

# The role of international financial institutions in the development of green investments

Kurbanova Karlygash\*, Nurmagambetova Azhar, Syrlybayeva Nazgul  
Al-Farabi Kazakh National University, Almaty, Kazakhstan

\*E-mail: [kurbanova-pismo@bk.ru](mailto:kurbanova-pismo@bk.ru)

DOI: [10.26577/SEDGCh.2023v2ca7](https://doi.org/10.26577/SEDGCh.2023v2ca7)

## Abstract

The importance of this study lies in the fact that economic growth has led to environmental risks and degradation as a result of increased consumption of natural resources. Therefore, the aim of this research is to investigate the measures taken by foreign countries and domestically to regulate “green” financing. The paper will also analyze the evolution of “green” economic initiatives worldwide. This article will examine the primary financial institutions that invest in projects related to the green economy and the financial mechanisms employed to regulate these initiatives in other countries. Additionally, the development of green finance institutions in Kazakhstan and the policies adopted by Kazakh companies concerning the implementation of sustainable development concepts will be discussed. Based on the findings, it can be concluded that the development of “green” financing institutions in the Republic of Kazakhstan is still in its early stages and lags far behind foreign countries.

**Keywords:** financial institutions; green finance; “green” economy; “green” tools; green projects

**JEL codes:** O44, Q56, F64

## 1 Introduction

For the current stage of socio-economic development of society, the dominant trend is globalization, which provides for worldwide integration and unification in the social, economic, financial, political and technological spheres. In the context of globalization, an essential aspect of collective efforts among countries is the establishment of “green” financing institutions, which align with the concept of sustainable development.

The foundation for the sustainable development concept was established by the United Nations' “Agenda for the 21st Century” program adopted in 1992. At the UN Summit on Sustainable Development (“RIO + 20”), held in 2012, the transition to a sustainable development model, the basis of which is the “green” economy, and the vectors of the “green”

economy were established, including:

- a) decarbonization, limitation of hydrocarbon emissions;
- b) reducing the degradation of plant and animal populations;
- c) conservation of the biosphere and enhancement of natural resources;
- d) use of low-carbon energy sources and resource saving;
- e) raising the standard of living and income of the population (Semenova et al. 2021; Yashalova, 2013).

The UN publication “Transforming Our World: The 2030 Agenda for Sustainable Development”, which was approved in 2015, outlines the objectives of sustainable development and identifies key indicators that must be met to preserve the world's resources and ensure adequate living conditions for all individuals on the planet. The document contains three aspects of sustainable development:

- social integration;
- economic growth;
- environment protection.

At the same time, solving the problem of reducing the anthropogenic load on the environment requires significant investments and the creation of an appropriate financial infrastructure. Today there is a huge gap between the size of actual investment and the existing need for green investment. In particular, for the EU countries in 2020, the investment imbalance in the energy sector alone was estimated at 500 million euros (Fedorova, 2020). Numerous studies by experts from international financial institutions show that over the next decade it is necessary to invest tens of trillions of dollars in the development of the “green” sphere of activity and, accordingly, to meet the need for financial resources, “green” tools should be actively used. At present, the dynamics of growth in the volume of “green” financing is noticeable. According to the Climate Bonds Initiative (CBI), a foreign non-profit organization, the issuance of green bonds and loans in 2019 worldwide amounted to a total of 254.9 billion US dollars, which is a 49% increase compared to 2018 (Green bond impact report, 2020). However, the issuance of green loans in 2019 was significantly lower, only 6.8 billion US dollars (2.6%), exacerbating the issue of a shortage of green financing sources. Nevertheless, the green bond market has substantial growth potential, and the Organization for Economic Cooperation and Development (OECD) predicts that it could reach a volume of 4.7-5.6 trillion US dollars by 2035 (Bakhvalova, 2020).

Over the last two decades, globalization has led to a shift from traditional societies to those that prioritize sustainable development principles. As a result, the trajectory towards a new world order has been influenced by globalization, which emphasizes the importance of intensive

scientific and technological progress based on environmentally friendly components of the economy. This, in turn, has led to the establishment of a financial regulatory model with specific financial centers serving as key drivers for promoting sustainable development.

