Agpaytech's Research 21st March 2022

Africa CBDC Series

The Paradigm Shift of Digital Currency (CBDC) & Its Technology Providers

Keywords:

Technology Service Providers, Digital Currency, CBDC.

Report Summary

Over 87 countries are exploring a CBDC.

9 countries have now fully launched a digital currency.

14 countries, including China and South Korea, are now piloting their CBDCs and preparing a possible full launch.

The latest cross-border payment test is Project Dunbar – a partnership between South Africa, Singapore, Malaysia, and Australia. The United States is the furthest behind the developed countries preparing to launch CBDC. In Africa, only Nigeria has launched its eNaira CBDC, while Ghana partnered G+D to pilot its eCedi.

Contents

Report Summary	1
Purpose and Methodology	3
Introduction	4
CBDC status in Africa	5
Africa countries yet to announce CBDC	8
CBDC Status in the Asia Continent	9
Latin America and the Caribbean (LAC)	13
CBDC Status in Europe	16
CBDC Status of Developed Countries	18
CBDC Technology Service Providers	20
Conclusion	23
References	24

Purpose and Methodology

Purpose

This paper provides an overview of the CBDC status by regions worldwide. The report highlights country's CBDC name, year started, current status, either whole or retail and the technology service providers.

Methodology

Agpaytech Research deeply compares countries digital currencies progress from multiple websites including the Atlantic Council, CDBD tracker, Central Banks Website, BIS papers and technology companies official pages. Sometimes, official emails are sent to some central banks for digital currency news confirmation. The researchers then compares and verified each countries CBDC status from all the availale press release and websites in order to provide the most recent progress across the world.

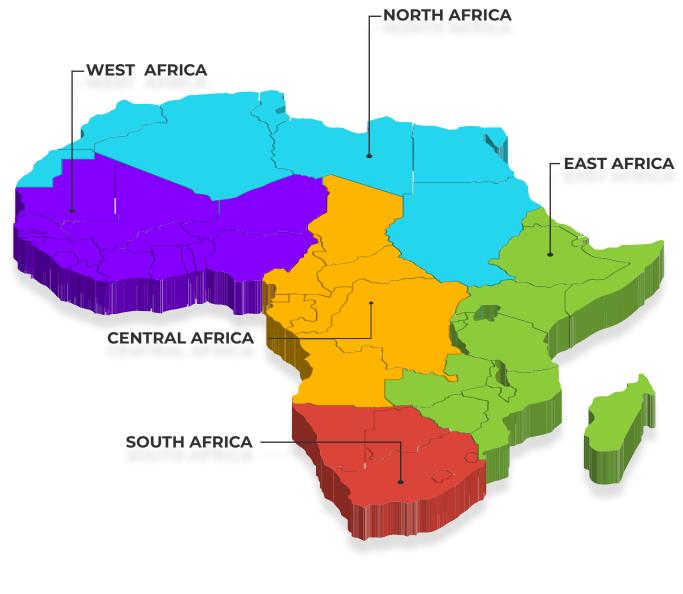
Introduction

The central bank digital currency (CBDC) could have important implications for the worldwide banking and payment industry. The emergency of CBDC does not indeed lead to disconnection from commercial banks to retain market power in the deposit market. The CBDC helps discipline the market power of banks. Several countries have launched their own central bank digital currency across the globe, while many areresearching the architectural design choice of their CBDC and its potential consequences on the financial industry.





Regions in Africa



African Population	Over 1.37 billion
Number of Countires	54 countries

CBDC status in Africa

Comparative studies from central banks websites and CBDC tracker. com revealed the status of some African countries that announced their interest in digital currency controlled by their respective central banks. Currently, about thirteen (13) countries in Africa have reported their plan to use digital currency, according to a comparative study by Agpaytech Research. This translates that 24.1% have decided to issue CBDC. Out of the thirteen countries whose CBDC status is known, only two countries have revealed their technology partners; Nigeria partneredBitt Inc., whereas Ghana contractedGiesecke+Devrient (G+D). However. forty-one (41) countries have not yet announced their interest in the CBDC. Table exhibits countries that have 1 announced their CBDC status, years announced, phase of the process, and the partnered technology service providers.



