PAGE PARTNERSHIP FOR ACTION ON GREEN ECONOMY

MINISTRY OF ECOLOGY, GEOLOGY AND NATURAL RESOURSES OF THE REPUBLIC OF KAZAKHSTAN

KAZAKHSTAN`S TRANSITION TO GREEN ECONOMY:

A STOCKTAKING REPORT

UN environment programme

International Labour Organization

UNDP

UNIDO UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

unitar United Nations Institute for Training and Research

The report is published as part of the Partnership for Action on Green Economy (PAGE) – an initiative by the United Nations Environment Program (UNEP), the International Labour Organization (ILO), the United Nations Development Program, the United Nations Industrial Development Organization (UNIDO) and the United Nations Institute for Training and Research (UNITAR).

Citation
PAGE (2020), Kazakhstan's transition to a Green Economy: A stocktaking report.

Disclaimer
This publication has been produced with the support of PAGE funding partners. The contents of this publication are the sole responsibility of PAGE and can in no way be taken to reflect the views of any Government. The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Partnership for Action on Green Economy concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the Partnership for Action on Green Economy, nor does citing of trade names or commercial processes constitute endorsement.

Cover photos:
©Loic Lagarde – ©Eskinder Debebe / Capital Postcard – ©Kazybek Baidulla

KAZAKHSTAN`S TRANSITION TO GREEN ECONOMY:
A STOCKTAKING REPORT

ACKNOWLEDGEMENTS

This report was commissioned by the Partnership for Action on Green Economy (PAGE) at the request of the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan. Officials from a variety of ministries contributed to this report including representatives from the Ministry of Energy, Ministry of Agriculture and the Ministry of Industrial and Infrastructural Development. Special thanks go to Ms. Aliya Shalabekova representing the Ministry of Ecology, Geology and Natural Resources for her continued support during the Project.

On behalf of PAGE, the report development was led by the UNITAR Green Development and Climate Change Division for Planet under the guidance of Ms. Maya Valcheva with invaluable help of Ms. Assel Nurbekova, PAGE Programme National Coordinator.

The research team of the Center for Strategic Initiatives collected data, managed the comprehensive stakeholders' consultations and drafted the report. The project was managed by Mr. Zhanibek Baidulla with support of Mr. Talgat Zhumabekov, Mr. Siegfried Ladnorg and Ms. Gulzhamal Issayeva.

The PAGE team gratefully acknowledges the support of all its funding partners and contributors to this report.

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AEOK	Association of Environmental Organizations of Kazakhstan
ARE	Alliance for Rural Electrification
Atameken Chamber	National Chamber of Entrepreneurs of Kazakhstan "Atameken"
BRI	Belt and Road Initiative
CHP	Combined Heat and Power Plant
Coalition	Coalition for Green Economy and Development "G-Global"
DAMU	"Damu" Entrepreneurship Development Fund" JSC
EAEU	Eurasian Economic Union
EBRD	European Bank for Reconstruction and Development
EIA	Energy Information Administration
FDSII	Socially Important Initiative Development Fund
GDP	Gross Domestic Product
GE	Green Economy
GFC	Green Finance Centre
GHG	Greenhouse gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GoK	Government of Kazakhstan
Green Economy Concept	The Concept for the transition of Kazakhstan to Green Economy
Green Council	The Council on Transition to Green Economy Under the President of Kazakhstan
IEA	International Energy Association
IGTIPC	International Green Technologies and Investment Projects Center
ILO	International Labour Organization
IRENA	International Renewable Energy Association
JM	Justice Ministry
KEGOC	Kazakhstan Electricity Grid Operating Company
kWh	kilowatt-hours
LRK	Law of the Republic of Kazakhstan
MAgri	Ministry of Agriculture
MEBP	Ministry of Economic and Budget Planning
MEGNR	Ministry of Ecology, Geology and Natural Resources
MEd	Ministry of Education and Science
MEn	Ministry of Energy
MFin	Ministry of Finance
MIID	Ministry of Industry and Infrastructural Development
ML	Ministry of Labor and Social Protection of the Population
MNE	Ministry of National Economy
MW	Megawatt

National Plan	National Plan "100 Concrete Steps"
NGO	Non-Governmental Organization
OECD	Organization for Economic Co-operation and Development
PAGE	Partnership for Action on Green Economy
ROI	Return on Investment
SME	Small and Medium Enterprises
UN	United Nations
UNDP	United Nations Development Program
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
WB	World Bank
WHO	World Health Organization
WNA	World Nuclear Association

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

In recent years, Kazakhstan has become a leading economy in the region of Central Asia. The economy has benefited from the export of natural resources and the First President`s open foreign policy has generated a continuous foreign investment flow into the country. However, a number of social, economic and environmental challenges have persisted, hampering Kazakhstan's transition to a high-income economy and threatening the long-term sustainability of the country's development model.

The transition of the country from oil-dependent economy to an inclusive green society, has been recognized as a key priority at the highest political level. This direction has been encoded in numerous national strategic documents and a myriad of sectoral policies and plans in the past 10 years. The commitment of Kazakhstan to Green Economy culminated with the adoption of the *Concept for the Transition of Kazakhstan towards a Green Economy* in 2013 – an ambition, multisectoral strategy aimed at restoring natural capital, increasing resource efficiency and competitiveness, and improving social conditions.

Yet, main source of Kazakhstan's national income continues to be oil, gas, and minerals. Investment in Green Economy remains low, the energy and material intensity of the economy is one of the highest in the world, and the penetration of green technologies is insufficient to change the prevailing industrial model.

> *Kazakhstan is the largest contributor of GHG emissions in Central Asia (353 million tons) and coal burning creates 80% of the country`s electricity generation. Only about 2% of electricity generated comes from renewables.*

The fluctuations of the world prices for commodities affect the value of the national currency and contribute to social imbalances. Economic opportunities remain concentrated around few major cities and the differences in life expectancy, employment rate, and purchase power between urban and rural areas are stark.

Environmental challenges, such as land degradation and desertification, unsustainable management of municipal, industrial, and historic waste, air pollution and water scarcity have a negative effect on both people and businesses.

> *Approximately 82% of Kazakhstan's lands are affected by erosion. In the south about 75% of the arable and pasture lands are characterized by a high or very high level of desertification. A decrease in the yield of spring wheat by 13-49% is expected by 2050.*

Another eminent environmental challenge relates to water availability. 50% of the existing glaciers are expected to melt by the end of the century causing floods and mudflows. In the same time, large amount of irrigation water is lost due to poor irrigation infrastructure. Despite challenges, policies and investment in climate change adaptation, sustainable waste and water management, biodiversity conservation, remain weak and require improvement.

The lack of sustainable financing is one of the most serious obstacles to "greening" the economy, and to preserving and resorting natural capital.

> *The average annual deficit for long-term green finance is estimated to be $2.3 billion, with EBRD, the European Investment Bank (EIB) and the European Union (EU) providing the bulk of green finance.*

This report takes stock of the challenges before Kazakhstan Green Economy transition, documents progress so far, and charts opportunities and priority area for policy action, which can have transformative effect on Kazakhstan's development. Ultimately, the report identifies priorities to tackle these challenges within the framework of the PAGE program.

Chapter 2 gives an overview of the mission and objectives of the Partnership for Action on Green Economy (PAGE) globally, as well as in Kazakhstan. It also outlines the rationale, scope, and methodology for this report.

Chapter 3 of this report gives an overview of the current situation in Kazakhstan in terms of social, economic and environmental challenges the country is facing.

Chapter 4 looks at the key national and international actors who play a role in advancing Green Economy in Kazakhstan. The main agencies and institutions reviewed include government agencies, civil society, and international stakeholders (see table 2 and 3).

Chapter 5 reviews the country`s strategic national policy framework for promotion of Green Economy. Key strategic documents, such as the Concept for the Transition of Kazakhstan towards a Green Economy, Kazakhstan-2050 Strategy, and Kazakhstan Environmental Code are examined. Table 1 below lists laws, strategies, and policies.

Chapter 6 provides a review of the status of the green economy transition in Kazakhstan from a sectoral and thematic perspective. Main policy documents, projects and initiatives are reviewed for the sectors of energy, agriculture, ecology, finance, industry, education and employment. Each subsection concludes with a brief outlook of the possibilities for PAGE to advance progress on thematic and sectoral level.

Chapter 7. Sums up the findings and recommendations from the stocktaking process, informed by various sources and research methods. A set of criteria have been applied to define PAGE priorities, including: 1. Potential for transformational impact 2. Strong demand from national stakeholders (i.e. political support), 3. Alignment with PAGE mandate, offer of services and operational modality, and 4. Potential synergies with projects and programmes by international and national partners.

The mandate of the Partnership for Action on Green Economy is to provide services that enable countries` transition towards green economies, including provision of technical and expert support, conducting diagnostics and evidence-based analysis, helping to define policy measures and tools.

Based on the criteria listed above, the main areas/interventions where PAGE can provide support and value added have been identified as follows:

1. **Support for the development and adoption of a low-carbon economic development strategy (LCDS)** reflecting the country's long-term vision to diversify and decarbonize the national economy and key industries. In the short term, the LCDS can provide a basis and a rationale for updating/raising the ambition of the Green Economy Concept. Besides transformational impact, the LCDS offers possibilities to collaborate with GIZ as a key international partner (see chapter 4 of this report) and sets a strategic direction within the PAGE mandate.
2. **Update of the Concept for the transition to Green Economy**. Since the Concept was adopted in 2013, Kazakhstan has ratified the Paris Agreement and the 2030 Agenda for Sustainable Development. Climate and SDG goals need to be better integrated in the country's Green Economy policy in accordance with the commitments made.
3. **Improve envirinmnetal governance by supporting the adoption of a new Environmental Code**. The new «greener» environmental regulatory document will ensure that environmental principles and methods such as Strategic Envirinmnetal Assessment and Best Available Technologies become mainstream practices. Leading to transformational effect across the economy.
4. **Support the development of a new Waste management programme.** Sustainable waste management was one of the priorities in the Kazakhstan's application to PAGE and figures as one of the seven priorities in the new Environmental Code. There is no overall strategy for the management of various waste streams and the stocktaking analysis revealed a lack of common vision across government agencies, private sector and civil society for the development of the waste sector. Wholistic, systemic approaches, built around preventive measures and circularity, have received relatively little attention. PAGE can provide catalytic, technical support for the development of the waste sector, incorporating the principle of circularity at national, regional, and local level. Moreover, PAGE is uniquely suitable to support such work due to the combined expertise of PAGE agencies (e.g. UNEP in the areas of municipal waste, UNIDO on industrial waste, UNDP's access to regions, etc.)
5. **Introduction of green public procurement.** This study revealed that in Kazakhstan the potential of sustainable public procurement is not fully utilized. Considering that the main share of procurement falls on the state and quasi-state sectors, the introduction of the principles of green procurement can be an effective tool to stimulate demand and supply for sustainable products ad services and the creation of green jobs.
6. **Support for Green Industry and access to the best available technologies (BAT)**. In

recent years Kazakhstan has taken steps to promote access to green technologies. For this purpose the International Green Technologies and Investment Center was established (IGTIC). More can be done to promote green business and green technologies through legal acts and norms, as well as via the piloting of projects and initiatives that demonstrate the potential of the sector. PAGE can support the development of standards, taxanomy, procedures to enable flow of investment and the proliferation of BAT. Collaboration with international and national partners, such as IGTIC, GIZ, regional authorities and others can be explored.

7. **Making the case for fossil fuel subsidy reform**. The Government of Kazakhstan has reconfirmed commitment to increase energy efficiency and share of renewables. However, with reforming inefficient fossil fuel subsidies, progress will be limited. Fossil fuel subsidy reform will ensure Kazakhstan can meet NDC commitments, and release revenue to support energy efficiency and renewable energy investment. PAGE can carry out diagnostics and analysis to make the case for fossil fuel reform. Collaboration with GIZ and UNDP can be explored.
8. **Capacity building for an effective transition to Green Economy**. Despite the fact that Green Economy has been a concept in the public space in Kazakhstan for some years now, concerted capacity development efforts are needed empower middle and senior officials to develop and implement green economy policies and actions. The stocktaking revealed that various government agencies have different understanding of what the green economy means. PAGE can help build common understanding and competencies across the public sector, by working closely with the Academy of Civil Service. In addition, measures that promote green economy education and awareness raising among youth and the public at large, can stimulate public debate and support on national level.

As identified in this stocktaking report, the priority areas for PAGE include support for overarching strategies and policies aimed at diversification and decarbonization the economy, as well as sector/thematic specific actions in the energy, waste, public procurement, and industry sectors. Action in these areas will increase the competitiveness of the Kazak economy, help create green and decent employment, preserve and restore natural capital, and increase people's wellbeing and social equality.