## **2 Literature review**

One of the next theorists of topical issues about investment, consumption and the green economy can be called Maria Madi & Miriam Kennet (2017), authors of the work “Green Economy, Green Investment, Green Finance”. In the “green economy” approach to investment and finance, as the authors note, it is especially important to understand this current global problem. New patterns of investment and consumption have been added to the process of financial deregulation, while public spending on social needs and infrastructure has been increasingly constrained by policy rules based on surplus targets.

The current global economy is disappointing due to the low rate of investment. Prior to the 2008 financial crisis, growth in wealthy countries was driven by spending on housing and consumption. However, after the crisis, both of these spending areas decreased, and the expected increase in investment never happened. Despite interest rates being at or below zero, investors are borrowing for risky investments, causing a decline in the overall quality of investment and an increase in leverage. There is a potential for significant drops in asset prices when central banks eventually tighten credit (Sachs et al. 2019).

The most widespread idea is the so-called “green economy”, according to which, under the threat of economic and administrative sanctions, environmental quality standards and quotas for the extraction of natural resources are set. This approach means that economic development retains its former extensive nature, and its costs are borne by economic growth. The past 30 years of operating under such an economy have demonstrated that it has been effective in resolving local problems. However, it has not been as successful in addressing environmental issues at a regional, and particularly at a global level. Therefore, various modifications of the “green” economy are proposed that enhance its environmental focus (Ugolnitsky, 2010).

Another approach to solving the problem of sustainable development is technological transformation, which implies a transition to energy and resource-saving, low-waste production technologies, and strict pollution control. According to the authors of the book “Factor Four: Doubling Wealth - Halving Resource Use” (Lovins et al. 1998), this area is recognized as the most promising for the present moment.

Following the global financial and economic crisis of 2008-2009, which many experts consider a systemic crisis, there has been increased analysis by scientists on the possibility of refining or significantly modernizing the strategy for sustainable socio-ecological development, including the impact of crisis processes (Pakhomova et al. 2013). The interrelationship between the financial and economic crisis and the sustainable development strategy implementation has attracted the attention of a number of researchers who have put forward the proposition that this issue forms a new research field in science that is of interest to a wide range of specialists (Van den Bergh, 2013). The author of the study connects the negative impact of the financial and economic crisis conditions with a shift from environmental issues with society, politicians and business. The positive impact of the crisis is distinguished among representatives of the capitalist system transformation concept, the green growth concept and the green industrial revolution concept associated with the sixth Kondratiev wave (Geels, 2013).

The threat of environmental degradation and depletion of principal natural resource stocks, an increase in the frequency of weather irregularities and climate change, price. The main channels for the green economy to affect the economic growth are: firstly, the stimulating effect due to investments, including the development of green infrastructure (of the water supply, sewage, alternative-fuel public transport), which expand employment and reduce unemployment, and, secondly, innovative activity, also at the companies level, supported by the creation of a favorable competitive environment and regulatory methods (World Bank, 2012).

Scientists and politicians view green growth as a new driving force for the global economy, formed through the consistent implementation of structural and institutional reforms (Kurdyukov et al. 2020). Green growth is believed to be capable of resolving several pressing issues and addressing accumulated contradictions in the world economy. The COVID-19 pandemic of 2020-2021 has further highlighted the importance of green growth in this regard. However, the green economy does not solve all the contradictions of the economic system.

The experience of the Netherlands as one of the most advanced countries in this field has provided us with an explanation of its environmental policy success (Maas et al. 2012). It is a close link between the environmental policy goals and the business cycles, which can be found not only in mainstreaming problems of economic feasibility and thereby the transition to a weak sustainability strategy, but also in the application of indicators.

No less interesting is the addition of Biswas, N. (2011) ideas - in his opinion, the introduction of greener banking practices will not only be beneficial for the environment, but will also bring benefits in terms of

improving operational efficiency, reducing vulnerability to manual errors and fraud, and also reduce the cost of banking.

In Western theory and practice of sustainable development, ideas of strict, weak and critical forms of sustainability are formed, indicators and management rules are developed to ensure their implementation, and the link between the theoretical provisions of the sustainable development concept, a resource economy and other economic areas is established. At the same time, a number of shortcomings and limitations are recognized (measurement and evaluation problems, different interpretations of the possibilities for replacing capital, insufficient operation of the proposed restrictions (Endres & Querner, 2004; Kurbanova et al. 2022), which do not make it possible to solve the problems of the transition to sustainable development of the territory on the fundamental level.

