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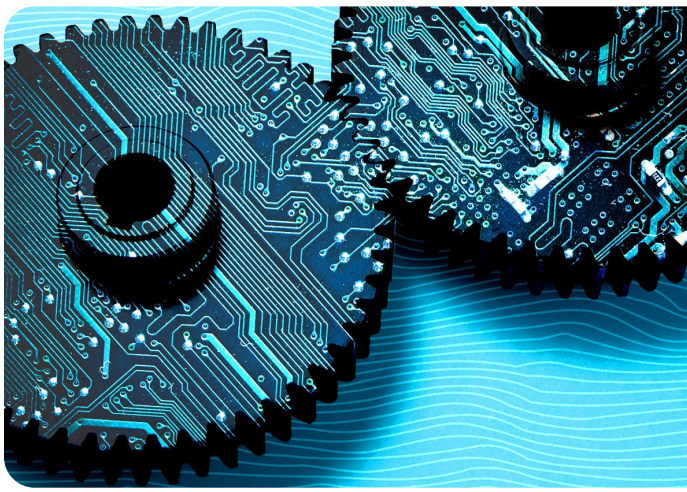
05.00.00 - Texnika fanlari
08.00.00 - Iqtisodiyot fanlar



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05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
05.01.03 – Informatikaning nazariy asoslari
05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
05.01.07 – Matematik modellashtirish
05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
05.02.00 – Mashinasozlik va mashinashunoslik
05.02.08 – Yer usti majmualari va uchish apparatlari
05.03.02 – Metrologiya va metrologiya ta'minoti
05.04.01 – Telekommunikasiya va kompyuter tizimlari, telekommunikasiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
05.05.05 – Issiqlik texnikasining nazariy asoslari
05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
05.08.03 – Temir yo'l transportini ishlatish
05.08.06 – "G'ildirakli va gusenisali mashinalar va ularni ishlatish" (texnika fanlari)
05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
08.00.01 – Iqtisodiyot nazariyasi
08.00.02 – Makroiqtisodiyot
08.00.03 – Sanoat iqtisodiyoti
08.00.04 – Qishloq xo'jaligi iqtisodiyoti
08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
08.00.06 – Ekonometrika va statistika
08.00.07 – Moliya, pul muomalasi va kredit
08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
08.00.09 – Jahon iqtisodiyoti
08.00.10 – Demografiya. Mehnat iqtisodiyoti
08.00.11 – Marketing
08.00.12 – Mintaqaviy iqtisodiyot
08.00.13 – Menejment
08.00.14 – Iqtisodiyotda axborot tizimlari va texnologiyalari
08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK Rayosatining 2024-yil 28-avgustdagi 360/5-son qarori bilan "Dissertatsiyalar asosiy ilmiy natijalarini chop etishga tavsiya etilgan milliy ilmiy nashrlar ro'yxati"ga texnika va iqtisodiyot fanlari bo'yicha "Muhandislik va iqtisodiyot" jurnali ro'yxatga kiritilgan.

Muassis: "Tadbirkor va ishbilarmon" MChJ

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9. Jizzax politexnika instituti

MUNDARIJA • СОДЕРЖАНИЕ • CONTENTS

MUNDARIJA

IMPROVING THE EFFICIENCY OF BANKS' GREEN FINANCING IN UZBEKISTAN AND KAZAKHSTAN

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Abstract. This article analyzes the issues of improving the efficiency of green financing in the banking systems of Uzbekistan and Kazakhstan. The study examines the role of commercial banks in green lending, the integration of ESG (Environmental, Social, Governance) factors, and identifies existing challenges and solutions based on international experience. Using empirical and analytical approaches, key directions for the development of green finance are identified and practical recommendations are proposed.

Keywords: green finance, commercial banks, ESG, sustainable development, lending, environmental risks, financial system.

Annotatsiya. Mazkur maqolada O'zbekiston va Qozog'iston bank tizimlarida "yashil moliyalashtirish" samaradorligini oshirish masalalari tahlil qilingan. Tadqiqotda tijorat banklarining yashil kreditlashdagi roli, ESG (Environmental, Social, Governance) omillarining integratsiyasi, shuningdek, xalqaro tajriba asosida mavjud muammolar va ularni bartaraf etish yo'llari o'rganildi. Empirik va tahliliy yondashuvlar asosida yashil moliyalashtirishni rivojlantirishning ustuvor yo'nalishlari belgilandi hamda amaliy tavsiyalar ishlab chiqildi.