Table 1 Economy policy programs and initiatives in Kazakhstan

FOCUS AREA	GOVERNMENT INITIATIVES
Strategies	Strategy "Kazakhstan-2050" Strategy "Kazakhstan-2025" Strategic plans of relevant ministries
Green Economy Core Policy Documents	Concept for the transition of Kazakhstan towards Green Economy
Laws	Environmental Code Law "On Energy Saving and increase of Energy Efficiency" Law "On support for the use of renewable energy sources" Land Code Water Code Forest Code Tax Code Code of Administrative Offences Entrepreneurial Code Law "On local governance and self-governance in the Republic of Kazakhstan" Law "On state regulation of the development of the agri-Industrial complex and rural areas" Table 2 Code "On Subsoil and Subsoil Use" Law "On Gas and Gas Supply" Law "On Public Procurement" All by-laws for the enforcement of laws
Other Initiatives	Adoption by the Astana International Financial Centre (AIFC) of the Green Bond Issue and Circulation Rules developed on the basis of the Principles of Green Bonds of the International Capital Market Association and provisions of the Climate Bonds Initiative United Republican Media Plan for Informational Support of the Implementation of the Concept on the Transition of the Republic of Kazakhstan to Green Economy EXPO-2017 Establishment of the International Green Technologies and Investment Projects Center (IGTIPC) Establishment of the "Green Finance Centre (GFC)" at AIFC

Table 3 Main international initiatives implemented programmes in the area of Green Economy

Key International Organization working on Green Economy	Programmes and initiatives
United Nations Development Programme - UNDP	Sustainable Cities for Low-Carbon Development in Kazakhstan Energy Efficient Standards, Certification And Labeling for Appliances and Equipment in Kazakhstan De-risking renewable energy investment New approaches to automated water supply system and e-billing Strengthening human resources, legal frameworks, and institutional capacities to implement the Nagoya Protocol on biodiversity Minamata initial assessment for Kazakhstan Conservation and sustainable management of key globally important ecosystems for multiple benefits Integrated dryland and drought management
United Nations Environment Programme – UNEP	Promotion of Sustainable Consumption and Production patterns, Sustainable Public Procurement and Green Economy-related issues Integrated Environmental Sustainability Waste management and outlook, including e-waste Climate Change, including in the mountain areas Ecosystem restoration, protection of biodiversity and wildlife Protection of the Marine environment of the Caspian Sea Integrated Environmental Outlook and Shared Environmental Information System (SEIS)
Deutsche Gesellschaft für Internationale Zusammenarbeit – GIZ	Supporting Green Economy in Kazakhstan and Central Asia Ecosystem-based adaptation to climate change in high mountainous regions of Central Asia Sustainable use of natural resources in Central Asia Transboundary water management in Central Asia
Asian Development Bank	Water and Other Urban Infrastructure and Services Agriculture, Natural Resources, and Rural Development Renewable Energy Development
European Bank for Reconstruction and Development – EBRD	Renewable Energy Development Public Transport Development Urban LED Lighting Solid Waste Management Water and Wastewater Infrastructure Modernization

Table 4 Key national agencies with a role and responsibility in the area of Green Economy

FOCUS AREA	MAIN ACTORS
Ministries	Ministry of Energy Ministry of Ecology, Geology and Natural Resources Ministry of Industry and Infrastructural Development Ministry of Agriculture Ministry of National Economy Ministry of Education and Science
Government owned Joint State Companies	Sovereign Wealth Fund "Samruk-Kazyna" JSC "Samruk-Energy" JSC "Kazakhstan Electricity Grid Operating Company" (KEGOC) JSC "KAZAKH INVEST" National Company" JSC "Financial Settlement Center of Renewable Energy" LLP "Zhasyl Damu" JSC "Electric power and energy saving development Institute" JSC "Kazakh Tourism National Company" JSC
Non-Governmental Organizations	National Chamber of Entrepreneurs of Kazakhstan "Atameken" Socially Significant Initiatives Development Fund Coalition for Green Economy and Development G-Global Association of Environmental Organizations of Kazakhstan "KazWaste" Kazakhstan Association of Waste Management" Self-Regulatory Organization International Green Technologies & Investments Center Kazakhstan Renewable Energy Association Kazakhstan Energy Auditors Association Kazakhstan Electric Power Association Kazakhstan Association of Nature Users for Sustainable Development Centre for Sustainable Consumption and Production
International Organizations	United Nations Development Program United Nations Economic Commission for Europe United Nations Environment Program European Bank for Reconstruction and Development Asian Development Bank World Bank Organization for Economic Co-operation and Development Deutsche Gesellschaft für Internationale Zusammenarbeit

2. INTRODUCTION

2.1. TOWARDS A PARTNERSHIP FOR ACTION ON GREEN ECONOMY

In 2012, the Rio+20 Declaration – The Future We Want, recognized the concept of Green Economy as a driver for achieving sustainable development and poverty eradication. It called upon the United Nations to support interested countries in their efforts to move towards "greener" and more inclusive economies.

The Partnership for Action on Green Economy (PAGE) is a response to the Rio+20 Declaration. It is an initiative of five United Nations Organizations: the United Nations Environment Program (UNEP), the International Labor Organization (ILO), the United Nations Industrial Development Organization (UNIDO), the United Nations Development Program (UNDP) and the United Nations Institute for Training eenand Research (UNITAR), to support countries in pursuing an inclusive, resource-efficient, low-carbon economy. The overall vision of PAGE is to contribute to the equitable and sustainable transformation of national economic structures in 30 countries by 2020, with the ultimate goal of achieving environmental sustainability, creating decent jobs, reducing poverty and improving human well-being.

PAGE`s objective is to support countries to generate new jobs and skills, promote clean technologies, redirect finances, and reduce environmental risks and poverty. More specifically, PAGE`s activities are aimed at developing and implementing national Green Economy strategies, building enabling conditions in participating countries by moving investment and policies towards the creation of new generation assets, such as clean technologies, resource efficient infrastructure, well-functioning ecosystems, "green" skilled labor and effective governance.

Kazakhstan applied and was admitted to the Partnership in 2018, underlining the Government's commitment to a Green Economy. As key directions sustainable nature resources management, "green" energy and industry, as well as sustainable agriculture were identified

PAGE support is provided to partner countries for 5 years, the first of which is the year of "inception". This analytical report is the first PAGE activity in the country. The report was developed to identify and clarify priorities for further cooperation with national and international partners. The report was prepared by CSI Research & Lab, which is a subsidiary of the independent Kazakhstan consulting and analytical company CSI Group.

2.2. THE PURPOSE AND SCOPE OF THE STUDY

The purpose of the study was to identify key environmental, social and economic challenges that Kazakhstan is facing in the country transition towards Green Economy, identifying policy gaps and defining ways and approaches to tackle these challenges within the framework of PAGE.

2.3. STUDY METHODOLOGY

The study is based on the results and recommendations of the PAGE mission, reliable date from official statistics and other open sources, reports and publications of national and international organizations, and interview with group of main stakeholders. The report is structured according to the format provided by PAGE. This document contains a set of recommendations arising from the analytical part, as well as from best international available practices.

DATA COLLECTION

The review is based on the both primary and secondary data with the best quality and references. The main data sources are as follows:

- Officially requested data (from governmental, non-governmental and private entities);
- Interview questionnaires (information gained from key stakeholders from the government, private, civil society and academic sectors) - the list of the stakeholders interviewed is available in the Annex to this study;
- Publicly available data (i.e. Committee of Statistics of the Republic of Kazakhstan);

DATA AND CONTENT STRUCTURING

The content of the report is structured according to mutually exclusive and collectively exhaustive (MECE) principle. Application of the MECE principle allows creating certain logic and structure the content most clear for the reader.

FINDINGS AND RECOMMENDATIONS

Findings and recommendations are delivered by group of experts based on analytical part of the review and series of meetings and workshops.

3. BRIEF OVERVIEW OF POLITICAL AND ECONOMIC SITUATION IN KAZAKHSTAN

3.1. POLITICAL SITUATION AND GOVERNANCE

Kazakhstan – in line with its Constitution – is a democratic, legal, unitary, secular republic with a presidential form of government.

Executive power is carried out by the Government, which is formed by the President in the manner prescribed by the Constitution.

Legislative power is exercised by a bicameral parliament – the Senate (upper house), the Mazhilis (lower house). The Senate consists of 47 deputies, 15 of whom are appointed by the President, the Mazhilis – 107 deputies.

In March 2019, Nursultan NAZARBAYEV, who had been leading Kazakhstan since independence, voluntarily resigned from his post as President, but retaining the position of the Chairman of the Security Council, whose powers were significantly expanded in October 2019.

The Government has made significant progress in improving governance, including substantial progress in budgeting, public service reform and e-government. However, a range of issues of governance still hinder long-term sustained economic growth, in particular too centralized governance, politicized decision-making, little delegation of authority to regional administrations, poor transparency and corruption (Kazakhstan ranked 131 out of 176 countries in the 2016 Corruption Perceptions Index by Transparency International). The heritage of Soviet management system is easily observable in Kazakhstan's public administration, notably highly formalized and slow bureaucratic process.

Within the framework of the Rio+20 Conference, the Government of the Republic of Kazakhstan adopted a number of strategic decisions, including the new long-term development strategy Kazakhstan-2050, as well as the Concept for the transition of the Republic of Kazakhstan towards Green Economy. The Green Economy Concept became a continuation of the Environmental Safety Concept and the Concept for transition of the Republic of Kazakhstan to Sustainable Development. The transformation of environmental legislation in the country follows international practices, taking into account national characteristics and the development priorities of the country.

In Central Asia the Republic of Kazakhstan has a leading position in establishing ways to transition to Green Economy. First of all, it is an intermediary activity within the framework of the Green Bridge Partnership Program between Asian and European countries. The International Partnership Program "Green Bridge" is an initiative of Kazakhstan for the transition of countries to Green Economy through multilateral partnerships with business, public and international cooperation. The program was presented by the First President of the Republic of Kazakhstan, Nursultan Nazarbayev, at the III Astana Economic Forum in May 2010. It was approved at the 6th ESCAP Conference of the Countries of the Asia-Pacific region in October 2010 in Astana, and later at the 7th Ministerial Conference "Environment for Europe" in September 2011. The program was included in the final document of the Rio + 20 World Summit on Sustainable Development "The Future We Want". In the period from 2012 to 2018, the Government of the Republic of Kazakhstan, together with the UNDP Country Office, implemented a number of projects to assist the country in the transition to Green Economy. In September 2015, during the 70th UN General Assembly, on the basis of the infrastructure and heritage of the ASTANA-EXPO 2017 exhibition, the International Green Technologies and Investment Projects Center was established. The Center was presented to the world community in 2018 during the Global Challenges Summit 2018 of the AEF.

Kazakhstan was also selected to host one of the largest international exhibitions EXPO-2017, the subject of which was devoted to "Energy of the Future". EXPO-2017 created an opportunity to join efforts for scientific, technical and industrial cooperation, to solve global problems related to climate change, improve energy efficiency and provide energy access for all.

3.2. ECONOMIC PROFILE

Kazakhstan's economy is the largest in Central Asia and the second largest in the post-Soviet space.

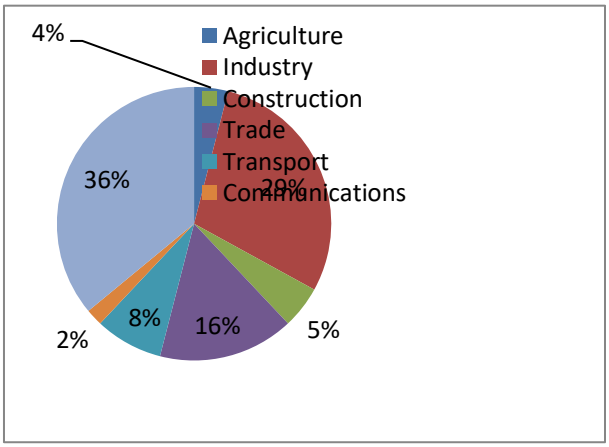
Like all other former Soviet republics, Kazakhstan has experienced a difficult economic transition since the 1990s. Despite this, the economic recovery was already in place by the early 2000s (mainly because of the oil export), when GDP growth rates reached 7%. Regarding further economic development of the republic, the GDP of Kazakhstan in 2018 rose to $179.3 billion. The growth was 4.1% in 2018[1].

A part of this indicator, namely 37.9%, was accounted by the production of goods, 55.5% by services and 6.7% by taxes on products. In the production of goods, the largest share belongs to raw materials extracting – 14.9%, whereas the processed goods reflect 11.4%. In production of services the main part is wholesale and retail trade – 16.8%. R&D services are negligible little[2].

The high economic performance of Kazakhstan is primarily supported by oil production and commodity prices. The estimated value of the mineral resources exceeds ten trillion US dollars. In proven reserves of zinc, tungsten and barite, Kazakhstan ranks 1st in the world, silver, lead and chromite – 2nd, copper and fluorite – 3rd, molybdenum – 4 and gold – 6th place. Kazakhstan also has significant oil and gas reserves (the 9th largest in the world), which are located in the western part of the country. Moreover, Kazakhstan ranks as the 2nd place in uranium reserves and as the 8th in coal reserves.

Mining is a capital-intensive industry, employing only 2% of the working population and increasing its share to 20% of the GDP. At the same time, in 2018, agriculture accounted for only about 4% of GDP (see Chart 1), while 42.12% of the population[3] lives in the rural areas. This indicates a structural imbalance in the economy of the country. Another indicator of regional disparities is the growth rate in different oblasts of Kazakhstan, which varies from 12.5% in the oil-rich Atyrau region to 4.7% in the Karaganda region, with a decline of 2.3% in the Kyzylorda region[4].

Chart 1. GDP Composition in 2018[12]



The current state of Kazakhstan's economy is characterized by high energy intensity. The reasons, except for the harsh climatic conditions, are the growing technological lack of sophistication of energy-intensive industries, and of housing and communal services, the state pricing and tariff policies, as well as the relatively low cost of energy, which does not encourage many consumers to save energy. According to the 2016 review of the International Energy Agency, Kazakhstan ranks 119th out of 143 countries in terms of energy intensity of GDP. The energy intensity of Kazakhstan's GDP is twice as high as the world average. This means that Kazakhstan is using two times more natural resources for the production per GDP output.

The country intends to transform the economy to produce more products with higher added value. The value chains should focus on the processing of raw materials, and not on its extraction. Moreover services with higher added value and R&D should be considered as priority directions. The priorities and key areas of the Green Economy Concept create an opportunity for the practical implementation of this approach.

3.2.1 BUSINESS ENVIRONMENT

In 2019, Kazakhstan ranked 28th out of 190 countries in the Ease of Doing Business Index. Yet, Kazakhstan's economy is mostly driven by state-owned enterprises. This hinders competition and discourages private investments. The government directly or indirectly owns the main sectors of the economy and fully owns and controls the biggest companies in the energy, transportation, postal, telecommunications, mobile services and electricity sectors (production, distribution and supply), as well as has a controlling share in branches of other companies. Price controls have been implemented in a number of markets.