### 3 Methodology

An important component of the emerging planetary “green” market is a multi-level network of financial intermediaries, including national “green” banks, development banks, investment funds and financial corporations (Table 1).

**Table 1 - G20 financial institutions**

<b>Country</b>	<b>Financial institutions</b>
Great Britain	Green Investment Bank GIB; British Business Bank; Charity Bank; Tridos Bank
South Korea	Korea Finance Corporation (KoFC); KoreaCredit Cuarantee Fud (KODIT); Korea Technology Finance Corp (KIBO); Export-Import Bank of Korea (KEXIM)
Canada	Green Investment Fund
Germany	National Investment Bank Kredittanstaltfur Wiederaufbau; Federal Ministry for the Environment (BMUB)
France	French Global Environment Facility (FFEM)
USA	First Green Bank; Huntington National Bank; U.S. Bank
EU	European Fund for Strategic Investments (EFSI)

Source: (Green bond impact report, 2020)

Global financial institutions play a dominant role in financing and assisting in the implementation of “green” projects and programs in the field of construction, infrastructure, water purification, waste management. It is they who broadcast the best practices for financing such projects to other participants in the global financial market. Among such institutions investing in green economy projects, the decisive role belongs to the European Investment Bank, the World Bank, the International Finance Corporation, etc. Thus, the International Finance Corporation provided green loans in the amount of USD 8.4 billion for the implementation of 221 projects environmental orientation mainly in the field of energy, construction and transport (Green bond impact report, 2020).

The policies for promoting a greener world economy are shaped by the efforts of multiple national and international organizations, as reflected in their relevant regulatory documents. Table 2 provides an overview of the various “green” economic initiatives put forth by these organizations.

**Table 2 - Green economic initiatives**

<b>The authority that put forward the “green” initiative</b>	<b>Year</b>	<b>Content</b>
World Commission on Environment and Development (WCED)	1983	Taking measures to prevent environmental pollution
International Coalition for an Environmentally Responsible Economy	1989	Development of ecological economy
UN Conference on Environment and Development	1992	Development of ways to solve problems of increasing efficiency in the allocation of environmental resources
UN Global Compact	1999	Encouraging businesses to take greater responsibility for the environment and promoting sustainable economic growth
Follow-up International Conference on Financing for Development to Review the	2008	Attracting investments to develop environmental, institutional, and social

Implementation of the Monterrey Consensus		infrastructure
UNEP Green Economy Initiative	2008	Establishing a policy to create new “green” jobs as a means of ensuring employment for the population
UNIDO-UN Green Industry Initiative for Industrial Development	2009	Stimulating the transition to a green industry
Green growth	2009	Establishment of the main directions of “greening” the economy
Green Climate Fund	2010	Financing measures to reduce environmental risks in developing countries
UN Sustainable Development Summit	2015	Adoption of a state action plan for sustainable development
Network of Central Banks and financial supervisory authorities	2017	Concentration of finances in order to develop the environment and reduce climate risks
Green investment principle “One Belt, One Road”	2018	Adoption of strategic plans for the use of “green” financial instruments
Green bonds	2019	Development and implementation of projects aimed at ensuring sustainable development while preserving the environment
The European Green Deal	2019	Adoption of a strategy defining “carbon zero” in the EU countries by 2050
Taxonomy	2020	Establishment of control measures to determine the “greenness” of financial instruments
Climate Summit	2021	International collaboration to decarbonize the global economy and achieve “carbon neutrality”

Source: (Buchkina, 2020; Khmyz, 2019; Sedash et al. 2019)

It is important to note that even after the COVID-19 pandemic, international cooperation in the decarbonization of the global economy remains a key concern for governments worldwide. In April 2021, the Climate Summit was held, with participation from leaders of 40 countries. During the summit, the US, Japan, Canada, and the UK announced new goals to decrease emissions in the next decade or so. Brazil announced its aim to reach carbon neutrality by 2050, while China plans to achieve carbon neutrality by 2060, with no immediate plans to reduce greenhouse gas emissions before 2030.

