World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

EXPERIENCES IN IMPLEMENTING CBDCs

Tursunova Ibodat Xo`jayor qizi
Leading Economist of the Central Bank of the Republic of Uzbekistan, Independent Researcher at Tashkent State University of Economics.
gmail: tursunovaibodat97@gmail.com

Article history:

Received: 10th September 2024
Accepted: 7th October 2024

Abstract:

This article reveals statistical and analytical data on the trends and practices of central bank digital currencies abroad, and describes the risks and potential benefits for Central Asian countries.

Keywords: digital currency, CBDC, global GDP, digital ruble, stablecoins, pilot, foreign reserves, liquidity

INTRODUCTION. The rapid advancement of digital technologies is reshaping global financial systems. Central Bank Digital Currencies (CBDCs), based on blockchain technology, are emerging as transformative tools with significant potential for economic and financial innovation. Many countries, including Uzbekistan, are actively exploring the implementation of their national digital currencies to enhance payment efficiency, financial inclusion, and monetary policy effectiveness.

This article aims to analyze the opportunities and challenges associated with introducing a Central Bank Digital Currency (CBDC) in Uzbekistan. It discusses the technological infrastructure readiness, regulatory frameworks, and public acceptance, while also drawing lessons from international experiences. The study emphasizes how a CBDC can address existing inefficiencies in payment systems and foster economic modernization.

Through a systematic approach, this research evaluates Uzbekistan's preparedness for CBDC adoption, identifies potential obstacles, and proposes practical solutions to mitigate risks. By understanding these dynamics, policymakers can align CBDC strategies with the country's economic priorities, contributing to a more resilient and inclusive financial ecosystem.

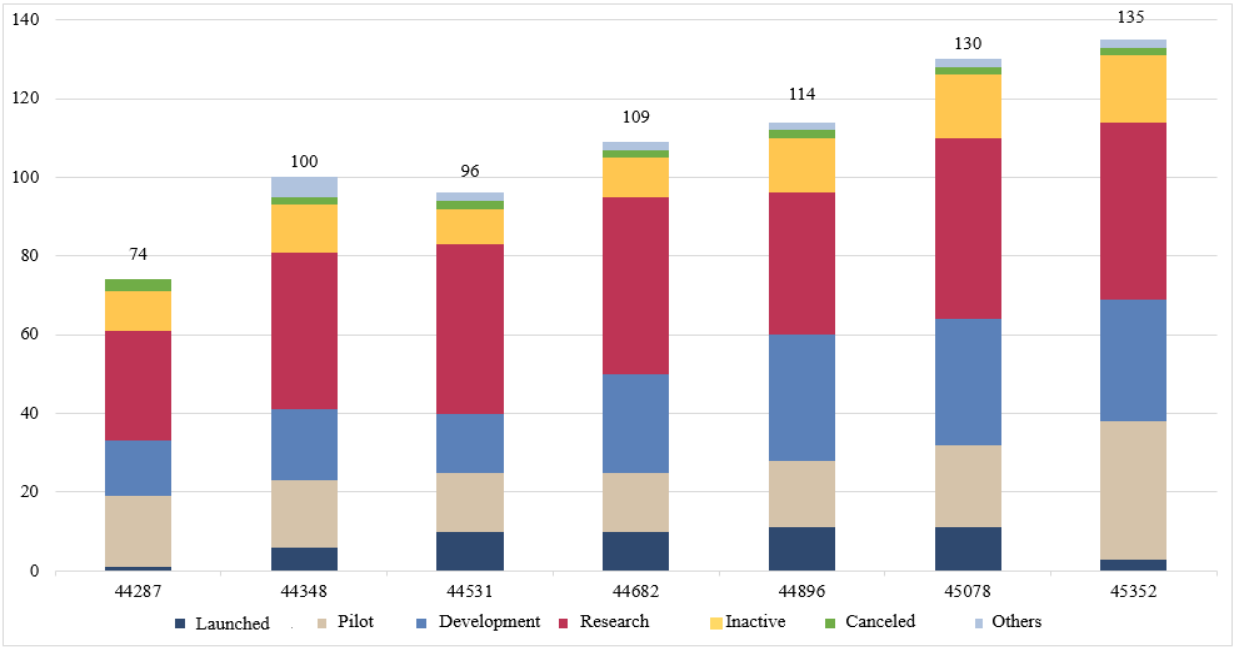
ANALYSIS AND RESULTS. With the advent of blockchain technology, the viability of digital currencies and wallets has been tested for years, and many countries are now exploring the possibility of introducing digital currencies at the state level.