[1] Statistics Committee of the RoK
[2] Statistics Committee of the RoK
[3] Population situation analysis of the RoK, UNFPA (2019)
[4] Internet source https://economy.kz/

High level of government interfering with the economy can hamper innovations, entrepreneurship and foreign investments. They constrain the space for growth for new businesses, as well. The share of SMEs in both GDP and employment is not significant according to international standards, and small-scale firms often operate on the periphery of the shadow economy. At the end of 2018, the share of SMEs' GVA in the GDP was estimated at 28%[5], which is 9.4% higher than in 2017.

According to the latest monitoring of SME development in Kazakhstan (2017), which is annually conducted by DAMU[6], the number of operating SMEs decreased by 3.4% and by the end of the year amounted to 1,146 thousand units. The share of operating SMEs among registered entities is estimated at 74.4%, which is 4.6 percentage points lower than in 2016.

The decrease in the number of operating SMEs occurs in line with the reduction in the number of individual entrepreneurs. At the same time, the number of SMEs in the form of legal entities increased by 19.0 thousand units. Their share in the overall structure of SME subjects increased up to 18%. Thus, the qualitative institutional development of small business continues due to the creation of new legal entities and re-registration of individual entrepreneurs in LLP.

The decrease in the number of operating SMEs occurs in line with the reduction in the number of individual entrepreneurs. At the same time, the number of SMEs in the form of legal entities is increasing. The share in the overall structure of SME increased up to 18%. Thus, the qualitative institutional development of small business continues due to the creation of new legal entities and re-registration of individual entrepreneurs in LLP.

The number of population involved in SME is 1.6 million people as per 2019. The share of the population employed in SME in the total number of employment rate in the country as of 2019 was around 30%.

The development of new business opportunities can serve in Kazakhstan as a momentum for a more qualitative growth of small and medium-sized enterprises. Along with the creative industry and digital technologies, it is necessary to note the opportunities that can be created in the «green» sphere. Such business initiatives can include waste processing projects including production, cultivation and production of organic food, and others. Governmental support in this area will create new jobs, increase the competitiveness of local producers, and an increase of SME tax revenues.

3.2.2. TRADE BALANCE AND TRADE PARTNERS

Kazakhstan has been recording trade surpluses since 1998 mainly due to rise in shipments of oil and other commodities. Main imports are: electronics, machinery and mechanical appliances (25 % of total imports); mineral products (15 %); transport equipment (12 %) and base metals and related products (10 %). Main trading partners are: China (12 % of total exports and 17 of imports) and Russia (10 % of exports and 40 % of imports). Others include: Italy (18 % of total exports and 4 % of imports), the Netherlands and Germany[7].

Trade in waste sector

In the context of this study, it is important to consider trade trends in the waste sector. The external turnover of the municipal solid waste of the country, which constitutes the main share of municipal waste (paper, glass and plastic waste) in 2017 amounted to $ 3.7 million in value terms and 16.4 thousand tons in kind - an increase compared to the previous 2016 year amounted to 27.8% and 19.7%, respectively.

Based on the data of the Statistics Committee, it can be said that over the past five years, CN FEA "Regenerated paper or cardboard (waste paper and other waste)" has one of the leading positions in the export structure. So, for example, in 2018, the share of this type of waste was 53.1%.

In 2019, a ban on the export of paper, cardboard and waste paper came into force. This measure will help to increase the share of processing of this type of waste. Based on the international experience, the ban on the export of secondary raw materials enables the development of local production, reduces the dependence of the MSW market on external factors, and increases the profitability of the processing business by reducing export costs.

[5] Internet source: baigenews.kz. – 2019.

[6] Report on the state of development of Small and Medium Entrepreneurship in Kazakhstan and its regions – Damu EDF JSC 2017

[7] Trading Economics. Kazakhstan trade balance 1998-2020

Kazakhstan posted a current account surplus of USD 1.20 billion in the first quarter of 2020, compared to a USD 0.1 billion deficits in the same period a year ago, a preliminary estimate showed. This was the first current account surplus since the last quarter of 2018. The goods surplus rose to USD 6.91 billion from USD 6.18 billion a year earlier and the services deficit narrowed to USD 0.84 billion from USD 0.89 billion. Meantime, the primary income gap decreased to USD 4.92 billion from USD 5.52 billion while the secondary income surplus remained barely unchanged at USD 0.10 billion[8].

3.2.3 UNEMPLOYMENT RATE

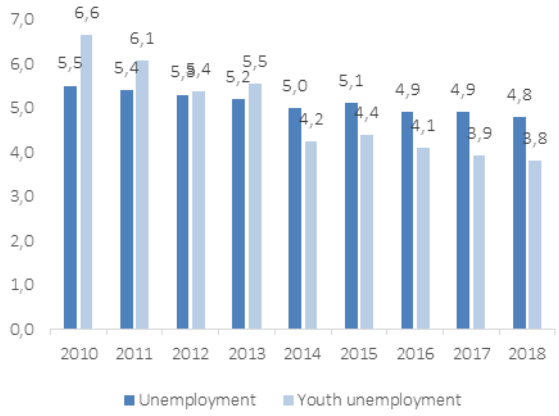
The number of workers aged 15 and over in the second quarter of 2019 was 9.2 million people. The economy of the republic employed 8.8 million people, or 66.7% of the population aged 15 and over. The employment rate for the population aged 15 years and over was 66.7% and decreased by 0.1% compared to the second quarter of 2018. The number of unemployed was 441.8 thousand people, the unemployment rate 4.8%[9].

In total, 6.7 million people, or 76.1% of the employed population, were hired workers, 1.5 million people - individual entrepreneurs, 2.9 thousand people – engaged in private practice, 7.2 thousand people – were founders (participants) of economic partnerships and founders, shareholders (participants) of joint-stock companies, as well as members of production cooperatives, 541 thousand people – independent workers[10].

The majority of the employed population was engaged in such types of economic activities as trade (16.1%), agriculture (13.9%), industry (12.6%), and education (12.6%)[11].

Although the overall unemployment rate shows a downward trend, the youth unemployment rate (15-28 years old[12]) has been declining faster in recent years.

Chart 2. Youth unemployment rate[13]



As was noted above, in the section on the business environment, the development of new "green" markets will help to maintain the pace of decline of unemployment, especially among young people. Today, in Kazakhstan, there are initiatives to support entrepreneurship and job creation, such as projects of the Atameken National Chamber of Entrepreneurship. However, there are no specialized business incubators aimed at creating, developing and supporting environmentally friendly entrepreneurship. There are separate initiatives and projects run by international organizations and foundations.

A good example is the competition of start-up projects for young people, launched in 2017 in the framework of the joint EU/UNDP/UNECE project "Support to Kazakhstan for the transition to a Green Economy model"[14]. The competition, organized in conjunction with the Bolashak Association, allowed three young entrepreneurs to create an official business, based on their ideas aimed at conservation of natural resources and at the same time profiting from it. The competition demonstrated that business ideas related to environmentally friendly agriculture and use of green technologies for water management (watering, drinking bowls for livestock, etc.) are profitable with an acceptable payback period. In this regard, we can conclude that the creation of "green" business incubators for young people will help develop the field of environmental entrepreneurship and increase employment, particular in rural areas.

[8] Statistics Committee of the RoK
[9] Statistics Committee of the RoK
[10] Statistics Committee of the RoK
[11] Statistics Committee of the RoK
[12] The definition of "youth" is set in the Youth Policy Act of 2015

[13] Statistics Committee of the RoK
[14] UNDP Kazakhstan

Table 5 Main indicators of the labor market

	Total	Including	
		Men	Women
Labour force, thousands of people	9 204,7	4 752,7	4 452,0
Labour force share in the population aged 15 years and over, %	70,1	76,6	64,3
Employed population, thousands of people	8 762,9	4 541,7	4 221,2
Employment rate, in % to:			
the population aged 15 years and over	66,7	73,2	60,9
the workforce	95,2	95,6	94,8
Unemployed population, thousands of people	441,8	211,0	230,8
Unemployment rate, %	4,8	4,4	5,2
Unemployed people aged 15-28 years, thousands of people	81,1	35,9	45,2
Youth unemployment rate at the age of 15-28, %	3,7	3,1	4,5
Long-term unemployment rate, %	2,1	1,7	2,4
People who are not part of the labor force	3 929,5	1 455,3	2 474,2
Non-employee share of population aged 15 years and over, %	29,9	23,4	35,7

3.3. SOCIAL PROFILE

Given the importance of public access to social services, the current situation was analyzed and the main social challenges in the context of the Green Economy Concept implementation were identified.

3.3.1. REGIONAL AND RURAL DEVELOPMENT, ACCESS TO SERVICES

Kazakhstan has low population density with 6.7 people per square kilometer. At the same time, the majority of the population lives in cities. The process of urbanization is actively progressing. The population of rural areas is decreasing. Over the past 5-6 years, the share of the rural population has decreased from 45.1% to 42.7%[15]. This is primarily due to the lack of job opportunities in rural areas and the fact that young people do not see any prospects for themselves.

In order to modernize and develop the social environment in rural areas and improve the accessibility of services for villagers, special programme "Auyil - El Besigi" (The Village – The Cradle of the Nation) was announced in the Adressof the President of Kazakhstan dated 5 October 2018.

The programme addresses the development of social and engineering infrastructure, ensuring the accessibility of rural residents to social- and public services, and create more comfortable living environment. In 2019, 52 rural settlements were selected together with Akimats, for implementation of more than 400 activities. The majority will be focused on the development of transport infrastructure (repair of intra-settlement roads), social infrastructure (construction, reconstruction and repair of sports facilities, schools, hospitals and medical clinics) and housing and communal services (repair of gas, water and heat supply systems).

In 2019, $77.1 million from the national budget and more than $10.3 million from the local budget were allocated for this purpose. Within the framework of the programme, it is planned to create a more comfortable living environment in the main villages within the next 7 years, the population of which will reach 6.1 million people in 2025. By 2025, it is planned to provide the necessary goods and services in accordance with the system of regional standards to 80% of all rural residents.

Within the framework of the State Program for the Development of Productive Employment and Entrepreneurship – "Enbek" - the issue of unemployment will be addressed by providing microcredits in rural areas to unemployed and self-employed citizens, as well as beginners and current entrepreneurs. These credits are designed to create new microenterprises and expand existing businesses. More than 4,000 microcredits for rural youth are planned for 2019, in accordance with the Roadmap for the Year of the Youth. Also, within the framework of the Business Roadmap Program-2020, $4.6 million has been allocated for 2019-2021 to provide state grants to young entrepreneurs under the age of 29 years. Grants of up to $7.7 thousand have been allocated to implement new business ideas in priority sectors of the economy and manufacturing industries.

[15] Statistics Committee of the RoK

Overall, more than 7.7 million people, or about 42% of the country's total population live in 6,500 rural settlements. The funds from the national budget by region were allocated in line with the number of rural population living in villages with high development potential. The largest amounts were allocated to the Almaty ($15.4 million), Turkestan ($9.5 million) and Akmola and Zhambyl regions ($7.2 million each).

Considering the fact, that regional inequality is one of the main causes of migration to urban areas, sustainable rural development plays an important role. A key factor to restrain population migration to large cities is to improve the quality of life and standards in rural areas to the regional levels. Improving the quality of life of rural settlements residents should also include environmental safety, as well as respect for their rights to clean environment and natural resources, which is equally guaranteed for all residents by the Constitution of the Republic of Kazakhstan.

3.3.2. EDUCATION

Higher and secondary vocational (special) education was provided to 7.0 million people, which is 79.9% of the employed population. The share of employed women with higher and secondary vocational education is by 6.6 percentage points higher than that of men. The main share of the employed population – 30.0% (2.6 million people) - is between the ages of 25-34 years[16].

Kazakhstan has achieved 100% coverage of secondary education, and 95.2% of children aged 3-6 attend preschool institutions. 54.3% of the population has a higher education; young people have access to free technical and vocational courses. Transition to trilingual (Kazakh-, Russian- and English-speaking) education is under way.

Despite the high level of literacy of the population[17] and high proportion of people with higher education, the quality and relevance of the education are issues that need to be addressed. Many young people cannot find jobs in their respective specialty. In addition, there is an outflow of highly qualified specialists abroad in search of more decent working conditions and living standards.

This challenge can be addressed by increasing the competitiveness of specialists through retraining programs, as well as advanced additional education programmes. Continuing education programs in the field of Green Economy can cover relevant thematic areas for various target groups, such as university professors, entrepreneurs, government officials at all levels, including senior officials, businessmen, and agricultural workers.

3.3.3. HEALTH

Human health is inseparably linked with environmental safety. Emissions of GHGs and other pollutants into the air, pollution of water and land resources, increased radiation background - are factors that have a direct and indirect effect on public health.

WHO determines safe levels of pollutants contained in the air for the human health. The data of official environmental monitoring by Kazhydromet[18] in the cities of Kazakhstan demonstrate an excess of the content of indicators such as PM10, SO2, NOx against the values recommended by WHO. Air pollution has led to an increase in respiratory illness[19]. The official health statistics for 2018 show that mortality rates due to respiratory diseases have a significant share in the total mortality rate: in Almaty - 10%, in the cities of Nur-Sultan and Shymkent - 12%, Taldykorgan 20% of the total number of deaths, in the city of Kostanay - 16%, in the cities of Semey and Ust-Kamenogorsk - 14%, in the cities of Aktobe, Aktau, Atyrau, Uralsk - 12%, in the city of Petropavlovsk - 10%, in the cities of Kyzylorda, Pavlodar, Taraz, Kentau, Kokshetau, Turkestan and Karaganda -8%.

Protecting atmospheric air and reducing GHGs emissions are of great importance for maintaining the health of the nation and can be considered as cross-cutting when developing strategic documents in the field of Green Economy and Low-carbon Development.

3.3.4. POVERTY

Official statistics show a remarkable improvement in poverty reduction from 46.7% in 2001 to 2.6% in 2017[20]. The government declares that poverty is declining in Kazakhstan, food consumption and the number of employed people is increasing, as well as the average monthly wage. Meanwhile, almost 80% of the population is not in a position to save their money. Social pessimism increases along with a deterioration of social well-being and, as a consequence, an increase of societal frustration.