Thanks to the global cooperation of international organizations, it has become possible to establish global regulatory standards, systems for sharing data and experiences, and modern financing tools for the process of “greening” the economy.

Foreign countries use various financial methods to regulate “green” initiatives, with some of the most significant methods being concessional lending to “green” projects in France, the USA, and Germany. The USA and Germany provide credit guarantees for financing environmentally friendly technologies. The USA and the UK develop and support specialized institutional investors. The EU focuses on developing and strengthening “green” financial infrastructure. Sweden provides informational and methodological assistance in the development of “green” tools. China, Brazil, and France create specialized national financial control bodies, and the EU emphasizes digitalization. In recent years, green transformation based on digital technologies has become an important part of many national strategies, as well as the subject of global competition for new markets (Frolova, 2020).

Currently, the EU pays great attention to the Green Deal program, which provides for the greening and decarbonization of the economy, including cross-border hydrocarbon regulation through the establishment of duties on goods whose production exceeds CO<sub>2</sub> emission standards (Greenpeace, 2022). Moreover, the largest emitters of CO<sub>2</sub> emissions are currently China (32.93%), the USA (12.55%), the EU (7.33%), India (7.00%), Russia (5.13%), in while the share of Kazakhstan in CO<sub>2</sub> emissions is - 0.56%. Around 75% of global greenhouse gas emissions can be attributed to 20 countries, including Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, UK, US, and the EU.

Approximately 120 parties that are part of the UN Framework Convention on Climate Change have committed to achieving net-zero emissions by 2050 (Tyutyukina, 2020). Denmark, France, New Zealand, Sweden, the EU and the United Kingdom have legislated this obligation.



#### 4 Results and Discussion

The Republic of Kazakhstan is lagging behind other countries in the development of “green” financing institutions, and is still in the early stages of their development. Nevertheless, not only issuers of green bonds entered the Kazakhstani market, but also commercial banks, which began to issue loans taking into account responsible investment factors (ESG factors), and management companies launched several investment funds and individual responsible investment strategies. The reinvigoration of financial institutions results in the restructuring of the “green” financial infrastructure. This restructuring is aimed at integrating the infrastructure functions into main groups or blocks with the following objectives:

- 1) methodological support;
- 2) establishing compliance (verification) with the principles of “green” financing;
- 3) information and analytical support;
- 4) providing trade support for “green” instruments.

This classification approach has practical significance in terms of how participants in the “green” finance system interact with its infrastructure, as shown in Table 3.

**Table 3 - Institutions of the financial infrastructure for green financing in Kazakhstan**

<b>Financial infrastructure Group (Block)</b>	<b>Financial infrastructure institutions</b>	<b>Areas of activity in the field of Green financing</b>
Methodological support	Astana International Financial Center (AIFC)	Development of a national system of “green” financing, methodology for evaluating “green” projects
	National Bank of the Republic of Kazakhstan	The Network for Greening the Financial System (NGFS) is a group of central banks and financial supervisors that work together to promote and share best practices in green finance.
Ensuring compliance (verification) with green	Rating agencies (RAEX Europe, Fitch Ratings, etc.)	Providing services to assess financial instruments, such as “green” bonds and “green” loans, using approved

finance principles		methodologies
Information and analytical support	Agency of the Republic of Kazakhstan for the regulation and development of the financial market, self-regulatory organization “Asset Managers Association”, “National Company “KAZAKH INVEST”	Preparation, support and promotion of programs, projects, strategies, decisions, standards, principles, benchmarks, practices, financial instruments and mechanisms for sustainable development in the Republic of Kazakhstan
Offering assistance for trading environmentally-friendly financial instruments	KASE	Providing conditions for the circulation of “green” bonds

*Source:* (compiled by the authors)

Kazakhstan’s key financial institutions consist of a large banking sector, a growing pension system and the National Bank which in addition to its monetary policy duties also serves as financial regulator and investment manager of the country’s external financial assets (National Fund) and domestic pension funds. The other important public sector institutions that support the financial sector are the Sovereign Wealth Fund Samuryq-Qazyna (SKKZ) and National managing holding “Baiterek”. Kazakhstan’s financial markets comprise foreign exchange and securities markets covering Government, equity and corporate debt securities as well as related repo agreements. These are traded principally on Kazakhstan’s largest exchange, the Kazakhstan Stock Exchange (KASE).