Table 1: CBDC by African Country

SN	CBDC Name	Country	Central Bank	Year started	Status	Whosalele or retail	Technology Provider
1	Egypt CBDC	Egypt	The central bank of Egypt (CBE)	2018	Research	Retail	N/A
2	eCedi	Ghana	The Bank of Ghana	2021	Pilot	Retail	(G+D) Filia
3	Kenya CBDC	Kenya	Central Bank of Kenya	2020	Research	Retail	N/A
4	e-Ariary	Madagascar	Banky Foiben'i Madagasikara	2021	Research	Retail	N/A
5	Mauritius CBDC	Mauritius	The Bank of Mauritius	2019	Research	Retail	N/A
6	Morocco CBDC	Morocco	Bank-Al- Maghrib	2021	Research	Retail	N/A
7	Namibia CBDC	Namibia	Bank of Namibia	2021	Research	Retail	N/A
8	e-Naira	Nigeria	Central Bank of Nigeria	2021	Launched	Retail	Bitt Inc. Hyperledger Fabric
9	Rwanda CBDC	Rwanda	The National Bank of Rwanda	2019	Research	Retail, Wholesale	N/A
10	South Africa CBDC	South Africa	South African Reserve Bank	2021	Research	Retail	N/A
11	Tanzania CBDC	Tanzania	Bank of Tanzania	2021	Research	Retail	N/A
12	Tunisia CBDC	Tunisia	Central Bank of Tunisia	2019	Research	Retail	N/A
13	Zimbabwe CBDC	Zimbabwe	Reserve Bank of Zimbabwe	2021	Research	Retail	N/A

Source: CBDC tracker.com

Africa countries yet to announce CBDC

Although many countries are piloting, researching, or launching their digital currencies, most countries are yet to make such decisions. Countries that are yet to make CBDC pronouncements constitute 75.9% of African countries.

Moreover, the CFA franc is the currency of eight independent states in West Africa. France maintains the position that the CFA franc is an 'African currency', existing only as a support to Africans, who retain their 'sovereignty'. Critics point out that the currency is controlled by the French treasury, and in turn African countries channel more money to France than they receive in aid and have no sovereignty over their monetary policies (Aubin, 2020)

SN	Country	Currency	ISO-4217	CBDC announced
1	Algeria	Algerian dinar	DZD	Not Yet
2	Angola	Angolan kwanza	AOA	Not Yet
3	Benin	West African CFA franc	XOF	Not Yet
4	Botswana	Botswana pula	BWP	Not Yet
5	Burkina Faso	West African CFA franc	XOF	Not Yet
6	Burundi	Burundi franc	BIF	Not Yet
7	Cabo Verde	Cabo Verdean escudo	CVE	Not Yet
8	Cameroon	Central African CFA franc	XAF	Not Yet
9	Central African Republic	Central African CFA franc	XAF	Not Yet
10	Chad	Central African CFA franc	XAF	Not Yet
11	Comoros	Comorian franc	KMF	Not Yet
12	Congo, Democratic Republic	Congolese franc	CDF	Not Yet
13	Congo, the Republic	Central African CFA franc	XAF	Not Yet
14	Cote d'Ivoire	West African CFA franc	XOF	Not Yet
15	Djibouti	Djiboutian franc	DJF	Not Yet
16	Equatorial Guinea	Central African CFA franc	XAF	Not Yet
17	Eritrea	Eritrean nakfa	ERN	Not Yet
18	Eswatini	Swazi lilangeni	SZL	Not Yet
19	Ethiopia	Ethiopian birr	ETB	Not Yet
20	Gabon	Central African CFA franc	XAF	Not Yet
21	Gambia	Gambian dalasi	GMD	Not Yet
22	Guinea	Guinean franc	GNF	Not Yet
23	Guinea-Bissau	West African CFA franc	XOF	Not Yet
24	Lesotho	Lesotho loti	LSL	Not Yet
25	Liberia	Liberian dollar	LRD	Not Yet
26	Libya	Libyan dinar	LYD	Not Yet
27	Malawi	Malawian kwacha	MWK	Not Yet
28	Mali	West African CFA franc	XOF	Not Yet
29	Mauritania	Mauritanian ouguiya	MRU	Not Yet
30	Mozambique	Mozambican metical	MZN	Not Yet
31	Niger	West African CFA franc	XOF	Not Yet