[16] Statistics Committee of the RoK

[17] Statistics Committee of the RoK

[18] Newsletter on the state of the environment of the Republic of Kazakhstan, RSE "KazHydromet"

[19] WHO Air quality guidelines for particular matter, ozone, nitrogen dioxide and sulfur dioxide. 2005

[20] Statistics Committee of the RoK

There is a linkage to size of the family; in larger families the situation is worse. Thus, families consisting of seven or more people assess the situation in the country as a crisis. Every 10th family consisting of seven or more people believes that the situation in the country will deteriorate, and every 2nd family believes that the situation will remain unchanged. Since poverty in developing countries is closely linked to family size, family allowances should be considered as a highly targeted (intervention, provided on the basis of a well-defined poverty level)[21].

In Kazakhstan, more than 97,6 % of the population have incomes of less than 10 thousand dollars a year, from 10 thousand to 100 thousand dollars – 2,1%. The annual income of 0.3% of people ranges from $100,000 to $1 million[22].

In this regard, it is necessary to take measures to prevent additional factors that directly address poverty. Climate change poses a fundamental threat to poverty alleviation. Poverty reduction and efforts to increasing living standards must continue to be priorities in view of climate change. There is also a need to provide focused support to people for their adaptation to climate change, to develop flood forecasting and early warning systems, to introduce heat-resistant crops and economic instruments (specialized environmental targeted assistance). In addition, efforts should be taken to reduce emissions, to protect the population below the poverty line.

3.3.5. SOCIAL UNREST

Within a few months after N. NAZARBAYEV's voluntary resignation from the position of the President of Kazakhstan on March 19, 2019, the population started expressing their dissatisfaction more and more often in the form of peaceful demonstrations. The reasons for dissatisfaction include corruption within state bodies, educational and medical institutions, low salaries (in particular, unequal salaries of Kazakhstani specialists compared to foreign experts, weak social security of citizens, weak purchasing power of the national currency, whose exchange rate continued to fall, and many other unsolved systemic problems. In order to address those challenges and build a consensus and dialogue, the Government has established the National Council of Public Confidence. The Council includes 44 members representing various social movements and state-affiliated organizations.

[21] E-magazine In Business – 2020

[22] E-magazine In Business – 2020

3.4. ENVIRONMENTAL PROFILE

Kazakhstan's economy is still highly energy intensive one. The country's GDP-energy intensity with 0.42 TOE/$ (2010) is 3.5 times the OECD average and is on 119th place out of 147 countries. Kazakhstan's energy sector owns the share of 85% of all GHGs emissions in the country. Also, Kazakhstan is the largest GHGs emitter in Central Asia with 353 tons of CO_2e emitted in 2018, and is one of the largest emitters in the world in terms of emissions per capita with 16.9 tons of CO_2[23].

The high level of coal use in energy production (75-80% of fuel in CHP) and the outdated energy producing and transmission infrastructure are some of the main sources of increased GHGs emissions.

Climate change is another issue of urgency, the effects of which appear now. More than 50% of the current mass of glaciers is anticipated to be lost by 2100, climate-related natural disasters such as floods, mudslides and droughts have become more frequent and larger and will increase in the coming decade. It is expected that climate change will have a damaging impact on water availability, as water resources are forecasted to decline by 2100 (to 22%). The latter results in water stress for all eight major basins of Kazakhstan. In the projected climate change scenarios, Kazakhstan, as a major wheat supplier, will face a 13-49% risk of reduced yields by 2050, with annual economic losses in this sector estimated to be $700 million, and poor households are expected to suffer the most[24].

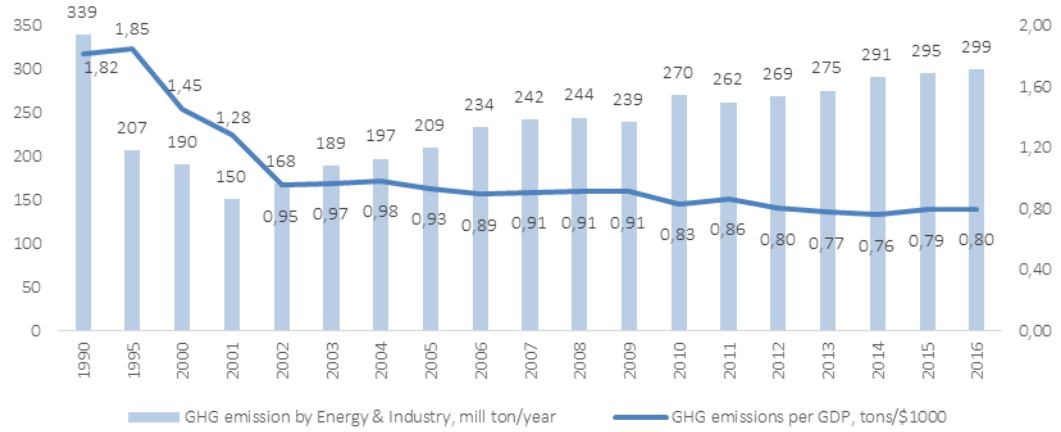
Air

Kazakhstan pledged in its Nationally Determined Contribution (NDC) under the Paris Agreement to lower GHG emissions by 2030 by 15-25% compared to 1990.

[23] Reforming Kazakhstan Progress, Challenges and Opportunities, 2018

[24] Seventh National Communication and third Biennial report of the Republic of Kazakhstan to the UN FCC

Chart 3. Dynamics of GHGs emissions in Kazakhstan by energy and industry sectors.



According to Climate Action Tracker the majority of countries has extremely inadequate targets and generally has no chance of reaching the 1.5°C temperature target set in the Paris Agreement. Kazakhstan has been listed among the ten countries with insufficient NDC. Furthermore, the country has highly carbon intensive energy systems that steadily increase GHG emissions, which are the reasons for the low progress in reaching the NDC targets. Recent forecasts demonstrate that at the current rate of GHG emissions growth and with the adopted and planned measures and policies Kazakhstan's NDC target till 2030 will not be achieved with 45 million tons of CO_2 equivalent over[25].

Air pollution is also a pressing issue in the country, particularly in larger urban areas, such as Almaty and Nur-Sultan where air quality is becoming a serious health issue. Industrial air emissions have been decreasing since 2008, despite a constant increase in total industrial output. The highest emissions are of SO_2, TSP and NO_X, which totaled 761,500 tons (53.5%), 349,200 tons (24.5%) and 249,300 tons (17.5%), respectively, in 2017. Air emissions from industry are responsible for significant air pollution, notably in urban centers where industrial facilities are located, such as Temirtau, Karaganda, Pavlodar and Aktobe. These emissions are potential sources of health problems for industrial workers and the population living nearby (e.g. respiratory diseases), especially when they contain heavy metals (e.g. arsenic, cadmium, lead)[26].

Lands

In addition to the challenges posed by the energy structure, unsustainable approaches to biological resource management are exacerbated by the negative impacts of climate change on agriculture and water sectors, natural pastures and forestry.

Desertification and land degradation are among pressing problems in the country, where an estimated 82% of the country's surface is subject to erosion. Kazakhstan's southern arid regions are highly vulnerable to desertification: about 75% of pastures and arable land has a high to very high desertification index. Major economic consequences of land degradation and desertification lead to reduced yields, decreased livestock populations and profitability, reduced agricultural export potential, stagnating of agribusiness, and severe cuts in taxes from the agriculture - and food sectors.

At the same time, estimates show that about 15% of agricultural areas are operated in an unsustainable manner. The main problems in the crop sector are monoculture farming and poor diversification of crops, which leads to a decrease in land fertility and increased wind and water erosion, etc.

With regard to livestock the country's plans to increase meat production will also increase the burden on ecosystems. Pastures in Kazakhstan are already subject to uneven use. Active livestock grazing is one of the main causes of habitat degradation in most arid and semi-arid pastures around the world, and the deserts of southern Kazakhstan are no exception. The result of overgrazing is the loss of vegetation cover and a change in vegetation towards unattractive secondary "pasture weeds" and increased erosion (primarily wind but also water erosion). In some areas (e.g., on the Ustyurt plateau), there is formation of salinized or "solonchak" lands. Overgrazing is particularly prevalent in the vicinity of villages and settlements. The impacts of overgrazing are also prevalent in the areas where vulnerable

[25] E-magazine Climate Action tracker - 2020

[26] Kazakhstan Environmental Performance Review, UNECE, 2019

poplar (Populus pruinosa) and tugai forests of the Ili delta are growing, resulting in the degradation of these ecosystems.

Biodiversity

To protect its globally significant biodiversity, Kazakhstan has established a system of protected areas covering 22,121,641 ha (8.1% of the total area of the country). At the moment, PA system coverage includes only 4.89% of the forested areas. Some ecosystems of global importance remain outside the PA system, in particular the unique tugai forest and floodplain ecosystems, which support a number of endemic and threatened species, large stands of valuable coniferous forests in the Altai region, representing an important CO_2 pools, and saxaul forests playing a critical role in supporting the wealth of local communities in arid lands. The current protected areas also do not fully cover the habitat of the snow leopard population groups. Only 30-35% of the reserve`s territory in Kazakhstan is protected within the PA network, which impedes effective protection from poaching. Huge areas that provide a natural bridge and genetic interaction between the Tien Shan, Zhungar and Altai population groups of snow leopard stay outside of the existing protected areas network. The financing gap for biodiversity conservation has been estimated to be around $ 400 mln over the next 5 years.

Water

In the water sector, according to the World Bank the water availability in Kazakhstan today (3,222 m^3) is 40% lower than the world average (world level 6,000 m^3). This indicator is estimated to decrease by another 30% by 2030 as a result of population growth (taking into account population growth of up to 25 million people by 2030), a decrease in the waterflow, and a decrease in the average annual water resources by 30% (77 km^3) per year (now 108.5 km^3 per year).

Given the increase in water withdrawal in neighboring countries, by 2030 the volume of available water resources may decrease from 108.5 km^3 to 77 km^3.

Water loss is a serious problem in Kazakhstan, especially in agriculture. On average, approximately 60% of the total water consumed by agriculture is lost. The poor (and sometimes critical) condition of the irrigation infrastructure is one of the causes of large water losses. The vast majority of agricultural canals which have been transferred to private owners are abandoned. This led to a low efficiency of the remaining distribution lines, large water losses, a rise in groundwater in certain areas and the salinization of adjacent lands.

Waste

The issue of waste management is also an urgent environmental challenge for Kazakhstan. As of 2019, the average coverage of the population with services of waste collection is approximately 80%, the share of processing as of –13.2%, the facilities for the placement of solid waste(landfields) in line with sanitary norms is only 17%. This level of waste management indicators is comparable to the lower middle income (below average) countries according to the World Bank scale. However, in terms of real incomes of the population, Kazakhstan is at the middle income countries level (middle level)[27]. Such an imbalance means that in the next ten years, the volume of MSW generation will continue to grow. Based on international comparisons, the growth of MSW generation is predicted to grow from 330 kg/capita/year to 420 kg/capita/year.

Thus, despite the current environmental policy, the environmental situation in Kazakhstan still faces serious challenges. The economy of Kazakhstan is still characterized by high energy intensity. Due to the high-carbon energy system, the country faces difficulties in achieving the goals of its national commitment to greenhouse gas emissions reduction. Based on forecasts, Kazakhstan will not be able to achieve the target of 45 million tons of CO2 equivalent by 2030. In addition to greenhouse gas emissions, the country has a high level of air pollution with other toxic substances. Unsustainable approaches to managing biological resources are exacerbated by the negative impacts of climate change on agriculture and the water sector, natural pastures and forestry. There is a shortage of water resources, which may worsen as early as 2040. Waste management issues also require increased attention, in the light of projected growth, based on comparable global data.

[27] The Country Context, World Bank Kazakhstan -2019

4. KEY STAKEHOLDERS AND PLAYERS

In the context of the transition to Green Economy, the main players can be considered central and local authorities, as well as NGOs and international organizations.

The role of the state is to shape the policy and ensure legal mechanisms for the transition towards Green Economy. Control and management of system-forming processes in economic, social, energy, environmental and other fields is also the prerogative of the state.

Non-governmental organizations involved in the transition to Green Economy are a kind of reflection of the efforts of a society that cares about its future. All types of public organizations, associations, movements make an important contribution, and are also the conductors of feedback from society on a variety of issues.

International organizations are represented in Kazakhstan by a wide range of organizations – UN agencies, large financial institutions, etc.

This section introduces the reader to the key players involved in Kazakhstan's transition to the Green Economy, their role and main functions.

4.1 GOVERNMENT

The main role in Kazakhstan's transition to a Green Economy due to its functions is represented by public authorities, especially ministries. Their role in this process is regulated by the Action Plan under the Concept of Transition to Green Economy. Below there is a table describing roles of key state bodies of the Republic of Kazakhstan.

Table 6 The key executive authorities and Government owned organizations.