Kazakhstan has been an early and enthusiastic proponent of sustainable development, aligning national strategic plans and programs with green economic objectives to enable a transition to a green, low-carbon economy. The efforts towards green economy and sustainability are supported by challenging low-carbon targets and the policy framework known as the “Concept on Transition to a Green Economy” (GEC). Kazakhstan's

obligations outlined in their *nationally determined contribution* (NDC) under the Paris Agreement include taking measures to reduce *greenhouse gas* (GHG) emissions, manage water resources, enhance agricultural practices, increase energy efficiency, promote renewable energy sources, and manage waste (AIFC, 2022).

Key items for green finance in Kazakhstan are:

- The National Development Strategy “Kazakhstan-2050” outlines Kazakhstan’s strategic goals, measures, and targets for becoming one of the top 30 economies by 2050. Among the goals specified in the document are the transition to a low-carbon economy and the utilization of alternative and renewable sources for power generation. The strategy also sets a target for the energy sector to derive at least 50% of its energy consumption from alternative and renewable sources. However, the strategy does not provide specific objectives for achieving the transition to a low-carbon economy.

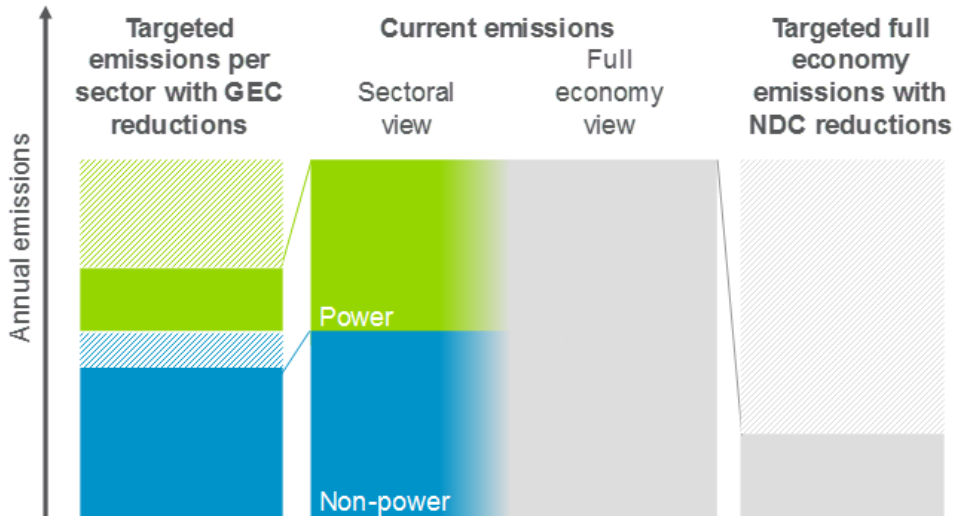
- The “Concept on Transition to a Green Economy” (Green Economy Concept, GEC) is a crucial policy framework in Kazakhstan that outlines a long-term plan for transitioning to a green economy in all sectors of the economy. This transition will be accomplished through resource optimization, implementation of new technologies and production methods, utilization of renewable energy, and effective ecosystem management. The GEC also highlights critical sectors, such as sustainable water resource management, sustainable and efficient agriculture, energy efficiency and conservation, power generation, waste management, air pollution reduction, and conservation and effective management of ecosystems, necessary for a successful transition.

- As part of its nationally determined contribution (NDC) under the Paris Agreement, Kazakhstan has pledged to reduce its greenhouse gas emissions by 15% below the 1990 level by 2030. However, if the country receives access to international climate finance, it intends to increase the target to a 25% reduction.

- A National Development Strategy titled “Kazakhstan-2025” is currently being prepared and will be presented to the government in 2018. The strategy will outline the necessary actions to implement the country's nationally determined contribution (NDC) under the Paris Agreement and ensure alignment with the Green Economy Concept (GEC) and Paris Agreement targets.

To meet the targets set by the Paris Agreement and the Green Economy Concept (GEC), Kazakhstan needs significant mobilization of funds for green investments, especially from private sources, since public resources are limited. Relying on public investment in the long term could threaten sustainable green growth.