According to the Bank for International Settlements (BIS), while in **2017-2018**, public statements by central banks on digital currencies were **only negative**, by **early 2020, more than 80% of central banks** were engaged in **research and development** in the field of digital currencies.

Today, **135 countries** and currency associations, accounting for **98% of global GDP**, are working on digital currencies (up from **35 in 2020**) (Figure 2), and **by 2030**, **the number of digital currencies implemented** is expected to **reach 24**.

Figure 1. Number and status of CBDCs in the world

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,



Source: Atlantic Council Geoeconomics Center CBDC Tracker

In particular, the number of implemented MBRs decreased by 73% compared to the previous year, from 11 to 3 in 2024: **the Bahamas, Jamaica and Nigeria,** the 8-nation **Eastern Caribbean Monetary Union** suspended "DCash" due to **technical problems** and is developing a new test phase. The European Central Bank is currently in the preparatory phase, conducting practical tests with some transactions being carried out in a controlled environment. The digital euro is also in the 2-year preparatory phase, which will end in 2025. While many central banks are investing heavily in the digital economy, the US Federal Reserve is taking the opposite position. As a result, the European Union risks falling behind India and China and the US dollar gradually losing its dominant role in the global economy.

Although the motives of developed and developing countries are quite different, there is some convergence. With a similar performance for both types of economies, the primary motivation for retail CBDC is domestic payment efficiency, while similarly, the primary driver for wholesale CBDC is cross-border payment efficiency.

Russia

Russia has been working on a digital ruble project since 2020, but has accelerated the program since the outbreak of the war in Ukraine.

The Bank of Russia sees the digital currency as a tool **to combat fraudulent transactions** and a way for **the government to monitor payments made from state budgets to social projects**[1].

The digital ruble is expected to be programmable, meaning the Bank of Russia could control how and where the CBDC is spent. At the end of 2022, two bills were introduced to the State Duma of the Russian Federation that could introduce a new concept - the "digital ruble" - into Russia's payment system.

- Federal Law No. 270838-8 "On Amendments to Certain Legislative Acts of the Russian Federation in Connection with the Introduction of the Digital Ruble".
- The Federal Law No. 270852-8 "On Amendments to Parts One, Two and Three of the Civil Code of the Russian Federation" was submitted to the State Duma of the Russian Federation at the end of 2022. A new concept for the Russian payment system is the "digital ruble".

In July 2023, the President of the country signed the draft law on the digital ruble (entered into force on August 1, 2023). By December 31, 2024, the Central Bank of Russia, in agreement with Rosfinmonitoring, will determine the circle of users of the digital ruble platform, the list of types of transactions and their threshold values. In the same month, the Bank launched a pilot test with 13 banks and a limited group of their clients. 600 consumers in 11 cities have the opportunity to test the CBDC at 30 retail outlets. The

[1] Parliamentary newspaper: Interview with Anatoly Aksakov, Chairman of the State Duma Committee on Financial Markets, 12 July 2023 (in Russian)

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

first stage of the test will also include payments by QR code.

The main provisions reflected in the draft No. 270838-8 are as follows:

The Bank of Russia acts as the operator of the digital ruble platform.

This means that the digital ruble operates exclusively under the control of this bank, including:

- organizing and ensuring the uninterrupted operation of the digital ruble platform;
- adopting regulatory documents containing the rules of the digital ruble platform, i.e. the conditions for access to the platform, requirements for platform participants and users, etc.;
- determining the maximum values of the amount of transactions with digital rubles and the amount of digital ruble balances on digital accounts (wallets);
- determining the procedure for credit institutions to provide their clients with the opportunity to carry out transactions with digital rubles, the list of transactions and the terms;
- determining the tariffs for services provided within the framework of the platform, the amount of fees paid by the operator to participants of the digital ruble platform;

To provide access to digital accounts (wallets) of credit institutions and other persons in cases established by the Federal Law "On the Central Bank of the Russian Federation (Bank of Russia)" (Articles 46, 48) and by the Bank of Russia, as well as to legal entities on a contractual basis;

- has the right to suspend access to the digital ruble platform, access to digital accounts (wallets) in case of violation of the established rules by participants or users of the platform, as well as in cases stipulated by federal laws. In fact, this may mean that all operations may be suspended or even resumed at the request of the relevant state bodies and the Bank of Russia.
- to process personal data on an equal basis with participants of the digital ruble platform;
- to be responsible for the security of digital rubles, the correctness of accounting for information on transactions with digital rubles.