Table 2: African countries yet to announce CBDC

SN	Country	Currency	ISO-4217	CBDC announced
32	Sao Tome and Principe	Sao Tome and Principe dobra	STN	Not Yet
33	Senegal	West African CFA franc	XOF	Not Yet
34	Seychelles	Seychellois rupee	SCR	Not Yet
35	Sierra Leone	Sierra Leonean leone	SLL	Not Yet
36	Somalia	Somali shilling	SOS	Not Yet
37	South Sudan	South Sudanese pound	SSP	Not Yet
38	Sudan	Sudanese pound	SDG	Not Yet
39	Тодо	West African CFA franc	XOF	Not Yet
40	Uganda	Ugandan shilling	UGX	Not Yet
41	Zambia	Zambian kwacha	ZMW	Not Yet

Source: CBDC tracker.com

Map of Asia



Asian population	4.62 billion
Number of countries	51 countries



CBDC Status in the Asia Continent

In the Asia continent, China was the first country to pilot its own digital currency called e-CNY.

Saudi Arabian Monetary Authority is piloting wholesale CBDC known as Aber, which is being championed by IBM technology. Aber aimed to create a digital currency that can be used between the two central banks of each nation and limited banks that are hand-selected by the central banks.

Table 3: CBDC status in the Asia Continent

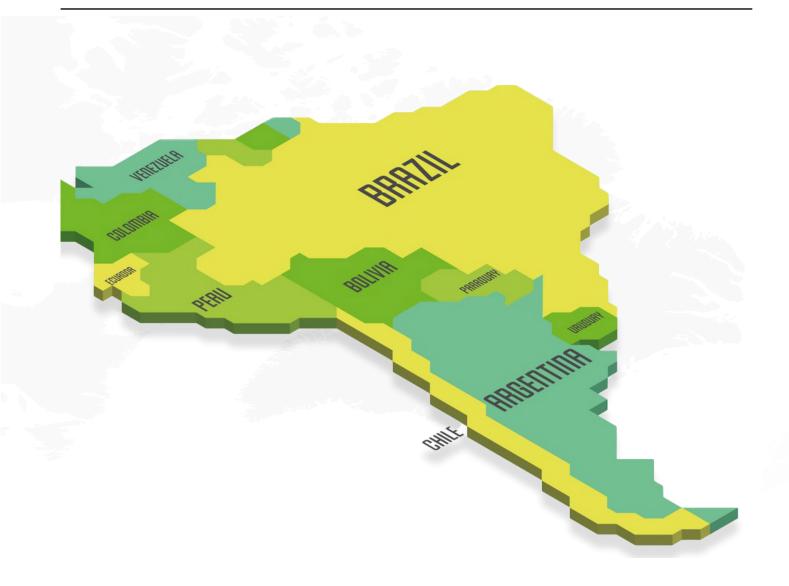
	1						
SN	Digital Currency	Country	Central Bank(s)	Year started	Status	Wholesale or retail	Technology Provider
1	Digital Dinar	Bahrain	Central Bank of Bahrain (CBB)	2018	Research	Retail	N/A
2	e-CNY	China	People's Bank of China	2017	Pilot	Retail	Feitian Technologies
3	Georgia CBDC	Georgia	National Bank of Georgia	2021	Research	Retail	N/A
4	Hong Kong CBDC	Hong Kong	Hong Kong Monetary Authority	2021	Research	Retail	N/A
5	LionRock	Hong Kong	Hong Kong Monetary Authority	2019	Proof of Concept	Wholesale	R3 Corda, ConsenSys
6	Digital Rupee	India	RBI	2021	Research	Retail	N/A
7	Digital rupiah	Indonesia	Bank of Indonesia	2018	Research	Retail	N/A
8	Digital Rial	Iran	Central Bank of Iran	2021	Proof of Concept	Retail	N/A
9	e-shekel	Israel	Bank of Israel	2017	Research	Retail, Wholesale	N/A
10	Jordan CBDC	Jordan	Central Bank of Jordan	2022	Research	Retail	N/A
11	Digital Tenge	Kazakhstan	National Bank of Kazakhstan	2021	Proof of Concept	Retail	R3 Corda
12	Kuwait CBDC	Kuwait	Central Bank of Kuwait	2019	Research	Retail	N/A
13	Laos CBDC	Laos	Bank of the Lao P.D.R	2021	Research	Retail	Soramitsu
14	Lebanon	Lebanon	Lebanon's central bank	2020	Research	Retail	N/A