The NDC and GEC set a number of targets, some of which have quantifiable impacts on climate change mitigation and associated climate and green finance needs. The targets of the GEC are mostly sector-specific whereas the NDC target is cross-sector or economy wide, as shown schematically in Figure 1. The new strategy under preparation, “Kazakhstan 2025”, aims to align the NDC and GEC targets (AIFC, 2022).



**Figure 1. Illustration of the overlapping nature of the NDC and GEC targets**

In terms of required emission reductions, analysis demonstrates that the NDC target requires much more substantial emission reductions compared to the 2030 baseline than the GEC targets: the NDC targets implies emission reductions of 132-169 MtCO<sub>2</sub>e, while the GEC power sector targets result in a 23 MtCO<sub>2</sub>e emission reduction with no additional reduction expected from achievement of the GEC energy efficiency target. Assuming that the GEC power sector target is reached yielding emission reductions below baseline in 2030 of 23 MtCO<sub>2</sub>e, the emissions reductions required from all other sectors to fulfill the NDC commitment would be around 109–146 MtCO<sub>2</sub>e.

- To meet its obligations under the Paris Agreement, Kazakhstan aims to reduce its greenhouse gas (GHG) emissions by 15% compared to the levels recorded in 1990. This target is considered unconditional, meaning it is not dependent on any external factors or international financing. The conditional

target aims to achieve a 25% reduction by 2030 compared to the 1990 base year. The absolute emission levels for both unconditional and conditional targets were assessed, with the assumption that emission reductions would originate from the energy, industry, agriculture, and waste sectors, rather than from land use, land-use change and forestry (LULUCF). The unconditional and conditional target emission levels in 2030 are 325 MtCO<sub>2e</sub> and 287 MtCO<sub>2e</sub>, respectively, excluding LULUCF. When compared to the without measures (WOM) baseline for 2030, the emission reduction implied by the NDC is 132 MtCO<sub>2e</sub> and 169 MtCO<sub>2e</sub> for the unconditional and conditional targets, respectively. This is equivalent to a 29% or 37% reduction in emissions in 2030.

- The GEC power sector target aims at a 15% reduction in power sector emissions in 2030 compared to current levels which totaled 91 MtCO<sub>2e</sub> (using 2012 as the “current” level). A 15% reduction equates to an emission level of 77 MtCO<sub>2e</sub>, or a 23 MtCO<sub>2e</sub> reduction in emissions in 2030 compared to the WOM baseline, or a 9 MtCO<sub>2e</sub> emission reduction compared to the GEC BAU level (AIFC, 2022).

- The Green Economy Concept (GEC) has established a goal to decrease Kazakhstan's GDP energy intensity by 30% in comparison to the 2008 level. However, this target may result in higher emissions compared to the 2030 without measures (WOM) baseline, which assumes a reduction of over 40% in energy intensity from the 2008 level. As the energy-related emissions in 2030 under the GEC target are greater than the baseline energy-related emissions, climate finance demand is not quantified for this target.

Achieving the 132 MtCO<sub>2e</sub> in emission reductions for the unconditional 2030 NDC target requires a green investment of between US\$<sub>2016</sub> 26-140 billion from now to 2030. Of this amount, an estimated that US\$<sub>2016</sub> 17 to 49 billion is needed for power sector investments and ~US\$<sub>2016</sub> 9 to 91 billion is needed for non-power sector investments. It is estimated that an additional ~US\$<sub>2016</sub> 20 to 39 billion are needed to meet the conditional NDC target. By contrast, the additional investments required to meet the full suite of GEC targets is expected to be US\$<sub>2016</sub> 34-60 billion, which is equivalent to 1-2% of GDP.

Additional investment estimates for the NDC and GEC targets using the different approaches shown in Table 4.