AUTHORITY BODY	KEY FUNCTIONS RELATED TO GREEN ECONOMY
Ministry of Ecology, Geology and Natural Resources	Develops and implements the policy, coordinates management processes in the following areas: waste management water management forestry natural resources environment protection GE development geological exploration, reproduction of mineral resources wildlife and specially protected natural areas
Ministry of Energy	Develops and implements the policy, coordinates management processes in the following areas: renewable energy sources oil and gas, petrochemical industry electric/heat power industry atomic energy uranium mining
Ministry of Agriculture	Develops and implements the policy, coordinates management processes in the following areas: agriculture, including organic agriculture land reclamation, land resources support for agricultural producers to export the products to external markets
Ministry of National Economy	Develops and implements the policy, coordinates of management processes in the following areas: strategic planning regional development coordinating the Council on Sustainable Development Goals
Ministry of Finance	Develops and implements the policy, coordinates management processes in the following areas: fiscal policy and implementation participates in green policy development
Ministry of Industry and Infrastructural Development	Develops and implements the policy, coordinates of management processes in the following areas: industry and industrial development transport communication and infrastructure urban planning and construction public utilities and municipal waste management (except for solid waste) water supply and water disposal infrastructure heating (except for thermal power plants and boilers)
Ministry of Education and Science	Develops and implements the policy, coordinates management processes in the following areas: education science
Ministry of Labor and Social	Develops and implements the policy, coordinates of management processes in the following areas:

AUTHORITY BODY	KEY FUNCTIONS RELATED TO GREEN ECONOMY
Protection of Population	labor and employment migration and social protection social security (including pension provision and social insurance)
Regional Akimats (local authorities)	execute all tasks at the local level distributes locally collected environmental fees
Sovereign Wealth Fund «Samruk-Kazyna» JSC[28]	Government owned investment holding that includes enterprises operating in the following industries – oil & gas, transport and logistics, chemical and nuclear, mining and smelting, energy, mechanical engineering and real estate. Facilitates the modernization and diversification of the national economy.
"Samruk-Energy" JSC	30% of Kazakhstan's electricity production 39.5% of Kazakhstan's steam coal production owner of all combined heat plants owner of all transmission and distribution of electricity
International Green Technologies & Investments Center	designed to be the main hub in Kazakhstan for delivering the green technologies[32] and to provide methodological, legal and technical support to regional authorities, investors and business projects in the field of Green Economy
Economic Research Institute (under the MNE)	one of the oldest analytical centers in Kazakhstan assists the Government in developing recommendations for the country's economic policy
Astana International Financial Centre	One of the key institutions for promoting Green Financing
"Zhasyl Damu" JSC (under the MEGNR)	Main activity fields: GHG issues management of ownerless hazardous wastes
"The Settlement and Financial Center for Renewable Energy Sources Support" LLP	centralized buyer of electricity produced by RES facilities

[28] Sovereign Wealth Fund «Samruk-Kazyna» JSC

Given the need to integrate Green Economy issues into line ministries and departments, as well as taking green priorities into account when making strategic decisions, there is a need to increase the capacity of civil servants of all levels on the issues of Green Economy.

4.2. NON-GOVERNMENTAL

In order to implement the transition to a Green Economy, it is necessary to consolidate the efforts of NGOs as well. There are about 20,000 organizations registered in Kazakhstan. More than 13,000 of them are active and actively functioning, and 3,000 of them are registered in the form of public funds, unions, associations, centers and institutes. Only 8% of this number works in the field of environmental protection, sustainable development and green technologies[29].

The table below contains information on the activities of key NGOs in the field of Green Economy.

Table 7 Key NGOs that shape the main trajectory in green non-governmental activities.

NGO	KEY FUNCTIONS RELATED TO GREEN ECONOMY
National Chamber of Entrepreneurs of Kazakhstan "Atameken"	The membership to Chamber is obligatory to all business entities except the foreign, auditing, governmental companies and non-profit organizations[30]. Currently the number of members is more than 1.3 million
Socially Significant Initiatives Development Fund	FDSII actively promotes the green projects as well as effectively consolidates the efforts of majority of NGOs related to Green Economy
Association of Environmental Organizations of Kazakhstan	AEOK was established in 2017 with the help of FDSII. AEOK comprises more than 100 organizations from different fields of activity
Coalition for Green Economy and Development G-Global	The Coalition is a member of the AEOK and a public provider of the Green Economy Concept. The main activities/projects of the Coalition: creating demonstration sites for Green Economy technologies and infrastructure to accumulate and share best practices supporting Kazakhstani innovators and inventors in the field of green innovation involving women and youth in Green Economy projects Institutional, legal and informational support of Green Economy

[29] "Sarbaz" Republican military-patriotic weekly newspaper

[30] Information and legal system of normative legal acts of the Republic of Kazakhstan Justice

As part of the country's cooperation with international organizations and foundations, projects and initiatives are being implemented in the country. They are aimed at introducing principles, practices and technologies in the field of the promotion of Green Economy. The key international partners in this field are described below.

UN AGENCIES:

UNDP

Within the framework of cooperation with Kazakhstan, UNDP provides support in the following areas[31]:

- development of key policy documents at the national and regional levels
- reducing social inequality, ensuring more equal access to social services
- dissemination of innovative experience in water use and exploitation of natural resources
- promotion of energy saving, introduction of renewable energy sources.

Starting 2012, UNDP in partnership with the Government of RK, has implemented a number of projects to support the country's transition to the Green Economy. Within the framework of these projects, technical assistance, as well as knowledge, experience and technologies were provided. UNDP assisted in the development of the Concept for the transition to the Green Economy and acted as an observer in the Council for the Green Economy. As part of the joint UNDP/EU project, the country was provided with a transfer of green technologies worth more than 4 million euro.

UNECE

One of the main contributions of the UNECE to the development of Kazakhstan is the implementation of the project "Supporting Kazakhstan's Transition to a Green Economy Model"[32]. Within the framework of this project, UNECE paid special attention to the rational use of water resources through the following support:

- implementation of activities to bring water resources management in line with the requirements of the Green Economy
- conducting analytical work in the field of hydro technical infrastructure management in Kazakhstan with development of relevant recommendations
- review of national environmental legislation and development of recommendations for the establishment of a modern environmental management system.

In 2018, UNECE prepared the Third Environmental Performance Review of Kazakhstan.

UNIDO

UNIDO provides extensive support to Kazakhstan in areas such as accelerated technological modernization of the economy, industrial and innovative development of Kazakhstan. The Government of Kazakhstan pays particular attention to UNIDO's support in the field of industrial statistics, industrial integration and mitigation of the negative impact of industry on the environment[33].

UNEP

UNEP provides comprehensive support to Kazakhstan in all areas related to environmental protection. Development and implementation of RES, reduction of emissions, reduction of air, water and soil pollution, biodiversity conservation, fight against various types of hazardous waste, impact of environmental changes on human health, etc. – this is a non-exhaustive list of various areas in which UNEP has been involved over the years cooperating with Kazakhstan.

OECD

The cooperation of Kazakhstan with the Organization for Economic Co-operation and Development (OECD) started in 2015, with the signing of the MoU between the Government of Kazakhstan and the OECD on the Country Program aimed at assisting Kazakhstan in the implementation of national reforms.

OECD's activities in Kazakhstan are conducted within the four thematic areas[34]:

1) national dialogues on Green Economy and Green Economy transition strategies

1.1) country platforms for action on Green Economy
1.2) analytical support for the development of GREEN ECONOMY/green growth transition strategies at the country level

2) environmentally oriented finance and investment

[31] United Nations Development Programme website
[32] United Nations European Economic Commission (UNECE)
[33] E-newspaper "Kursiv"
[34] The Organization for Economic Co-operation and Development (OECD)

2.1) "greening" of public finance policies
2.2) enabling access to finance for environmentally sound investments, in particular climate finance

3) integration of environmental, economic and sectoral policies for green growth

3.1) assistance to national environmental regulations
3.2) integration of environmental and sectoral policies for green growth
3.3) measuring and evaluating progress towards green growth

4) improvement of water resources management

4.1) strengthening the economic and financial aspects of water resources management, in particular, adaptation to climate change
4.2) strengthening of water management organizations and regulatory legal acts on water resources management
4.3) supporting countries in Eastern Europe, the Caucasus and Central Asia in addressing the water-food-energy nexus and its links to water security
4.4) support for national and regional water policy dialogues, communication and dissemination of program results and conducting regional reviews.

DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT GMBH (GIZ)

The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) is the German Society for International Cooperation, which came to Kazakhstan in 1996 and today employs about 40 specialists in two offices in Nur-Sultan and Almaty. In general, GIZ works in Kazakhstan on behalf of the German government and the European Commission[35].

Areas where GIZ supports Kazakhstan include vocational training and education, combating the environmental and climate change, infrastructure development, good management and health care.

GIZ is supporting the Kazakh Government in the fields of sustainable economic development and Green Economy. Support has been provided through multi-year projects, as well as expert support for the development of legal frameworks in specific areas, upon demand (e.g. waste). GIZ has participated in working groups under the Green Economy Council.

GIZ has launched a project with the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan on the development of a Low Carbon Development Strategy, based on macroeconomic modeling.

Another priority for GIZ is adaptation to climate change. There is a project related to the consideration of climate risks in economic planning. The project works in close cooperation with the Ministry of National Economy of the Republic of Kazakhstan and the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan.

EUROPEAN BANK FOR RECONSTRUCTION AND DEVELOPMENT

The EBRD's strategy in the countries where the Bank operates in the field of low-carbon and sustainable economies is the Green Economy Transition Strategy (GET)[36]. Using the GET approach, the Bank plans to increase the share of green projects in the total annual volume to 40% by 2020.

To date, the EBRD has invested around €30 billion in green projects and financed more than 1,600 green projects. Jointly, these projects reduce carbon emissions by more than 100 million tons annually.

The sectors where the GET is applied, varies from renewable energy to energy efficiency, from clean transport to waste management.

Most of the EBRD's client countries are developing countries that are actively pursuing positive change.

In Kazakhstan the EBRD is one of the largest investors. Despite the fact that the bank's shareholders are representatives of the states, the EBRD, together with its commercial partners actively invests mainly in SME. In Kazakhstan, EBRD focuses on diversifying the economy and sustainable energy.

As per the EBRD's Strategy for Kazakhstan, adopted in July 2017[37], the following strategic directions are proposed to guide the EBRD's engagement with Kazakhstan in the forthcoming strategy period:

- balancing the role of the state and the private sector;
- expanding access to finance, strengthening the banking sector and developing local capital markets;

[35] Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (GIZ)

[36] European Bank for Reconstruction and Development (EBRD)

[37] European Bank for Reconstruction and Development (EBRD)

- enhancing inter-regional network and international integration;
- promoting transition to Green Economy

As part of these four strategic priorities, the Bank will also look for the opportunities, both through projects and policy dialogue, to facilitate greater regional integration and inclusion, and address remaining skill mismatches that continue to inhibit the competitiveness of both the public and private sectors.

Over the entire period of cooperation, the EBRD has invested into Kazakhstan more than seven billion euros in more than 240 projects[38]. Today, the EBRD's portfolio in Kazakhstan is about $3 billion and it is 121 projects. About 40% projects are implemented in the field of transport, infrastructure and logistics, another 40% are in the energy sector, including renewable and extraction projects, and 20% are in the corporate and financial sectors. The share of green projects in 2017 was 40% as well[39].

ASIAN DEVELOPMENT BANK

ADB's cooperation with the Government of Kazakhstan dates back to 1994. ADB's most active support was provided in the sector of education, social services, agriculture and finance sectors.

Since 2000, Kazakhstan has been implementing a policy of economic diversification to avoid a middle-income trap. To achieve these objectives, ADB, together with the Government of Kazakhstan, has focused on transport and finance.

ADB works with Kazakhstan to map out a medium-term development strategy and a 3-year plan to implement it.

- In the plan for 2020-2022 the ADB's activities will be in the following areas related to Green Economy:
- Drinking water supply and sanitation systems
- Waste management, sustainable transport, utilities
- Irrigation system modernization
- Management and capacity development in agriculture
- Water user organizations
- Land-based natural resources management
- Livestock
- Agriculture, marketing and trade

[38] E-newspaper «Kursiv»
[39] E-newspaper «Interfax»

WORLD BANK

The World Bank (WB) is one of the world's largest financial institutions that acts to reduce poverty, increase shared prosperity, and promote sustainable development.

WB comprises the activities of five institutions: International Bank for Reconstruction and Development (IBRD), International Development Association (IDA), International Finance Corporation (IFC), Multilateral Investment Guarantee Agency (MIGA), International Centre for Settlement of Investment Disputes (ICSID).

Kazakhstan is the member of WB since 1992. To date WB has launched in Kazakhstan 65 projects in various areas on amount of $10.3 billion.

The activities of WB in Kazakhstan for the upcoming 5 years are outlined in the Country Partnership Framework (CPF) 2020-2025. The focus areas in the CPF 2020-25 are:

- promoting inclusive growth
- strengthening human capital
- securing sustainable growth.

BELT AND ROAD INITIATIVE

In 2013, Xi Jinping, the President of China, announced the launch of the Silk Road Economic Belt and the 21st Century Silk Roads initiatives. The aim of these initiatives is to develop infrastructure and investment projects that will extend from Asia to Europe. The project is one of the most ambitious infrastructure projects.

Today, within the framework of Belt and Road Initiative (BRI), cargoes from China are delivered by two routes – through Kazakhstan and Russia. In order to speed up the transit of goods through its territory, Kazakhstan has repaired motorways, built new railway branches, optimized the system of railway freight transportation, and modernized the involved railway and cargo handling infrastructure.

Kazakhstan is an important link in two of the six BRI projects. In particular, in the New Eurasian Land Bridge, connecting China and Europe via Central Asia, and the China-Central Asia-West Asia Corridor.

To further increase trade turnover and raise the technological and industrial level of Kazakhstan in 2015, the aligned Nurly Zhol Program with BRI was launched.

The Nurly Zhol Program is the state program of infrastructural development which was launched for 2015-2019 in order to create a single economic

market of Kazakhstan by establishing macro-regions of the country with the defining of the cities of Almaty, Nur-Sultan, Aktobe, Shymkent and Ust-Kamenogorsk as hub cities of national and international level with modern infrastructure and ensuring the integration of the country's transport infrastructure into the international transport system.

The following activities are planned to be performed within this program:

- formation of modern transport infrastructure of Kazakhstan, as well as ensuring its integration into the international transport system
- development of industrial infrastructure and tourism infrastructure
- strengthening of the energy infrastructure within the framework of the Unified Power System
- modernization (reconstruction and construction) of housing and communal services infrastructure and heat, water supply and water disposal systems
- development of education infrastructure
- increasing the competitiveness of business entities
- support of domestic machine-building
- export support
- increase of competitiveness of subjects of agrarian and industrial complex
- provision of infrastructure for the projects of the "Business Road Map – 2020" Program
- ensuring the safety of product quality through the development of laboratory facilities
- ensuring the study of the territory of Kazakhstan with an assessment of projected resources.

The Nurly Zhol foresees investments up to the $40 billion until 2020 in logistics, public services, SMEs and other infrastructure. Kazakhstan wishes to project the dry land port of Khorgos (part of Nurly Zhol) as a transit hub for freight traffic flowing between China and Europe.