Source: CBDC tracker & Atlantic council

	Digital	Country	Central	Year	Status	Wholesale	Technology
SN	Currency		Bank(s)	started		or retail	Provider
15	Macau CBDC	Macau	Macau Government	2021	Research	Retail	N/A
16	E-ringgit	Malaysia	Bank Negara Malaysia	2022	Proof of Concept	Retail	Feitian Technologies
17	Pakistan CBDC	Pakistan	State Bank of Pakistan	2019	Research	Retail	N/A
18	Palestine CBDC	Palestine	Palestine Monetary Authority	2017	Research	Retail	N/A
19	Philippines CBDC	Philippines	The Bangko Sentral ng Pilipinas	2021	Research	Wholesale	N/A
20	Aber	Saudi Arabia	Saudi Arabian Monetary Authority	2019	Pilot	Wholesale	IBM
21	Project Orchid	Singapore	Monetary Authority of Singapore	2021	Research	Retail	N/A
22	South Korea CBDC	South Korea	Bank of Korea	2020	Pilot	Retail	N/A
23	Thailand CBDC	Thailand	Bank of Thailand	2021	Proof of Concept	Retail	Giesecke+ Devrient (G+D)
24	Ithanon- LionRock	Thailand	Bank of Thailand		Proof of Concept	Wholesale	R3 Corda, ConsenSys
25	Digital lira	Turkey	Central Bank of the Republic of Turkey	2021	Proof of Concept	Retail	N/A
26	United Arab Emirates CBDC	United Arab Emirates	United Arab Emirates Central Bank		Research	Retail	N/A
27	Aber	United Arab Emirates	United Arab Emirates Central Bank	2019	Pilot	Wholesale	IBM
28	Vietnam CBDC	Vietnam	State Bank of Vietnam		Research	Retail	N/A

Source: CBDC tracker & Atlantic council

Map of South America



Population	420 million
Number of countries	12 countries

Latin America and the Caribbean (LAC)

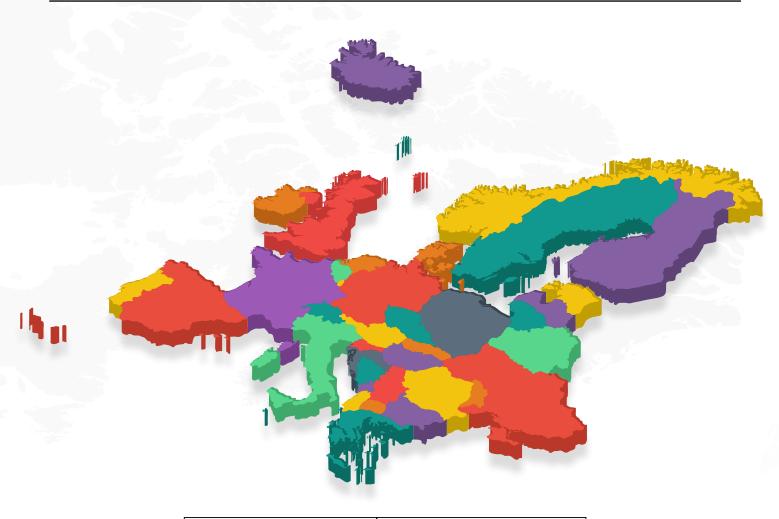
The interest of LAC central banks in CBDCs, like that of central banks in other emerging markets and developing economies (EMDEs), is around promoting greater financial inclusion, efficiency, and safety of the payments system. LAC's interest in CBDC development focuses on innovation, fast payment systems, government effectiveness, financial account ownership, economic development, and the public's interest in CBDCs.