A special concept of a "digital ruble platform", the procedure for organizing and ensuring its operation have been introduced.

The Digital Ruble Platform is an information system through which the operator of the digital ruble platform (the Central Bank of Russia), participants of the digital ruble platform and its users interact to carry out operations with digital rubles in accordance with the legislation of the Russian Federation.

The system is state-owned, and all transfers of digital rubles are carried out only within the framework of this platform.

The list of banks participating in the pilot tests on the website of the Central Bank of the Russian Federation currently includes 12 financial institutions. Another 19 banks have concluded agreements with the Central Bank of the Russian Federation and are currently setting up their systems.

Banks participating in the test of transactions with real digital rubles[2]

№	Full name of the participant of the digital ruble platform	Date of entry into the digital ruble platform
1.	"Alfa-bank" Joint Stock Company	15.08.2023
2.	Joint-Stock Company "Bank DOM.RF"	31.08.2023
3.	Joint-Stock Company "Ingosstrakh Bank"	15.08.2023
4.	VTB Bank (open joint-stock company)	15.08.2023
5.	Gazprombank (joint-stock company)	15.08.2023
6.	Joint-Stock Commercial Bank "AK BARS" (OJSC)	24.08.2023
7.	"MTS-Bank" JSC	15.08.2023
8.	"Promsvyazbank" JSC	15.08.2023
9.	"Sovkombank" JSC	25.08.2023
10.	"Bank Sinara" JSC	24.08.2023
11.	"Transkapitalbank" JSC	31.08.2023

[2] cbr.ru sayti ma`lumotlari

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

This list will be expanded further and will be supplemented by banks that are currently undergoing MFA (interoperability tests) to join the digital ruble platform. Some financial institutions cannot yet join the project, as they need modernization to pass the MFA due to the update of the stands for the new electronic message album.

Participants of the digital ruble platform include:

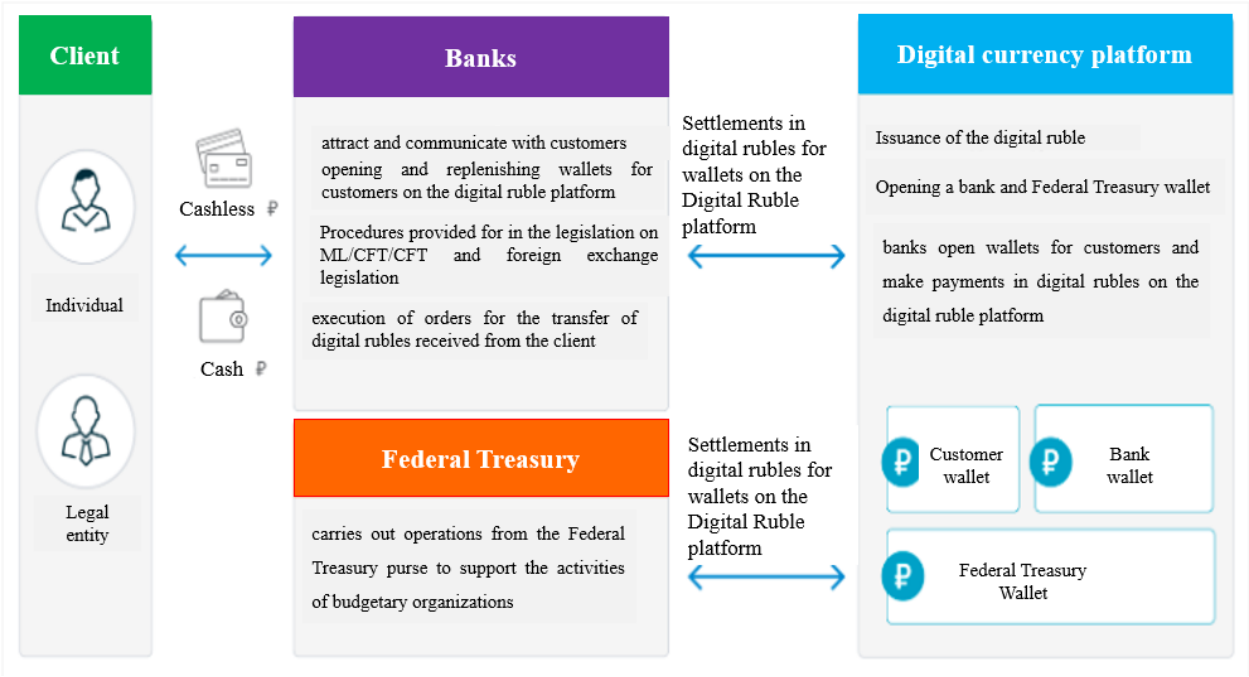
Money transfer operators,

Foreign banks that have a digital account (wallet) opened for transactions with the digital ruble in accordance with the rules of the digital ruble platform are included in the list of participants of the digital ruble platform and provide users with the opportunity to use the digital ruble platform and digital accounts (wallets), as well as the opportunity to carry out transactions with the digital ruble.

Information about participants of the digital ruble platform is included in the list posted on the official website of the Bank of Russia. The functions of a participant of the digital ruble platform may be performed by the Bank of Russia, the Federal Treasury. Users of the Digital Ruble Platform will be individuals, legal entities, individual entrepreneurs, as well as state bodies that meet the requirements established by the Rules of the Digital Ruble Platform and in cases established by Russian legislation.

The debtor's digital account (wallet) has built-in features for making and collecting money transfers denominated in digital rubles, which are taken into account in enforcement proceedings and by customs authorities.

Scheme of the two-tier retail model of the digital ruble



Non-residents will be able to open a digital account (wallet) on the platform.

On the territory of the Russian Federation, non-residents have the right to open bank accounts (deposits) in foreign currency and in Russian currency only with authorized banks, with the exception of opening a digital account (wallet).

Digital accounts (wallets) can be opened for non-residents by the operator of the digital ruble platform. Access to digital accounts (wallets) of non-residents is carried out through participants of the digital ruble platform, which are authorized banks. Non-residents can dispose of digital rubles within the framework of the digital ruble platform in accordance with the established rules of this platform.

However, until other countries issue their own digital currencies and agree on the possibility of converting the digital ruble, settlements with digital rubles outside the Russian Federation will not be possible.

If any foreign bank becomes an authorized participant in the Bank of Russia's digital ruble platform, it can be assumed that digital ruble holders will be able to transfer digital rubles to the corresponding bank outside of Russia, but if conversion into another currency is not provided, these digital rubles will not be able to be effectively used abroad, and their circulation will be limited only to users of this platform and within digital ruble wallets under the control of the Bank of Russia.

Kazakhstan

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

Digital money is a logical continuation of the active digitization of the Kazakh economy. In 2021, the National Bank of the Republic of Kazakhstan launched the "Digital Tenge" pilot project, created with the participation of market representatives, experts and international partners.

In 2022, the Digital Tenge Hub cooperation platform was launched, bringing together all parties interested in the experiment. The platform created conditions for communication, exchange of experiences and joint study of the nuances of introducing digital tenge. At the end of 2022, test trials were conducted with the participation of real participants in the financial market - buyers and suppliers. The test results showed that the use of the digital national currency of the Republic of Kazakhstan does not pose a threat to the current monetary policy and does not threaten the stability of the country's financial sector. Thus, more than 60% of respondents expressed their readiness to use digital tenge in everyday life.

In 2023, the implementation of the project continued. For example, in several schools in Almaty, "digital vouchers" were introduced, which were used in the payment system for students' meals. And second-tier banks issued cards linked to digital accounts using international payment systems. By the way, such cards became a unique product - the first in the world.

It is planned that with the national digital currency it will be possible to carry out the same operations as with cash or money on a card. In other words, users will be able to open accounts, pay for services or goods, and make money transfers. All operations will be carried out through bank and payment system applications. Users will also be able to make payments using NFC and QR codes.

The national digital currency has several differences:

Cryptocurrency is famous for the fact that it does not have an issuer, that is, it is not actually issued by any organization. Digital tenge has its own issuer - the National Bank.

Digital tenge is not subject to mining, that is, cryptocurrency mining. Mining is decentralized and anyone can participate in it. There are rules for dealing with digital tenge, the implementation of which is monitored by the National Bank.

The digital tenge is positioned as an official means of payment. It has a rate equal to the national currency in a ratio of 1 to 1. Therefore, the electronic currency of Kazakhstan can be exchanged.