Kalit so'zlar: yashil moliyalashtirish, tijorat banklari, ESG, barqaror rivojlanish, kreditlash, ekologik risklar, moliyaviy tizim.

Аннотация. В данной статье анализируются вопросы повышения эффективности «зеленого финансирования» в банковских системах Узбекистана и Казахстана. В исследовании рассмотрены роль коммерческих банков в развитии зеленого кредитования, интеграция факторов ESG (экологические, социальные и управленческие), а также выявлены существующие проблемы и пути их решения на основе международного опыта. На основе эмпирического и аналитического подходов определены приоритетные направления развития зеленого финансирования и разработаны практические рекомендации.

Ключевые слова: зеленое финансирование, коммерческие банки, ESG, устойчивое развитие, кредитование, экологические риски, финансовая система.

INTRODUCTION

Climate change and the global transition toward low-carbon development are prompting banking sectors to reconsider how capital is allocated. For emerging economies such as Uzbekistan and Kazakhstan, efficient green financing is becoming a strategic necessity: both countries have set carbon neutrality targets for 2060, both face aging energy infrastructure, and both require private capital to modernize their economies.

Commercial banks are at the center of this transition. However, their green lending remains limited due to weak project pipelines, insufficient ESG integration, low awareness, and a limited range of regulatory incentives.

This thesis examines how commercial banks in Uzbekistan and Kazakhstan can improve the efficiency of green financing by drawing on theoretical concepts and successful international practices.

Theoretical Foundations of Efficient Green Financing. Green finance frameworks generally refer to systematic approaches or taxonomies that define which activities qualify as "green" or sustainable. A well-known example is the EU Sustainable Finance Taxonomy, a science-based classification system that identifies sustainable economic activities and has become a model for other countries. The importance of a clear framework is widely emphasized in the literature on emerging markets: the existence of a taxonomy and clear standards helps prevent greenwashing, that is, the mislabeling of activities as environmentally sustainable, and directs capital toward genuine climate solutions.

Both Kazakhstan and Uzbekistan have recognized this need. Kazakhstan adopted a national green taxonomy in 2021, developed by the AIFC Green Finance Centre in alignment with international standards, while Uzbekistan approved its own green taxonomy in October 2023. These frameworks can theoretically improve efficiency by reducing information asymmetry, since banks and investors are better able to identify eligible green projects and assess their impacts, thereby channeling funds more confidently into sustainable activities.

Green finance refers to financial products aimed at reducing environmental harm or generating positive

environmental outcomes. Efficiency in green finance requires:

clear definitions and taxonomies;

transparent reporting;

alignment with national climate goals.

Both Uzbekistan and Kazakhstan have recently introduced green finance taxonomies, but their practical adoption within banking institutions remains limited.

ESG Integration in Banking. A significant body of research examines how banks integrate ESG factors into their governance, strategy, and risk management systems. ESG integration means that environmental and social risks and opportunities are considered alongside financial indicators in lending and investment decisions. For banks, one of the most important aspects of this process is the adaptation of credit risk management to climate-related risks.

Climate change introduces two main categories of risk to banks' loan portfolios: physical risks, such as damage caused by extreme weather events affecting borrowers, and transition risks, including financial losses faced by carbon-intensive industries due to policy changes, carbon pricing, or technological shifts. If these risks are not properly managed, they may weaken asset quality, increase default rates, and create additional pressure on the financial stability of banks.

Regulators and international institutions have increasingly provided guidance in this area. The Network for Greening the Financial System (NGFS), a consortium of central banks and supervisory authorities, has developed scenarios and recommendations for climate stress testing in financial institutions. In practice, many leading banks now conduct climate scenario analyses to assess how their loan portfolios would perform under, for example, a rapid decarbonization scenario compared with a business-as-usual scenario. In 2022, the European Central Bank (ECB) conducted a pioneering climate risk stress test for major euro area banks. Although the exercise was largely qualitative, it showed that about 60 percent of banks had not yet fully integrated climate risk into their credit models, while potential losses under severe climate scenarios could be substantial, which led to further supervisory attention. The literature suggests that the proper pricing of climate risk, for example through higher interest rates or additional collateral requirements for carbon-intensive projects, is an important mechanism enabling banks to support an orderly transition[1]. At the same time, banks have historically faced challenges related to limited data and methodological tools for quantifying these emerging risks.