Table 4: CBDC status of Latin America and Caribbean countries

SN	Digital Currency	Country	Central Bank(s)	Year started	Status	Wholesale or retail	Technology Provider
1	Sand Dollar	Bahamas	Central Bank of Bahamas	2017	Launched	Retail	NZIA
2	Digital Real	Brazil	Central Bank of Brazil	2017	Research	Retail	R3 Corda
3	Chile CBDC	Chile	Central Bank of Chile	2019	Research	Retail	N/A
4	Dinero electronico	Ecuador	Central Bank of Ecuador	2017	Cancelled	Retail	Mobile Money
5	iQuetzal	Guatemala	Bank of Guatemala	2021	Research	Wholesale	N/A
6	Gourde Digitale	Haiti	La Banque de la Republique d'Haiti	2020	Research	Retail	N/A
7	Haiti CBDC	Haiti	La Banque de la Republique d'Haiti	2019	Cancelled	Retail, Wholesale	Bitt Inc.
8	Honduras CBDC	Honduras	Central Bank of Honduras	2021	Research	Retail	N/A
9	Jamaica CBDC	Jamaica	Bank of Jamaica	2021	Pilot	Retail	eCurrency Mint
10	Mexico CBDC	Mexico	Banco de México	2021	Research	Retail	N/A
11	Peru CBDC	Peru	Central Reserve Bank of Peru	2021	Research	Retail	N/A
12	Trinidad CBDC	Trinidad	Central Bank of Trinidad	2021	Research	Retail	N/A
13	Tobago CBDC	Tobago	Central Bank of Tobago	2021	Research	Retail	N/A
14	e-Peso	Uruguay	Central Bank of Uruguay	2014	Pilot	Retail	Roberto Giori Company
15	DCash	Eastern Caribbean	Eastern Caribbean Central Bank (ECCB)	2017	Launched	Retail	Bitt Inc.

Source: CBDC tracker & Atlantic council

Map of Europe



Population	734.99 million
Number of countries	52 countries

Agpaytech

CBDC Status in Europe

The Governing Council of the European Central Bank (ECB) has launched the investigation phase of a digital euro project. ECB is looking at the prototyping and conceptual work. Besides, many countries in Europe are researching their digital currencies. According to Atlantic Council Report (2022), 9 countries have now fully launched a digital currency. Nigeria is the latest country to launch a CBDC, the e-Naira, the first outside the Caribbean.

SN	Digital Currency	Country	Central Bank(s)	Year started	Status	Wholesale or retail	Technology Provider
1	DELPHI	Austria	Oesterreichische Nationalbank	2021	Research	Wholesale	N/A
2	Czec Republic CBDC	Czech Republic	Czech National Bank	2021	Research	Retail	N/A
3	E-kroner	Denmark	The Central Bank of Denmark	2016	Cancelled	Retail	N/A
4	Avant	Finland	Bank of Finland	1993	Cancelled	Retail	Toimiraha
5	France CBDC	France	Banque de France	2019	Research	Wholesale	IZNES
6	Hungary CBDC	Hungary	Central Bank of Hungary (MNB)	2021	Proof of concept	Retail	N/A
7	Rafkrona	lceland	Central Bank of Iceland	2018	Research	Retail	N/A
8	Norway CBDC	Norway	Norges Bank	2019	Research	Retail	N/A
9	Digital zloty	Poland	Narodowy Bank Polski (NBP)	2017	Research	Retail	N/A
10	Digital Rouble	Russian Federation	Bank of Russia	2021	Proof of concept	Retail	N/A
11	e-krona	Sweden	Sveriges Riksbank	2017	Proof of concept	Retail	R3 Corda
12	Project Helvetia	Switzerland	Swiss National Bank	2020	Research	Wholesale	N/A
13	e-franc	Switzerland	Swiss National Bank	2019	Research	Retail	N/A
14	e-hryvnia	Ukraine	National Bank of Ukraine	2017	Proof of concept	Retail	Stellar