**Table 4 - Additional Investment Estimates for NDC and GEC Purposes Using Various Approaches**

Target	Approach	Abatement estimate (MtCO <sub>2e</sub> in 2030)		Additional investment estimate (billion US\$ <sub>2016</sub> in 2030)	
		Min	Max	Min	Max
NDC	BUR-TIMES	132	169	140	179
NDC	NERA-BNEF	132	169	26	46
GEC	GEC	23	23	60	60
GEC	GEC-WB power	23	23	34	34
GEC	GEC-TIMES power	23	23	37	37

Source: (AIFC, 2022)

This demand assessment has significant implications for the design and implementation of the Green Financial System in Kazakhstan. In 2015 green investments can be estimated to total between US\$ 500-600 million. In comparison, average annual additional investments needs to achieve the NDC-related investments are about US\$ 1-9 billion, which is equivalent to 1-5% of GDP per year. To achieve the GEC targets, annual average additional investments on the order of US\$ 2-4 billion are needed, which is equivalent to 1-2% of GDP per year. Green investment needs of around 3% of GDP are slightly higher than, but comparable with, estimates of green finance needs on a global scale.

To achieve Kazakhstan's green economy goals, it is essential to establish new mechanisms that can attract funds from both domestic and international sources. Private companies may need substantial incentives to ensure that green investments are economically viable. The Green Finance System should focus on specific sectors that require the most funding and where emissions can be reduced at a low cost. According to the GEC, approximately 75% of the overall green finance required to achieve the targets will be allocated to renewable energy, fuel switching to gas, and energy efficiency investments. A recent study suggests that Kazakhstan's transportation, heat supply, and building sectors offer promising areas for green investments that require minimal or no public support.

As for climate change adaptation, it is mentioned only briefly in the Green Economy Concept and not at all in Kazakhstan's NDC. However, the Green Economy Concept's targets on sustainable water use and achieving sustainable and high-productivity agriculture have a strong adaptation dimension.

There are currently no national or local cost estimates specifically for climate change adaptation for Kazakhstan. The draft concept of the law on climate change adaptation indicates that no additional funding from the national budget is needed for the implementation of the proposed legislative amendments, as these measures had been foreseen to be implemented under different titles already.

The Green Economy Concept has identified water saving measures in agriculture, industry and municipalities and estimated the cost to be US\$ 8.5 billion until 2030, of which US\$ 3.3 billion would need to be funded by public investment. Additional supply-enhancing measures in irrigation infrastructure, reservoir management and groundwater extraction would be needed to fully close the water gap. However no cost estimates are currently available. Much of such needed investment can be considered as adaptation investment, where adaptation is understood not as a limited environmental issue but rather as a cross-cutting economic theme comprising various important economic activities relating to businesses, infrastructure, agriculture, water and energy. In addition to initiatives that take place under the general headings of agriculture and water infrastructure, there have been a number of initiatives specifically designed for climate change adaptation measures. International financial sources have been utilized in various projects relating to agriculture, land management and resource efficiency. These projects represent at least US\$ 750 million of financing (including international financing and co-financing from various sources, including Kazakhstan) associated with climate change adaptation.

## **5 Conclusion**

The trends of the last two decades are due to the greening of the financial sector, its “greening”, which is directly caused by the process of globalization.

In the process of formation of the global “green” market, an important place is occupied by international financial institutions investing in projects of the “green” economy, as well as numerous financial intermediaries, whose network consists of national “green” banks, development banks, investment funds, financial corporations.

International organizations collaborating on “green” finance have created global regulatory standards, established systems for sharing information and expertise, and developed modern financing tools to support a new development model.

Kazakhstan is currently in the early stages of developing institutions for “green” financing. The main regulatory body responsible for investment activities and attracting funds for green projects is the Ministry of National

Economy of the Republic of Kazakhstan. In order to finance “green”, social national projects, a sustainable development sector has been created at the Kazakhstan Stock Exchange.

To foster the growth of the green finance market, actions need to be taken to encourage financial institutions and investors to invest in green projects. Various approaches are being implemented globally to motivate the implementation of environmental policies, such as direct public investment, the use of “green” financial instruments and their inclusion in asset portfolios, regulatory easing measures for financial institutions, and government subsidies at low interest rates.