The integration of ESG factors also strengthens risk management beyond climate considerations alone. Social risks, such as labor-related issues or community opposition to projects, and governance risks, including corruption, can directly affect borrowers' creditworthiness. Studies indicate that banks that proactively manage ESG risks tend to experience lower levels of non-performing loans over the long term, pointing to a positive relationship between sustainability and credit quality. Thus, from a theoretical perspective, efficient green financing is enhanced when banks incorporate ESG considerations into their risk management frameworks. This enables them to identify promising opportunities, such as financing a profitable wind power project, while avoiding potential exposures, such as stranded coal-related assets.

The Central Bank of Uzbekistan appears to be moving in this direction. As of 2023, it has developed a Sustainable Finance Strategy that includes measures for regulating climate change and ESG risks, and it is expected to require banks to integrate climate risks and sustainability considerations into their credit risk management frameworks. This illustrates how regulatory expectations are gradually translating theoretical concepts into practical application[2]. In Kazakhstan, the Agency for Regulation and Development of the Financial Market (ARDFM) has similarly issued Guidelines for Environmental and Social Risk Management (ESRM) for banks and is developing tools to help banks calculate the carbon footprint of their loan portfolios[3]. These steps in both countries reflect broader global trends in adapting credit risk management to incorporate ESG factors.

This chapter reviews green financing by commercial banks in Uzbekistan and Kazakhstan through the lens of the theoretical framework outlined earlier. Both countries are post-Soviet, resource-dependent economies with a strong role of the state in the financial sector, yet their green finance trajectories differ in terms of pace, depth, and institutional design. The following subsections outline the main developments and constraints in each country, followed by a brief comparative perspective.

The current state of Uzbekistan's green finance market remains at an early stage, although notable progress has been made in several segments. The most visible achievements have taken place at the sovereign and quasi-sovereign levels. The government has issued a sustainability (SDG) bond and later a sovereign green bond, becoming one of the first countries in Central Asia to take such steps. One of the country's largest

1 blogs.worldbank.orgblogs.worldbank.org
2 documents1.worldbank.org
3 aifc.kzaifc.kz

state-owned banks, Uzpromstroybank, has also issued a corporate green bond. These operations required the adoption of a sovereign green bond framework aligned with international standards and encouraged the securities regulator to introduce technical guidelines for corporate green bonds. Multilateral institutions such as the Asian Infrastructure Investment Bank and other multilateral development banks have supported these issuances and invested in them, helping to shape market practices.

However, the banking sector is still dominated by large state-owned banks that have historically implemented government lending programs and accounted for the majority of banking sector assets. A medium-term reform agenda aims to privatize several of these institutions, improve corporate governance, and attract foreign investors. This process is highly relevant for green finance because it generally brings stronger ESG expectations and encourages more advanced risk management practices. For example, Uzpromstroybank and Ipoteka-bank have participated in advisory programs with international financial institutions, introducing elements of green banking and launching new products, including energy-efficiency loans.

On the retail and SME side, several banks have begun offering green consumer loans, mainly for small-scale renewable energy and energy-saving technologies such as rooftop solar panels and solar water heaters. Demand for these products is supported by rising energy prices and concerns about the reliability of energy supply, particularly during the winter season. Some of these products are supported by concessional credit lines from international financial institutions or by interest subsidies under government programs. This demonstrates that banks are beginning to recognize green finance as a commercial opportunity in specific market segments, even though the overall scale remains modest relative to total lending portfolios.

From an institutional perspective, the Central Bank of Uzbekistan has only recently started to integrate sustainability into financial sector supervision. A sustainable finance roadmap and strategy has been developed, which envisages the gradual inclusion of climate and ESG factors in banking supervision, as well as the introduction of climate-related risk management and reporting requirements. Green finance is also reflected in the country's Green Economy Strategy and coordinated through a national body responsible for green economy policy. In addition, several initiatives implemented with the support of United Nations Development Programme and other partners focus on knowledge sharing and coordination, although these initiatives currently function more as informational platforms than as direct financing mechanisms.