STAKEHOLDERS COLLABORATION

This review showed that representatives of all key sectors are present in the country for the full implementation of the Concept for the transition to the Green Economy. An important aspect is the need to integrate the efforts of various players to increase the effectiveness of projects, as well as to optimize available resources and avoid duplication of actions.

The activities implemented under the PAGE program will, inter alia, be aimed at integrating efforts towards the transition to the Green Economy. Relevant government authorities, NGOs, international organizations and financial institutions will be informed and involved in the implementation of projects. It is advisable to develop and implement an awareness programme to increase the capacity of government officials at all levels for the implementation of the Concept for Kazakhstan's transition to the Green Economy. An important component of the implementation of the Green Economy Concept is the wide involvement and awareness raising of the population. In this regard, an information campaign for all segments of the population will help to raise awareness and integrate the practical elements of the Green Economy on the ground. Such information campaign could become a part of the PAGE programme.

5. STRATEGIC NATIONAL GREEN ECONOMY DOCUMENTS AND POLICIES

The main documents in Kazakhstan defining goals, objectives, tools, etc. are the Strategy "Kazakhstan-2050", Strategic Plan for Development until

2025, the National Plan "100 Concrete Steps", the Program of Regional Development until 2020, etc.

With the country's commitment to the international community in the context of sustainable development, Kazakhstan has adopted such documents as the Green Economy Concept and the Environmental Code.

In order to implement the RES development plans, as well as other measures aimed at further development of the Green Economy and fulfillment of commitments under the Paris Agreement, the MEGNR has started developing the Low Carbon Development Strategy of Kazakhstan until 2050.[40]

The Strategy will provide opportunities and benefits for replacing or reducing the use of coal and gas under different economic and energy development scenarios. An analysis of all sectors of the economy will be conducted jointly with foreign experts. This work is planned to be completed by the end of 2020.

The key aspect of the transition to low-carbon development of Kazakhstan will be the development of renewable energy sources.

The implementation of the Strategy will contribute to the reduction of GHG emissions, which will enhance the possibility of meeting the conditions of the Paris Agreement by 2030.

The waste management policy is defined in the Green Economy Concept and is aimed at introducing separate waste collection, development of the waste recycling sector with the production of recycled products with the attraction of investments, including investments through public-private partnerships.

At the same time, for further development of the sector's MSW management it is necessary to create a favorable investment climate, state support measures, allocation of funds from the state and local budgets, as well as attraction of private investments.

In this regard, to address the problems in the field of MSW and to form a common vision in the industry, MEGNR, together with stakeholders started development of the state program in the field of MSW management.[48]

This section provides an overview of the above-mentioned documents in the context of Kazakhstan's efforts in its transition to Green Economy.

5.1. GREEN ECONOMY CONCEPT

The political will of Kazakhstan to transition towards Green Economy is best of all reflected by the Green Economy Concept which is monitored and coordinated by the Special Council on Green Economy under the President (the Green Council) and is chaired by the Prime Minister.

The Green Council was established in May 2014 by the Decree of the President of Kazakhstan and includes representatives of key ministries, international organizations, specialized and non-governmental organizations[41]. The purpose of the Green Council is to monitor and evaluate the implementation of the Green Economy Concept, develop appropriate recommendations, define the strategy, tactics and mechanisms for the implementation of the Green Economy Concept.

The Concept for the transition of the Republic of Kazakhstan to Green Economy[42] is Kazakhstan's effort in the global activities to combat the climate change, to minimize environmental impact and degradation of natural resources.

The main priorities for the transition to Green Economy are:

- effective water management;
- modernization of agriculture;
- energy saving and energy efficiency improvement;
- energy development;

[40] Low Carbon Development Strategy of Kazakhstan until 2050

[41] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

[42] Coalition for Green Economy and development G-Global

- waste management;
- air pollution reduction.

The planned phases of the Green Economy Concept realization:

- 2013–2020 – optimization the use of resources and increasing the efficiency of environmental protection activities, creation of "green" infrastructure;
- 2020–2030 – on the basis of the "green" infrastructure the careful use of water, promotion of renewable energy technologies, construction of facilities based on high energy efficiency standards;
- 2030–2050 – transition of the national economy to sustainable use of natural resources.

For the implementation of the Green Economy Concept the Action Plan was adopted. The strategic plans of all central and local authorities were brought in line with Green Economy Concept.

Currently, the second phase of Green Economy Concept is being implemented within approved action plan.

5.1.1. COVERAGE OF THE SUSTAINABLE DEVELOPMENT GOALS IN THE GREEN ECONOMY CONCEPT

At the end of the 20th century and the beginning of the 21st century, the world community recognized the problem of global warming and began to take steps to address this problem. The documents adopted in Rio de Janeiro, Kyoto, Paris and ratified by the UN member states set new trends and new development paradigm.

As a result, in 2015, 17 Sustainable Development Goals were developed. The SDGs, associated with Green Economy are one third of all SDG targets (56 out of 169) and more than half of the indicators. Green Economy can be perceived as a means for identifying, accounting and valuing ecosystem goods and services leading to better decision-making for managing, preserving and restoring natural environments and integrating ecosystem-oriented management in the process of economic decision-making and development.

To measure the degrees of SDGs in the Green Economy Concept, the Agriculture Development Program 2017-2021 and Regions Development Program 2020 the Rapid Integrated Assessment (RIA), developed by UNDP[43], was used.

The assessment unveiled that only 6 SDGs out of 17 were covered by the Green Economy Concept and were reflected in its provisions.

[43] United Nations Development Programme in the RoK

Table 8 The coverage of SDGs with Green Economy Concept

Sustainable Development Goals		The coverage of the SDGs with the Green Economy Concept and Action Plan for its implementation
2. Zero Hunger	2.4. Food production systems	3.2. Development of sustainable and highly productive agriculture.
		3.5. Waste management system
	2.4. Food production systems	11. Pilot Projects Pilot projects in agriculture and water management
6. Water	6.1. Safe water 6.2. Sanitation and hygiene 6.3. Water quality	3.1. Sustainable use of water resources
	6.4. Water-use efficiency	3.1. Sustainable use of water resources 3.2. Development of sustainable and high-efficiency agriculture 3. Measures to develop sustainable and high-yielding agriculture
	6.5. Integrated water resource management	26. Strengthening the legal framework of joint commissions and working groups on the protection and use of transboundary rivers
	6.6. Water-related ecosystems	2. Bringing the strategic plans of state authorities and territorial development programs in line with the provisions of the Green Economy Transition Concept
7. Energy	7.1. Access to energy	12. Conversion of vehicles to environmental fuels, including the introduction of electric vehicles and the creation of relevant infrastructure
	7.3. Energy efficiency	3.4. Development of the electric power industry Modernization of existing coal power plants, which will be operated after 2020, with the installation of dust and gas filtering to capture emissions of dust, sulfur dioxide and nitrogen oxide, in order to achieve modern standards for emissions of harmful substances
	7.b. Energy infrastructure and technology	11. Pilot Projects Creation of pilot green areas in the fields of electricity and energy efficiency
9. Infrastructure and Industrialization	9.4. Resource efficiency	3.4. Development of the electric power industry Modernization of existing coal power plants, which will be operated after 2020, with the installation of dust and gas filtering to capture emissions of dust, sulfur dioxide and nitrogen oxide, in order to achieve modern standards for emissions of harmful substances
11. Cities	11.2. Transport services	12. Conversion of vehicles to environmental fuels, including the introduction of electric vehicles and the creation of relevant infrastructure
	11.7. Green and public spaces	11. Pilot Projects Pilot projects in the field of effective ecosystem management
	11.b. Integrated disaster risk management	11. Pilot Projects Creation of pilot green areas in the fields of electricity and energy efficiency
	11.c. Resilient buildings	
12. Sustainable Consumption and Production Patterns	12.4. Management of chemicals and waste	3.6. Reducing air pollution. 13. Introduction of thermal power plant emissions filtering and electric power saving on the basis of the latest technologies in production and everyday life
	12.5. Reduce, recycle, reuse	3.2. Development of sustainable and high-efficiency agriculture 3.5. Improvement of the waste management system
	12.a. Science and technology in developing countries	14. Provision of state support to the development of domestic science in the field of renewable natural resources Training of scientific personnel
15. Land	15.3. Desertification and land degradation	14. Provision of state support to the development of domestic science in the field of renewable natural resources. Improvement of legislation

Source: Based on the National Voluntary SDG Report

The SDG's Dashboard information and based on them SDGs diagnostics were used to see the current status of SDGs, to set up target values to be achieved by 2030 and 2050. As a result it is possible to compare the coverage of SDGs by the policy frameworks mentioned above as it is shown in the Table 8.

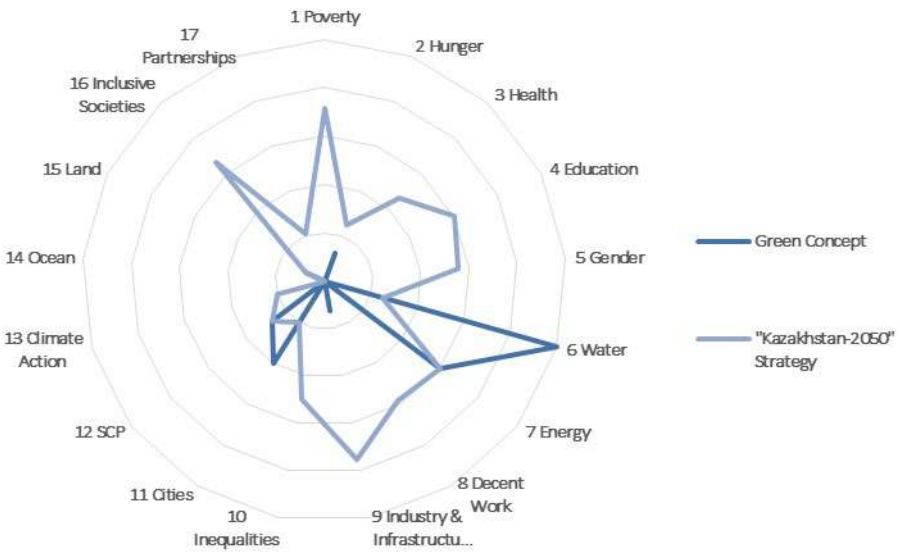
Table 9 The comparison of SDGs embracement, %

		POLICY DOCUMENTS			
		Green Economy Concept	Kazakhstan-2050	Agriculture 2017-2021	Regions 2020
SDG Coverage, %	1 Poverty	0.0	71.4	0.0	28.6
	2 Hunger	12.5	25.0	62.5	12.5
	3 Health	0.0	46.2	0.0	7.7
	4 Education	0.0	60.0	0.0	40.0
	5 Gender	0.0	55.6	0.0	0.0
	6 Water	100.0	25.0	75.0	37.5
	7 Energy	60.0	60.0	0.0	60.0
	8 Decent Work	0.0	58.3	0.0	25.0
	9 Industry & Infrastructure	12.5	75.0	12.5	37.5
	10 Inequalities	0.0	50.0	0.0	10.0
	11 Cities	40.0	20.0	0.0	90.0
	12 Sustainable Consumption & Production (SCP)	27.3	27.3	0.0	0.0
	13 Climate Action	0.0	20.0	0.0	60.0
	14 Ocean	0.0	0.0	0.0	0.0
	15 Land	8.3	8.3	16.7	0.0
	16 Inclusive Societies	0.0	66.7	0.0	16.7
	17 Partnerships	0.0	21.1	0.0	5.3

As can be seen from the table, the SDGs are more or less covered by the Kazakhstan-2050 Strategy and the Region Development Program 2020. The provisions of the Green Economy Concept do not fully reflect the goals of sustainable development.

This is also evident from Table 8, which compares the coverage of the SDGs between the Green Economy Concept and the Kazakhstan-2050 Strategy.

Chart 4. The comparison of SDGs embracement of Green Economy Concept and Kazakhstan-2050 Strategy, %



As can be seen from the chart, the current versions of both documents do not fully cover the SDGs. It can be concluded that at least the Green Economy Concept needs deep rethinking and updating.

PAGE could support the revision of key program documents, including the Concept for the Green Economy to reframe them around SDGs and the Paris Agreement.

5.1.2 THE GREEN ECONOMY CONCEPT AND THE LOW CARBON DEVELOPMENT STRATEGY

In October 2019, the Ministry of Ecology, Geology and Natural Resources announced the beginning of development of the Low Carbon Development Strategy of Kazakhstan until 2050[44]. Kazakhstan, having ratified the Paris Agreement, has accepted a voluntary contribution to reduce GHG emissions by 15% by 2030 from 1990 levels. Starting in 2014, the country's emissions exceed the commitments under the agreement and continue to grow.

One of the instruments for fulfilling obligations is the transition from coal to renewable energy, which leads to a reduction in pollutant emissions. Therefore, in order to implement the development plans for renewable energy and the Green Economy, as well as the commitments under the Paris Agreement, it is necessary to define a long-term vision for low-carbon development of the country.

For this purpose, the Ministry has started development of the Low Carbon Development Strategy of Kazakhstan until 2050. The Strategy will provide for opportunities and benefits of replacing or reducing the use of coal and gas under different economic and energy development scenarios. The work will be supported by GIZ, as part of a grant project worth €4.5 million from the German government. An analysis will be carried out for all key sectors of the economy. Completion of the project is planned for the end of 2020.

At present, within the framework of the development of the Low Carbon Development Strategy, expert consultations are being held in the following sectors: energy, transport, waste, agriculture and land use, land use change and forestry, industry and the housing sector. = The work within LCDS envisages modeling of different scenarios with suggested measures to provide low-carbon development of key sectors. Involvement of PAGE in this process will allow to contribute to significant work on the elaboration of country's low-carbon development vision as well as to use the solid quantitative results of the modeling for the update of the Concept thus providing for the complementarity of workstreams.

5.2. "KAZAKHSTAN-2050" STRATEGY

On December 14, 2012 the President of Kazakhstan N. NAZARBAYEV presented in his Message to the people of the country - Strategy "Kazakhstan-2050"- a new political course of the established state.