## References

1. Semenova, N. N., Eremina, O. I., Morozova, G. V., & Filichkina, Yu. Yu. (2021). Financial institutions and regulation of “green” finance in the context of globalization. *Economy. Taxes. Law*, 14(4), 74-84.
2. Yashalova, N. N. (2013). “Green” economy: questions of theory and direction of development. *National Interest: Priorities and Security*, (11), 33-40.
3. Fedorova, E. P. (2020). The role of the state in solving the problems of the development of “green” financing. *Financial Journal*, 12(4), 37-51.
4. Odaro, E. D., Peeters, S., Maria Paraan, O. K., & Avendano, F. (2020). Green bond impact report: Financial year 2020. *International Finance Corporation, Treasury Market Operations and Climate Business Departments*.
5. Bakhvalova, M. (2020). Bond. “Green” bond. Who needs green bonds and why? Retrieved from: <https://www.banki.ru/news/daytheme/?id=10928450>
6. AIFC. (2022). Concept on introduction and development of green finance instruments and principles. Retrieved from: <https://gfc.aifc.kz/uploads/Concept%20on%20introduction%20and%20development%20of%20green%20finance%20instruments%20and%20principles.pdf>
7. Buchkina, A. A. (2020). Risks of the one belt, one road initiative. *Horizons of the Humanities*, (1), 87-94.
8. Khmyz, O. V. (2019). International experience in issuing “green” bonds. *Economy. Taxes. Law*, 12(5), 132-141.
9. Sedash, T. N., Tyutyukina, E. B., & Lobanov, I. N. (2019). Directions and tools for financing “green” projects in the concept of



- sustainable economic development. *Economy. Taxes. Law*, 12(5), 52-60.
10. Frolova, E. E. (2020). The New Ecosystem of the European Union Financial Market: Digitalization and Sustainability. *Bulletin of the PFUR. Series: Legal Sciences*, 24(3), 673-694.
  11. Madi, M. & Kennet, M. (2017). *Green Economy, Green Investment, Green Finance*. The Green Economics Institute.
  12. Tyutyukina, A. A. (2020). Institutional tools for the development and regulation of green finance. *Business. Education. Law*, (2), 137-143.
  13. Sachs, J. D., Woo, W. T., Yoshino, N., & Taghizadeh-Hesary, F. (2019). Why is green finance important?.
  14. Greenpeace. (2022). *Green Deal*. Retrieved from: <https://greenpeace.ru/wp-content>
  15. Ugolnitsky, G. A. (2010). Hierarchical management of sustainable development.
  16. Pakhomova, N. V., Kurt, R. K., & Malyshkov, G. B. (2013). Strategy for sustainable development and the transition to a green economy: updating priorities and mechanisms. *Bulletin of St. Petersburg University. Economics*, (4), 35-54.
  17. Van den Bergh, J. C. (2013). Economic-financial crisis and sustainability transition: introduction to the special issue. *Environmental Innovation and Societal Transitions*, 6, 1-8.
  18. Geels, F. W. (2013). The impact of the financial–economic crisis on sustainability transitions: Financial investment, governance and public discourse. *Environmental Innovation and Societal Transitions*, 6, 67-95.
  19. World Bank. (2012). *Inclusive green growth: The pathway to sustainable development*. The World Bank.
  20. Kurbanova, K. A., Massakova, S. S., Kurbanbayeva, A. A., & Syrlybayeva, N. S. (2022). Digital Kazakhstan: achievements of tax administration of the Republic of Kazakhstan in the year of the 30th anniversary of independence. *Bulletin of KazNU. Series Economic*, 139(1), 121-136.
  21. Kurdyukov, V., Badalyan, L., Bakhtinova, V., & Ovcharenko, A. (2020, February). “Green” Investments—Between Necessity and Constraints. In *IV International Scientific and Practical Conference' Anthropogenic Transformation of Geospace: Nature, Economy, Society'(ATG 2019)* (pp. 149-153). Atlantis Press.
  22. Maas, R., Kruitwagen, S., & van Gerwen, O. J. (2012). *Environmental policy evaluation: Experiences in the Netherlands*.

- Environmental Development*, 1(1), 67-78.
23. Biswas, N. (2011). Sustainable green banking approach: The need of the hour. *Business Spectrum*, 1(1), 32-38.
  24. Endres, A., & Querner, I. (2004). Economics of natural resources. St. Petersburg: Peter, 256, 15.
  25. Lovins, L. H., Von Weizsacker, E., Lovins, A. B., & Milani, B. (1998). Factor four: doubling wealth, halving resource use. *Alternatives Journal*, 24(2), 33.