-determined conditions to the predetermined population group. Digital assets are automatically distributed without any delay. With smart contracts, stakeholders access complete and permanent real-time records of all assets that have been distributed to the determined groups and this data can be used for future planning and analysis.[34]

The decentralization ecosystem of blockchain can offer decentralized philanthropy, which connects donees and donators without any NGO channel. It is a different concept, which may be discussed in further research.

8. Conclusion:

NGOs are becoming more professional and international day by day and their complexity on their operations needs better or alternative technology infrastructures. Blockchain is still a progressive technology, which can offer win-win services for the NGO sector. It is important to know technology before implementing any operations while the legal frame must be shaped carefully to avoid any problem. As we discussed in this paper several blockchains can be used for NGO activities. Permissioned private blockchains would be the first point to start NGO operations while utility token creation is launched to get extra funding sources for NGO activities.

In the near future, the main motivation of the Blockchain ecosystem changes to a decentralized universe, which is dominated by stakeholders, not by any central institute. Creation of decentralized app and decentralized finance project, work as an NGO to utilize its services without the need of any third party would be the future for the NGOs. During the Covid-19 pandemic, some NGOs working in the health sector have been criticized for becoming late to take necessary measures in time while central organizations are challenged with time and inefficiency. The creation of smart contract-based NGO facilities may work better, faster, and in a more transparent fashion than many NGOs today. What we need to do is to follow up on the advantages of the technology to contribute to society more effectively

[34] "Aid:Tech: Disaster Relief" (*Aid.technology*) <https://www.aid.technology/disaster-relief> accessed January 31, 2022