[44] E-newspaper "Vlast"

"Kazakhstan-2050" Strategy[45] is the main document that defines the general direction of the country`s development.

The main goal of the strategy is to create a prosperous society in the country, based on the strong state, as well as developed economy and opportunities for universal labor and to join the group of 30 most developed countries.

In order to achieve this goal, the Strategy envisaged implementation of seven long-term priorities:

- The economic policy of the new course – comprehensive economic pragmatism based on the principles of profitability, return on investment and competitiveness.
- Comprehensive support of entrepreneurship – leading force in the national economy.
- New principles of social policy – social guarantees and personal responsibility.
- Knowledge and professional skills are key landmarks of modern education, training and retraining system.
- Further strengthening of statehood and development of Kazakhstan democracy.
- Consistent and predictable foreign policy is promotion of national interests and strengthening of regional and global security.
- The new patriotism of Kazakhstan is the basis for the success of multi-ethnic and multi-confessional society.

In the Strategy, for the first time, the need for Kazakhstan's transition to a Green Economy was outlined.

The Strategy identifies three environmental challenges: acute water shortage, global energy security, and limited natural resources. The Strategy defines the objective to provide the population with high-quality drinking water by 100% until 2020 (in 2018, the provision in urban areas is 94.5%, in the SNP 84.5%), and the restoration of irrigated lands on 610 thousand hectares. In the field of renewable energy, the goal is to increase the share of renewable energy to 3% by 2020, to 50% by 2050 (in 2018, the share of renewable energy in the energy balance was 1.3%). Given the positive results of the renewable energy auction system, the achievement of renewable energy indicators by 2020 is realistic.

[45] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

5.3. STRATEGIC PLAN FOR DEVELOPMENT UNTIL 2025

The Strategic Plan for Development until 2025 (2018 Decree of the President No. 636) replaced the version of 2010. Green Economy and environmental protection is one of its seven priority directions, witch consist of following tasks:

- achievement of the commitments under the Paris Agreement;
- defining the sources of financing, consideration of green finance and investments;
- promotion of investments in green technologies;
- decarbonization of the economy; increased efficiency in use and protection of water resources;
- development of RES and improvement of conventional energy sources;
- conservation of biodiversity; development of low-waste economy;
- and waste management.

The Plan includes only two indicators referring to the Green Economy and environmental protection, namely - energy intensity of GDP and share of RES. Other priority areas are not covered by "green" indicators.

5.4. NATIONAL PLAN "100 CONCRETE STEPS"

The preamble to the National Plan 100 Concrete Steps states that this policy document sets out a fundamental transformation in society and the State, with the main objective of treating systemic challenges rather than alleviating their external symptoms[46].

The National Plan "100 Concrete Steps"[47] is a mechanism to implement the Five Institutional Reforms.

[46] E-newspaper «Kazakhstanskaya Pravda"

[47] Information and legal system of normative legal acts of the RoK «Әділет»

Table 10 The corresponding number of steps from the National Plan in comparison with the Five Institutional Reforms.

100 CONCRETE STEPS	5 INSTITUTIONAL REFORMS
15 steps	Development of a Modern State Administration
19 steps	Ensuring the Rule of Law
50 steps	Industrialization and Economic Growth
6 steps	Nation with United Future
10 steps	Transparent and Accountable State

The Reform program introduced in 2015 to support "Kazakhstan-2050" Strategy through 100 specific actions focuses on capacity building, institutional development and structural reforms. Some of the specific targets include the reorganization of the electric power industry (step 50) and attracting strategic investors to the energy saving industry (step 59).

In the context of social development, a new Labor Code has been developed and adopted in accordance with the 83rd step to ensure the rights of citizens to decent work.

84th step of the National Plan provides for the optimization of social assistance by strengthening its targeted character. Social assistance will be provided only to those citizens who really need it. The state targeted social assistance to the low-income able-bodied citizens will be provided only if they actively participate in the programs of employment assistance and social adaptation.

5.5. THE REGIONS DEVELOPMENT PROGRAM

Since the beginning of January 2015, the Regional Development Program until 2020 (RDP-2020) was launched in Kazakhstan. The main idea of this document was to synchronize several existing programs and documents in terms of overlapping indicators, such as "Aqbulaq", "Affordable Housing 2020", "Housing Utilities Modernization 2011-2020", "Single-Industry Towns (Monotowns) Development Program for 2012-2020 and Regional Development". As a result, the previously adopted documents were combined into one program document covering issues of provision of the population with housing, modernizing communications at various levels, and in general of creating comfortable living conditions for the citizens of the country, considering the peculiarities of the region. Also, the objectives of energy efficiency, water supply, education policies, mitigation of emissions and air pollution are also included in the Program[48]. Thus, the earlier adopted state programs were optimized into the Regions Development Program-2020 (RDP-2020) launched in November 2018.

For the period 2015–2017 the Government allocated 181.9 billion tenge from the state budget for the implementation of the program, allocating for the needs of cities - 96.8 billion tenge, rural settlements - 61.7 billion tenge[49].

5.6. ENVIRONMENTAL CODE

In October 2019, the Minister of Ecology, Geology and Natural Resources M. MIRZAGALIEV presented in the Mazhilis a draft of the new Environmental Code[50]. Thedraft suggests large companies to pay more for the emissions into the environment. The changes will not affect companies introducing new technologies into production. They will be exempted from payment for emissions. The released funds will be used to purchase new equipment (BAT introduction).

In the new Code, the increase of financing for solving environmental problems is also envisaged. Presently, the payments for violation of environmental legislation and payments for emissions are accumulated in the local and national budgets. In most cases, they are not allocated for environmental protection measures.

Today, only about 14% of payments for emissions are used to tackle environmental problems. However, 14% is an average-value. In some regions there is 14.7% of emission payments are used, in other regions – about 6%. Therefore, the new Environmental Code plans to allocate 100% of all funds for emissions to environmental measures.

The current Environmental Code of Kazakhstan was adopted on January 9, 2007. However, in his Address to the People of Kazakhstan, dated January 10, 2018, the First President of Kazakhstan ordered to develop a new Environmental Code that would meet the requirements of the time. The updating process has been launched in 2019 and still in the process (to the date of developing this research).

[48] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[49] Official Information Source of the Prime Minister of the Republic of Kazakhstan https://primeminister.kz/
[50] Institute of Economic Research

The fundamental principles of the new draft Code include:

- the precautionary principle whereby the absence of certainty must not be the reason to refuse or delay the adoption of effective and proportionate measures (at economically acceptable price) aimed at preventing the risk of significant and irreversible damage to the environment;
- the pollution prevention principle, primarily at the source of formation, using the best available technologies and at economically acceptable price;

"Polluter pays" principle to be applied in accordance with international interpretation, which is still not the case in Kazakhstan. The funds channeled into to the budget in the form of fees for emissions and compensation for damage are not targeted and are generally not spent to address environmental issues, as a result of which the objectives of the "polluter pays" principle (pollution prevention, reduction and control) are not achieved;

- the principle of integration, whereby for the achievement of sustainable development of the state, environmental protection is an integral part of such development and cannot be considered in isolation from it (for example, one of the tools for implementing this principle is strategic environmental assessment)
- the principle of participation and involvement of the society, which requires that everyone has access to environmental information, including information on hazardous substances and activities, and whereby the public must be involved in the processes associated with the implementation of projects that have a significant impact on the environment, As part of the new edition of the Environmental Code, issues related to the improvement of waste management system have also been revised. In particular, the introduction of a "Waste to Energy" concept was proposed. However, given the complexity of this approach, it was decided to place the Concept in separate draft legislation. It is expected that Waste to Energy draft legislation will be finalized till the end of the 2020 by the Ministry of Ecology, Geology and Natural Resources.

Considering an obligation of the country within the Paris Agreement, the corresponding climate change adaptation conceptual framework was introduced in the Draft Code, identifying authorized body in the field of adaptation to climate change and basic approaches to planning actions for adaptation to the consequences of climate change.

To develop the new Code, the Ministry of Energy approved the Roadmap, formed a working group of representatives of the OECD, the National Chamber of Entrepreneurs "Atameken", associations of private business entities and natural resource users.

5.7. NATIONALLY DETERMINED CONTRIBUTION

There are two dimensions inherent to climate change: the first is the reduction of greenhouse gas emissions and the second is adaptation to the effects of climate change.

In the area of reducing greenhouse gas emissions, public efforts are focused on a more sustainable use of natural resources and on establishing a reliable system of measurable reduction targets.

In the context of adaptation, attention should be paid to assessing the negative impact of climate change and actions to build an economy that is resilient to climate change.

According to the Paris Agreement, all Parties are committed to do their best within the framework of nationally determined contributions (NDC). All Parties report regularly on their emissions and their implementation efforts[51].

According to the Agreement, all Parties are committed to prepare, communicate and maintain NDC and to pursue domestic measures to achieve them. Parties have to submit their NDCs every five years as well.

The global goal of adaptation is to build capacity, increase resilience and reduce susceptibility to climate change. All Parties should participate in adaptation planning, submit and periodically updated reports on adaptation[52].

The Climate Action Tracker has identified that the vast majority of countries have targets that are inadequate and, collectively, will not meet the 1.5°C temperature goal of the Paris Agreement. Kazakhstan has been grouped among ten countries with insufficient NDCs[53].

[51] United Nations Climate Change (UNFCC)
[52] United Nations Climate Change (UNFCC)
[53] Climate Action tracker – 2020

Kazakhstan is one of the largest emitters of greenhouse gases in Europe and Central Asia (national emissions amounted to 332.7 million tons of CO_2 in 2016). The energy sector accounts for 78.8% of total greenhouse gas emissions, followed by agriculture (9.5%) and industrial processes (7.2%)[54]. More than 80% of the electricity produced is coal, followed by natural gas (7%) and hydropower (8%).

Recognizing the importance of preserving the future climate, Kazakhstan has proposed as its Nationally Determined Contribution (NDC) an overall reduction of greenhouse gas emissions by 15% by 2030 compared to 1990 level. Kazakhstan ratified the Paris Agreement in November 2016 and committed itself to meeting the proposed target as the first NDC. The goal will be to contribute to sustainable economic development, as well as to the long-term global goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels and to pursuing efforts to limit the increase to 1.5°C.

Kazakhstan has also launched an online platform for monitoring, reporting and verification of emission sources and greenhouse gases. This inventory is an essential part of Kazakhstan's national emissions trading system.

In summary Kazakhstan formulated clearly defined strategic goals in the field of environmental protection and created a legislative framework for the transition to the Green Economy. Recognizing the importance of a timely response to global transformations, the country initiated the process of developing and revising documents in the field of Green Economy. Efforts within the PAGE program could focus at the support of these efforts, including provision of expertise in the development and revision of such key documents s the Green Economy Concept,the Low-carbon Development Strategy, and support for the practical implementation of the New Environmental Code.

[54] Statistics Committee of the RoK

Kazakhstan's National Emissions Trading System

Kazakhstan's National Emissions Trading System (NETS) was launched in 2013 as the main tool to regulate domestic CO_2 emissions and develop low-carbon technologies. However, in 2016, the NETS system was suspended in order to eliminate the identified deficiencies[i]

For example, since the launch of the bidding system, quotas have been issued according to the historical method, i.e. from the actual volume for the last 2 years the necessary volume of reduction (approximately 1.5% per year) was deducted. Thus, GHG emitters were given a reduced quota. However, it turned out to be impossible for the enterprise to achieve such a reduction in one year.

The reason for this is the growth of Kazakhstan's economy, which generates an increase in demand for electricity. As a result, the question came up: how can energy producing companies meet the country's electricity needs if electricity production is associated with the growth of GHG emissions? That is, when issuing quotas, it was necessary also to consider the growth rate of the economy.

To address this issue, a quota reserve was introduced. It is designed to issue additional quotas in case of capacity increase, such as the introduction of new installations.

The national quota distribution plan for 2014-2015 contained restrictions preventing the company from transferring the saved quotas from one year to another. In 2016, the Environmental Code was amended[ii] to allow for the transfer of saved quotas from one year to another within the framework of the existing national quota plan. This regulation came into force in 2018, when the emissions trading system was re-launched.

In addition, a list of sector-specific GHG emission rates has been developed.[iii] The list includes 52 specific coefficients for the electricity, oil and gas, mining, metallurgy, chemical and manufacturing sectors. After all necessary adjustments, the emissions trading system was re-launched in 2018.

[i] https://www.zakon.kz/4776924-kazakhstan-priostanovit-do-2018-g.html
[ii] Article 94-9 of Environmental Code
[iii] https://www.kazpravda.kz/news/obshchestvo/o-rabote-po-sokrashcheniya

6. REVIEW OF SECTORAL POLICIES AND INITIATIVES

This section reviews in more details the sectoral and thematic areas that were highlighted in the Kazakhstan's PAGE application, by the PAGE inception mission in February 2019, and within the subsequent consultation with the PAGE national focal point.

This section describes the achievements and efforts that Kazakhstan has been making towards sustainable development, where the transition of the country to the Green Economy occupies a special place. In addition, the section focuses on sectoral strategies (initiatives, programs, etc.) to reduce the negative impact of the industrial sector.

6.1. ENERGY

Extensive reserves of oil, gas, coal and uranium have turned Kazakhstan into one of the major players in the global energy market.

Since Kazakhstan gained independence, more than 60 % of total investments in the country were made in the energy sector, particularly in oil and gas. Vast natural resources of the country are projected to meet 2-3% of predicted global oil demand in the next decade. Moreover, Kazakhstan is in the top ten countries in the world in terms of coal and gas reserves. Its proven gas reserves stand at 3 trillion m^3 and projected reserves at 5 trillion[55].

The abundance of uranium resources is another reason why Kazakhstan is regarded as an energy superpower. Although, the country does not have any active nuclear power stations, it has 12% of the world's explored uranium resources and in 2018 produced about 21,700 tU, which is more than 1/3 of the global uranium production[56].