To work with digital currency, you will not need a new payment infrastructure - the infrastructure that is already working smoothly in the Republic of Kazakhstan will be used. Thus, users will be able to carry out transactions with digital tenge through applications of secondary banks. For example, you can buy digital currency for money on the card or perform the reverse operation, that is, convert tenge into a non-cash form.

It is planned that the possibility of using the electronic national currency and using all its functions will become available starting in 2025. The pilot project will end in 2024: by the end of the year, specialists will have the necessary data for the full implementation of the digital tenge.

Kazakhstan, like many other countries in the world, considers electronic currency to be the money of the future. One of their main features is the acceleration of mutual settlements. Today, even when carrying out cashless transactions, payments take some time - the use of digital tenge eliminates this drawback. So, the country can keep up with the rapid pace of development of the modern world.

Israel

In September 2023, the Bank of Israel (BoI), the Hong Kong SAR, and the BIS published a report on the Sela project, a joint retail CBDC (rCBDC) experiment by the central banks of Israel (BoI), Hong Kong SAR, and the BIS.

The project demonstrated the feasibility of an rCBDC ecosystem that combines availability, competition, and preventive cybersecurity while maintaining the core benefits of physical cash. Sela also tested a new intermediary, the Access Enabler, that reduces liquidity and settlement risks and operational costs.

The design of the Sela ecosystem was driven by the lens of four key pillars: policy, legal, cybersecurity, and technology/PoC implementation. It demonstrated the reduction of barriers to entry for service providers and the separation and redistribution of activities related to rCBDC accounts between public and private entities.

The project leveraged the Bank of Israel's ongoing work on the digital shekel project, its cybersecurity expertise, and the HKMA's knowledge gained from Project Aurum and its ongoing work on e-HKD.

The Central Bank of Israel has also prepared a roadmap for a potential digital shekel, but has not approved issuance.

According to the Central Bank of Israel, the conditions supporting the decision to issue a CBDC include:

1. Issuance of CBDCs by other countries, in particular the United States, the European Union, and other developed economies.
2. Decline in the use of legal tender and its acceptance in transactions in Israel may occur sooner than expected.
3. Significant penetration of stablecoins or other private payment instruments, which could harm remittances.
4. The extent of competition in the domestic payment system.

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

5. Technological developments in the payment system that justify the retail use cases enabled by CBDCs.

Recent Developments in Asia

1. e-CNY: The People's Republic of China's (PRC) e-CNY, or digital renminbi, has been undergoing public testing as part of the Digital Currency Electronic Payment (DCEP) project since April 2020. The current version of the currency requires a commercial bank account, but may be "decoupled" from the banking system in the future, allowing tourists to access the PRC system (PBOC 2021).
2. Bakong Project: On October 28, 2020, Cambodia launched the Bakong payment system, built on Hyperledger Iroha's closed-loop permissioned distributed ledger technology (DLT).
3. Ubin Project: Proposed in 2016, implemented under the Monetary Authority of Singapore (MAS), it began as a public-private partnership to test domestic and cross-border payments with settlement systems using DLT.
4. Inthanon-LionRock Project: A collaborative project exploring the potential of DLT and the application of CBDCs in improving financial infrastructure to support multi-currency cross-border payments, supported by the BIS, the PRC, the HKMA, the Bank of Thailand, the Central Bank of the United Arab Emirates, and the Digital Currency Institute of the People's Bank of China.
5. e-HKD Pilot Program: The Hong Kong Monetary Authority (HKMA) announced the launch of the e-HKD pilot program on May 15. The e-HKD pilot program is part of the HKMA's three-track approach to exploring retail CBDCs.

Risks for emerging Asian countries

- While a digital local currency could be a good way to de-dollarize, there is a risk that the CBDCs will not be able to maintain stability in the event of a lack of liquidity or foreign reserves in the financial position of the central bank, or a loss of market confidence.
- The effect of the swap between the two currencies as reserves authorized by the central bank, especially the impact on the exchange rate, will be an area for further study.
- The high speed and transfer speed of CBDC and payment systems may require more research to assess the risk.

Uncertainties Facing Emerging Asia

I. Foreign Currency Dependence

- Larger countries' CBDCs could crowd out digital currencies from smaller countries, leading to excessive dependency and loss of economic independence.
- The use of unverified stablecoins as a medium of exchange in a digital economy could undermine monetary and fiscal policy and create challenges for monitoring and tax collection.