Source: CBDC tracker & Atlantic council

CBDC Status of Developed Countries

Agpaytech Research Team explores developed country's CBDC status since most countries are looking up to them. Table 6 exhibits that the U.K., USA, Canada, Australia are all at the research stage of CBDC.

Table 6: CBDC status of Developed countries

SN	Digital Currency	Country	Central Bank(s)	Year started	Status	Wholesale or retail	Technology Provider
1	Project Atom	Australia	Reserve Bank of Australia	2020	Proof of concept	Wholesale	ConsenSys Software
2	Australia CBDC	Australia	Reserve Bank of Australia	2021	Research	Retail	N/A
3	E Dollar	Canada	Bank of Canada	2020	Research	Retail	N/A
4	Jasper	Canada	Bank of Canada	2016	Pilot	Wholesale	R3 Corda
5	Digital yen	Japan	Bank of Japan		Proof of concept	Retail	N/A
6	Stella	Japan	Bank of Japan	2016	Research	Wholesale	R3 Corda
7	New Zealand CBDC	New Zealand	Reserve Bank of New Zealand	2021	Research	Retail	N/A
8	United Kingdom CBDC	United Kingdom	Bank of England	2018	Research	Wholesale	N/A
9	RSCoin	United Kingdom	Bank of England	2015	Research	Retail	N/A
10	Project Hamilton	United States of America	U.S. Federal Reserve	2021	Research	N/A	N/A

Source: CBDC tracker & Atlantic council



CBDC Technology Service Providers

Technology service providers offer technology services, often Softwareas-a-Service (SaaS), to specific market segments or industries serving hundreds of thousands or even millions of customers. CBDC **Technology** provider means any person or entity which designs, manufactures, builds or rebuilds, programs, installs, modifies, distributes, or supplies payment systems for or on behalf of the central banks. Despite central banks considering CBDC rollout, few countries have provided detailed information on their CBDC technology providers. For instance, Nigeria partnered with Bitt Inc. to issue its eNaira, whereas Ghana collaborated with Giesecke+Devrient (G+D) to pilot eCedi. The South African Reserve Bank (SARB) has embarked on a study investigating the feasibility, desirability, and appropriateness of a central bank digital currency (CBDC) as electronic legal tender for general-purpose retail use, complementary to cash. SARB argued that while the CBDC feasibility study is different from Project Khokha, which focuses on the settlement of highvalue transactions between commercial banks and other stakeholders at the wholesale level, it is expected that the two studies will result in better policy alignment and coordination.