Kazakhstan has moved somewhat further than Uzbekistan in formalizing a green finance framework and integrating sustainability into financial regulation, although the overall scale of green lending remains limited. The country positions itself as a regional financial center through the Astana International Financial Centre and has established a long-term carbon neutrality target.

A central element of Kazakhstan's progress is the National Green Taxonomy, introduced in 2021 and developed by the AIFC Green Finance Centre. This taxonomy is incorporated into financial legislation and provides the basis for defining green instruments, including requirements for external reviews of green bonds. As a result, a growing market for sustainable bonds has emerged, with more than twenty green, social, and sustainability bond issuances by sovereign-related institutions, corporations, and financial institutions, amounting to more than one billion US dollars. Examples include a local-currency green bond issued by the Development Bank of Kazakhstan and a sustainability bond issued by Bank CenterCredit. In parallel, some banks and development institutions have introduced dedicated green loans for renewable energy projects.

On the regulatory side, the Agency for Regulation and Development of the Financial Market has adopted a roadmap for integrating ESG principles into financial markets. This roadmap includes mandatory ESG-related disclosure in annual reports, guidelines for environmental and social risk management, and methodologies for calculating financed emissions. Stock exchanges such as Kazakhstan Stock Exchange and Astana International Exchange have also promoted ESG reporting for listed companies. These measures create a top-down push for transparency and are intended to integrate ESG considerations into banks' internal processes.

Nevertheless, the direct contribution of commercial banks to green investment remains limited. Analyses by the Astana International Financial Centre indicate that banks account for only a small share of total fixed investment, while a large portion of green investment is financed by the public sector, development banks, or foreign investors. When development institutions are excluded, green loans represent only slightly more than one percent of total banking sector loan portfolios. Until recently, banks did not classify or report loans as green at all; this is only beginning to change with the gradual implementation of taxonomy-based reporting. Major banks such as Halyk Bank have started to disclose limited figures on green lending and offer products such as green mortgages and loans for electric vehicles, often with support from state programs or international financial institution credit lines.

Kazakh banks are also increasingly influenced by external ESG expectations. Membership in international networks such as the Sustainable Banking and Finance Network and the Network for Greening the Financial System, as well as the listing of securities on foreign exchanges, means that regulators and investors are paying greater attention to climate and ESG-related issues. Regional development banks and international

institutions are also adopting global principles for responsible banking, creating examples for local market participants.

Overall, Kazakhstan has developed a relatively advanced institutional framework for sustainable finance compared to neighboring countries and has implemented several important transactions and regulatory reforms. However, green finance still occupies only a limited place in banks' balance sheets. To move from formal frameworks to meaningful scale, banks need to deepen ESG integration, regulators need to support practical implementation and improve data quality, and public institutions need to play a stronger role in attracting rather than replacing private green capital.

CONCLUSION AND RECOMMENDATIONS

Efficient green financing in Uzbekistan and Kazakhstan requires not only strong political commitment but also:

standardized frameworks;
integrated ESG risk management;
targeted financial incentives;
strong institutional capacity;
and a stable pipeline of bankable projects.

By adopting lessons from Europe, China, and Southeast Asia, both countries can accelerate green lending, reduce transition risks, and align their banking sectors with long-term sustainability goals.

Commercial banks, once equipped with appropriate tools, regulations, and incentives, can become key drivers of the region's green transformation.

Recommendations for Uzbekistan and Kazakhstan:
Strengthen regulatory and policy frameworks:
Introduce mandatory ESG reporting requirements in Uzbekistan, following Kazakhstan's example;
Ensure the full implementation of green taxonomies in both countries;
Recognize green loans as a separate legal category within banking legislation.
Create incentives for banks:
Introduce refinancing facilities for green loans, similar to the model used in China;
Provide partial credit guarantees for SME sustainability projects;
Offer temporary interest subsidies for solar energy projects, green housing, and electric vehicle loans.
Improve institutional capacity:
Train credit officers in green project assessment and environmental risk analysis;
Develop standardized tools for green loan appraisal;
Establish dedicated environmental risk units within banks.

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