II. Financial Imbalances

- The introduction of CBDCs requires careful monitoring to prevent unintended credit expansion and the formation of asset bubbles.
- The transition to CBDCs requires efforts to minimize uncertainty and potential financial crises.
- CBDCs can enhance trust and confidence in the financial system, offering traceability and transparency.

iii. Competition between CBDCs and deposits or sovereign bonds

- CBDCs and stablecoins could compete with deposits and domestic sovereign bonds, creating substitution effects.
- Borrowing in foreign CBDCs can create uncertainties and affect exchange rates, which requires close monitoring.

CONCLUSION

Central Bank Digital Currencies (CBDCs) signify a transformative shift in the global financial landscape, offering both opportunities and challenges. This study underscores the importance of strategic and measured approaches in implementing CBDCs to ensure their success. By 2030, with over 24 digital currencies expected to launch worldwide, their influence on financial stability, payment efficiency, and economic inclusivity will likely be profound.

The findings highlight the potential of CBDCs to optimize domestic and international payment systems, enhance liquidity management, and strengthen financial stability. However, the realization of these benefits requires addressing significant technological, regulatory, and operational challenges. Developing countries, in particular, must navigate risks related to sovereignty, economic independence, and financial imbalances while leveraging CBDCs to modernize their economies.

To capitalize on these opportunities, policymakers must:

1. **Ensure financial stability**: Establish robust frameworks for liquidity monitoring and integrate CBDCs with existing monetary tools.
2. **Invest in infrastructure**: Prioritize advancements in cybersecurity and interoperability to support seamless CBDC operations.
3. **Promote global collaboration**: Develop standardized frameworks for international payment systems and expand regional cooperation to mitigate dependencies on dominant currencies.
4. **Empower citizens and businesses**: Provide comprehensive education on CBDC

World Economics & Finance Bulletin (WEFB)
Available Online at: https://www.scholarexpress.net
Vol. 41, December, 2024
ISSN: 2749-3628,

usage and its implications to foster trust and adoption.

The introduction of CBDCs is not merely a technological evolution but a cornerstone for a more inclusive and resilient global financial system. For Uzbekistan and similar economies, adopting a well-designed CBDC strategy can unlock economic modernization and regional integration, ensuring long-term prosperity and growth. By addressing the outlined challenges and aligning with global best practices, CBDCs can serve as a pivotal tool in shaping the future of finance.

RECOMMENDATIONS

Strategy for ensuring financial stability:
Central banks should continuously monitor the liquidity of digital currencies and their impact on foreign reserves.
To maintain stability in the financial system, it is necessary to ensure a balance between stablecoins and traditional financial instruments.
Development of technological infrastructure:
For the effective operation of digital currencies, it is necessary to ensure a robust infrastructure and cybersecurity.
Strengthen public-private partnership to implement stablecoins.
Strengthen international cooperation:
Develop standards for the use of digital currencies in international payment systems.
Expand regional cooperation to reduce economic dependence and preserve sovereignty.
Special strategies for developing countries:
To preserve sovereignty, developing countries should ensure a balance with their stablecoins against the currencies of other countries.
Better analyze the role of stablecoins in international trade and the consequences of their use.
Training of the population and economic entities:
Conduct training and awareness-raising activities to inform citizens and business representatives about the opportunities and risks of stablecoins.
The above conclusions and suggestions can help countries and financial institutions successfully implement IBRDs. Each country will need to develop specific approaches tailored to its economic and political circumstances.

REFERENCES:

1. **Bank for International Settlements (BIS)**. (2021). *Central bank digital currencies for cross-border payments*. BIS Quarterly Review.
2. Atlantic Council GeoEconomics Center. (2024). *CBDC Tracker*.
3. Xalqaro valyuta jamg‘armasi. (2022). *Markazlashtirilgan raqamli valyutalarning tartibga solish yondashuvlari*.
4. Vaganova, N. & Bykanova, M. (2022). *Raqamli valyutalarning iqtisodiy imkoniyatlari va tavakkalchiliklari*.
5. Central Bank of the Russian Federation. (2023). *Digital Ruble Platform Rules*.
6. Tenge Hub. (2023). *Digital Tenge Pilot Project*. Qozog‘iston Milliy banki hisobotlari.
7. People's Bank of China (PBOC). (2021). *e-CNY Digital Payment System Report*.
8. Hong Kong Monetary Authority (HKMA). (2023). *e-HKD Pilot Program Report*.
9. PwC. (2022). *Global CBDC Index*.