Table 7: CBDC Technology Service Providers

SN	Technology Provide	About Company	CBDC	Countries
1	Feitian Technologies	FEI TIAN provides robust authentication solutions to fit financial, healthcare, government, enterprise, payment, and more needs. Backed with a solid and experienced R&D team, FEI TIAN can quickly react to the industry trends and market requests, with easy integration at a competitive cost.	e-CNY	China
2		Corda is a next-gen blockchain platform that delivers privacy, scalability, and security, making it the DLT	LionRock	Hong Kong
	R3 Corda	platform of choice for financial services and beyond.	Digital Tenge	Kazakhstan
3	SORAMITSUis a global technology company delivering blockchain-based solutions for enterprises, universities, and governments. From the creation of domestic and cross-border payment systems to the development of our decentralized autonomous economy, our projects and use case studies represent the next generation of fintech.		Laos CBDC	Laos
4	Ground X	Ground X Ground X is the blockchain subsidiary of Kakao, Korea's largest social network.		South Korea
5	Giesecke+Devrient (G+D)	G+D is a German-based company that develops security technologies with passion and precision in four major playing fields: enabling secure payment, providing trusted connectivity, safeguarding identities, and protecting digital infrastructures.	Thailand Retail CBDC	Thailand
			eCedi	Ghana
6	ConsenSys	With MetaMask, Infura, and a leading suite of blockchain products, we make it easy to build applications on Ethereum and participate in DeFi, NFTs, DAOs, and the metaverse.	Thailand Wholesale CBDC	Thailand
7	IBM	IBM discovers, designs, and develops advanced information technology and translate that into value for our clients through consulting services.	Aber	United Arab Emirates
8	NZIA	The first of its kind, NZIA's decentralized wireless payment system provides an alternate payment infrastructure for CBDC that augments existing payment networks. o provide broad accessibility and ensure constant availability of CBDC across a nation.	Sand Dollar	Bahamas
			Haiti CBDC	Haiti
9	Bitt. Inc	Bitt Inc. is a leading digital currency expert. The company provides digital currency solutions worldwide for governments, central banks, financial	DCash	Caribbean countries
		institutions, and ecosystem participants.	eNaira	Nigeria

Source: Agpaytech's Research

Table 7: CBDC Technology Service Providers

SN	Technology Provide	About Company	CBDC	Countries
10	eCurrency Mint	eCurrency pioneered Digital Symmetric Core Currency Cryptography (DSC) technology for central banks to issue and distribute Central Bank Digital Currency (CBDC) securely and efficiently.	Jamaica CBDC	Jamaica
11	Iznes	Iznes is the pan-European record-keeping platform for funds, based on cutting-edge blockchain technology developed by SETL and compatible with the various distribution channels.	France CBDC	France
12	Stellar	Ukraine Electronic Hryvnia Pilot Launched by TASCOMBANK and Bitt on Stellar	e-hryvnia	Ukraine

Source: Agpaytech's Research





Conclusion

The report found that few Central Banks in Africa are piloting their CBDC (e.g., Ghana) with only Nigeria that has fully launched its eNaira CBDC. The majority of the Central Banks are in the research phase with limited information on the technology service providers. Besides, many Central Banks have not yet announced their intentions to adopt digital currency, while others carefully observe first movers. The report recommends more opportunities for technology service providers and Central Banks in Africa to interact and design a flexible digital currency based on the specific country's financial system. Agpaytech Ltd is into digital currency and payment technology designs and implementation and could help partner with interested Central Banks.

mtries have

WORD BUSINESS

References

South African Reserve Bank (2021, May 25). SARB commences feasibility study for a general-purpose retail central bank digital currency [Press Release]. https://www.resbank.co.

Ifeanyi, U.J. (2021). What you should know about Bitt Inc, CBN's digital currency partner [online, retrieved 2022, March 1] https://nairametrics.com/

CBDC Tracker (2022). Today's Central Bank Digital Currencies Status [online, retrieved 2022, March 1]. https://cbdctracker.org/

Bank of Ghana (2021, August 11). Bank of Ghana partners with Giesecke+Devrient to pilot first general-purpose Central Bank Digital Currency in Africa. [Press Release]. https://www.bog.gov.gh/news/press-release

Central Bank of Nigeria (2021, August 30). CBN Selects Technical Partner for Digital Currency Project [Press Release]. https://identitymanagementinstitute. org/facing-customer-identity-challenges/

About the Company

Agpaytech is a company pioneering in the Fintech Space with a focused approach on building robust technologies for eCommerce Card Processing Solution for Payment Service Providers (PSPs). Additionally, we provide Compliance and Regulatory Umbrella, Remittance-as-a-Service White-Label Solution, Foreign Exchange, Cross Border Payments, digital currency technology. We have partnered with multiple banks, non-banking financial institutions, and corporate organizations to create a solid service delivery model for them and their customers to ease their international remittances and payments concerns. info@agpaytech.com

AGPAYTECH LTD. 3rd Floor, 86-90 Paul Street, London, EC2A 4NE, UK info@agpaytech.com