The current total installed power capacity in the country is 21.7 GW, which is approximately 0.3 % of the global installed capacity[57]. Total generation of electricity in 2017 was 102.4 billion kWh – of which more than 88% came from fossil fuel power plants, 11% - from hydropower plants, and less than 1% came from renewable energy sources[58].

According to the International Energy Agency (IEA) almost half of the global CO_2 emissions come from the energy sector[59]. Despite the objective reasons for the high energy intensity of country's GDP, there is considerable potential for energy saving and energy efficiency. The analysis of the energy audits outcomes in main industrial enterprises revealed an average energy saving potential of 10%, and about 40% in public sector[60].

Taking into account current obligations of Kazakhstan within Paris Agreement, the Government realizes the importance of emissions reduction policies in the energy sector. The Kazakhstan-2050 Strategy, the Kazakhstan-2025 Strategy and the Green Economy Concept set targets to reduce the energy intensity of GDP by 25% by 2025 and 50% by 2050 from the 2008 level. At the end of 2017, the GDP energy intensity decreased by 18% compared to 2008[61].

A number of laws, strategies and programs have been developed and adopted that ultimately reduced emissions in the sector. Development of Low-carbon Strategy was recommended by the National Voluntary Review within SDGs implementation process.

This Chapter discusses current status, policies and laws, as well as practices to support Green Economy transition from energy perspective.

6.1.1. ENERGY EFFICIENCY

Kazakhstan possesses significant reserves of natural resources. The industry is a legacy of the Soviet era, when energy efficiency and energy intensity were not the first priority. For this reason, the production process was characterized by high and inefficient energy consumption, which ultimately affected the price of products.

Therefore, the country's energy balance is dominated by thermal power plants and boiler-houses operating on coal. The applied technologies of coal combustion combined with an outdated infrastructure in the sectors of production, transmission and distribution of electric and thermal energy make this sector energy intensive and energy inefficient.

Adoption of the new regulatory requirements for emissions of harmful substances from coal-fired power plants became a stimulating factor for increasing the energy efficiency of thermal power plants and boiler-houses[62].

[55] Ministry of oil and gaz, RoK
[56] World Nuclear Association
[57] Central Intelligence Agency
[58] US Emergency Information Administration
[59] International Energy Agency
[60] www.eenergy.media.kz
[61] Committee for Industrial Development and Industrial Safety of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan
[62] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

The energy efficiency targets, set by power plants and boilers, are achieved through introduction of advanced technologies that allow increasing efficiency of energy production, namely:

- gas technologies – based on a combined steam and gas cycle;
- new coal technologies – application of circulating fluidized bed boilers;
- cogeneration of electricity, heat and cold;
- fuel cells – direct conversion of the chemical energy of fuel into electrical energy;
- mini- and micro-CHPs (Combined Heat and Power) – decentralized semi-autonomous energy supply systems, etc.

In the heat and electricity transmission and distribution sector, the following energy efficiency technologies are being implemented:

- digital and automatic production processes;
- isolating heat network pipelines;
- installation of frequency regulation on pumping equipment;
- modernization of electric networks;
- replacement of transformers with more energy efficient ones, etc.

Despite the introduction of advanced technologies, the existing tariff policy does not allow companies to generate sufficient funds for investment and modernization. Presently, in Kazakhstan, the tariff is subsidized for the population at the expense of entrepreneurs and legal entities. This practice justified itself in those days when there was no competition on the electricity market, but there was a monopoly. But currently, there are unregulated energy trading organizations have appeared on the energy market. More than 300 licenses have been issued for this type of activity, and about 40 of them remain regulated.[63]. According to the World Bank, to cover the investment needs of the sector, tariffs for the population should be increased by 40-55%.

The basis of the modern energy saving system was established in 2012-2015 as part of the first five-year plan of industrial and innovative development. Based on Japan experience, the key element of the energy saving system is the State Energy Register (SER)[64]. Today, the Register includes about 26 thousand organizations, of which 16.5 thousand – public institutions, 5.5 thousand – quasi-public sector, 3.5 thousand – legal entities[65].

In 2017, SER subjects consumed 41% of the country's energy consumption or 53.3 million TOE, non-SER subjects – 48%, population – 7%, losses – 4%. In total, Kazakhstan consumed 132 million TOE[60].

Due to the established energy consumption threshold for public institutions and quasi-public sector entities in the amount equivalent to or exceeding 100 thousand TOE per year, about 5,000 entities are included in the SER, of which only 4,000 are public institutions and quasi-public sector entities[60].

Thus, more than 24,000 public institutions and quasi-public sector entities are not monitored for energy consumption. At the same time, the experience of other countries shows, that the monitoring of energy consumption by public institutions is one of the most important area. Savings in this sector could be allocated to other social needs.

According to the Article 20 of the Law "On Energy Saving and Energy Efficiency" dated January 13, 2012, the authorized organization forms and maintains an energy efficiency map, selects and includes projects in the energy efficiency map.

Currently, the Energy Efficiency Map is an active resource, created under the initiative of the Government with the support of the World Bank to raise public awareness on energy saving issues[66].

The dearth of available financing for investment purposes remains one of the most significant impediments to transitioning towards Green Economy. There has been very little private-sector involvement in sustainable energy and climate projects; private investment has been hampered by an unstable business climate, with difficulties to obtain permits for "green" and environmentally oriented projects.

As part of the promotion of low-carbon practices as one of the measures to reduce the energy intensity of the economy and improve energy efficiency, the Government of Kazakhstan together with UNDP, with financial support from the Global Environment Facility, launched a financial mechanism to subsidize the interest rate of the loan for "green" modernization. The project subsidizes 10% of the loan rate. The financial mechanism, innovated by UNDP and piloted with DAMU Fund, attracted more

[63] Informational-sectoral resource EnergyMedia
[64] «Energy Efficiency Law» -2012
[65] State Energy Register of the RK
[66] National resource in the field of energy conservation and energy efficiency

than $35.2 million of private investments in 2018 alone. This mechanism is being extended on renewable energy projects as well, focusing on distributed renewable energy systems[67].

6.1.2. RENEWABLE ENERGY

Within the Paris Agreement, Kazakhstan established obligation on unconditional target to GHG emissions by 15% by 2030, conditional target is 25%. Within the Green Economy Concept, country has also set ambitious targets to increase the share of renewable and alternative energy sources to 50 % by 2050. Since then, RES projects implementation in Kazakhstan has passed through a number of evolutionary stages, starting from a feasibility study development scheme (indicating the price, payback period and etc.) and fixed tariff "FIT" scheme (from July 4th, 2013) with FIT for each category of renewable energy sources (wind, sun, hydro and biogas) set by the Ministry of Energy. Both schemes (the feasibility study and the FIT) suggested that investors go through licensing procedures and only then apply for conclusion of a PPA (Power Purchase Agreement for 15 years).

The Kazakhstan Electricity Grid Operating Company (KEGOC) has established a Financial Settlement Center, through which 15-year energy supply contracts could be signed in case of investment in RES. Such mechanism ensured constant cash flow to investors and improved ROI for renewable energy projects.

Mechanism of fixed tariffs allowed launching Kazakhstan's market of RES. The country is one of 48 countries worldwide where fixed-tariff policies were replaced with renewable power auctions in 2018. For instance, in 2014 there were 35 facilities with total installed capacity of 177 MW, and by the end of 2018, the total installed capacity was already 531 MW[68].

The same year, first RE auctions took place, demonstrating great effect on reduction of electricity tariff. The auctioning system has been considered as one of the most effective policies in RE sector. As a result of trading in 2019, the price of solar energy amounted to 0.025 $/kW×h, wind – 0.050 $/kW×h, biomass – 0.083 $/kW×h.

According to the last available data, share of RES (wind, solar, biogas) in total produced electricity is about 0.4%.[74]

Enabling legal framework allowed leveraging $1 billion of investments in Kazakhstan's Renewable Energy sector. 87 wind and solar plants with the capacity of 1,042 megawatts started operating in Kazakhstan in the end of 2019.

Despite some improvements in the legal regime for RES in 2019 (simplification of licensing procedures, introduction of indexation for exchange rate differences, arbitration clause, phased introduction), the development of the RES (large-scale projects) sector is constrained by the following challenges:

Dependence on the traditional energy production sector. In accordance with the Law of the Republic of Kazakhstan "on Support of the Use of Renewable Energy Sources", RE production costs are imposed on the traditional energy producing companies through the FSC. RE costs are incorporated into a limited tariff for conventional electricity supply of the producing companies. In the light of projected growth of RE production the pressure on traditional energy producing companies will grow. Thus, for example, a tariff for conventional electricity supply of the Ekibastuz State District Power Station 1 is limited to 0.015 $/kW×h with the share of RE reaching 0.002 $/kW×h (2019). In 2025 the share of RE in a limited tariff (0.015 $/kW×h) is projected to reach 0.006 $/kW×h thus significantly reducing the profits of electricity producing company

Unsustainability of the existing system, where the FSC – a buyer of RE energy has limited financial capabilities. RE cost positive trends (2019 – $146.9 mill, 2025 – $541.2 mill) expose the risks of non-compliance of FSC with the obligations to purchase RE in accordance with PPA.

[67] United Nations Development Program
[68] Inforburo RK

Lack of medium and long-term planning on the RES energy to be purchased through auction mechanism. The "Action Plan for the Development of Alternative and Renewable Energy for 2013-2020" aimed to install 3054 megawatts of renewable energy capacity, mostly from wind and hydropower sources by 2020. The Accounts Committee's 2016 assessment of its implementation revealed that it had fallen far short of its targets and that lack of co-ordination has led to financing constraints at the national and local levels. The Action Plan's mandate expired in April 2017. The government should continue working on new plans for renewable projects, which will utilize Kazakhstan's great potential for wind and photovoltaic power.

Potential of the small scale RES segment

The greatest potential is within the small scale RES segment. In 2018 the Government of the Republic of Kazakhstan prepared a Concept of the National Program for the Development of Beef Cattle Breeding for 2018-2027, with the focus not at large enterprises, but family farms. Within the framework of the Concept the following is planned:

increase the number of farms from 20 to 100 thousand;
increase in job creation for the rural population from 100 to 500 thousand;
increase in the number of livestock up to 15 million heads and an;
increase in labor productivity per employee from $1,000 to $8,000.
Resource: National Program for the Development of

Beef Cattle Breeding for 2018-2027

The indicators of the Beef Livestock Development Program can serve as a powerful incentive for the creation of rural energy systems with distributed and local energy generation with RES at the core of such energy generation system. It is estimated that 15 million head of cattle can provide the resource base for the biogas plants with the capacity of about 40 million m^3 of biogas daily, from which 250,000 MW×h of power energy can be produced (CHP1, CHP 2, CHP 3 of Almaty jointly produce about 20,000 MW×h per day). The introduction of biogas-RES complex approach will help to address climatic and environmental challenges from generated animal waste.

Currently, the Ministry of Ecology, Geology and Natural Resources is working on amendments to the relevant legislation to facilitate the deployment of small scaled renewable energy systems, including heating and cooling sector which account for around half of the total energy demand. Amendments introduce the definition of small-scale RES projects with redefined capacity gradation, technical standards for RE equipment, simplify grid connection procedures, as well as envisage financial support (subsidies and tax preferences) to such projects. Also, for the first time in Kazakhstan, the draft law introduces incentives for the development of RE for heating sector, accounted for around half of total final energy demand.

While these efforts have led to progress in some areas and helped launching the country's renewable energy market, the energy mix shows little diversification and GHG emissions continue to grow[69]. As was mentioned above, Kazakhstan remains one of the largest emitters of GHG emissions in Central Asia and is among the world's 10 most energy-intensive economies. The energy sector accounts for 78.8% of total GHG emissions, followed by agriculture (9.5%) and industrial processes (7.2%). The economy is heavily reliant on fossil fuels (close to 50% of primary energy needs are supplied by domestic coal and over 60% of electricity generation is coal based). This dependence on coal affects environmental degradation and human health. The economy is also highly energy and carbon intensive: using 1.7 times as much energy per unit of GDP as the OECD average – which undermines Kazakhstan's competitiveness in international markets[70].

Thus, to overcome energy sector curbing challenges there is a need in a reform of a sector with focus on a self- regulating market based model. One of the first steps on this way is to analyse possible fiscal policy measures to support sectoral transformation strategies towards low-carbon growth in Kazakhstan. There is a high potential to reform fossil fuel subsidies across sectors. Moreover, the fluctuations of oil price and the latent macroeconomic vulnerabilities of a reliance on commodities clearly revealed within the last years provide a particular opportunity to address fossil fuel subsidies and support efforts to address the current oil crisis and help build a more resilient, sustainable energy system in Kazakhstan. Efforts to improve energy efficiency and develop renewable energy must go hand in hand with fossil fuel subsidy

[69] PAGE (2020 forthcoming), Kazakhstan's transition to a Green Economy: A stocktaking report.
[70] WBG (2019) IBRD IFC Multilateral Guarantee Agency Country Partnership Framework for the Republic of Kazakhstan for the period FY20-25

reform in order to be successful and sustainable over the long-term. Here is the potential entry point for PAGE, where international best practices and experience supported with clear methodology can be introduced to identify fiscal space and potential much needed areas such as health, education, renewables areas to redirect public resources to.

6.2. NATURAL RESOURCES MANAGEMENT: AGRICULTURE, BIODIVERSITY

As the President of Kazakhstan K. Tokayev stated in his Message to the people of Kazakhstan dated September 2, 2019 "Agriculture is our main resource, but it is not fully used. We have significant potential for the production of organic and environmentally friendly products that are in demand not only in the country, but also abroad».

Historically, Kazakhstan was a predominantly agrarian country. Considerable weight in agriculture is occupied by crop production. Growth of production in the agricultural sector has been declared as one of the strategic development goals of the country. The share of livestock in gross agricultural production is 45%, while the share of crop production is 55%.

6.2.1. LAND MANAGEMENT

The area of agricultural land in Kazakhstan is more than 222 million hectares, of which 186.9 million hectares are pasture, 29.41 million hectares are cropland, 5.16 million hectares are hayfields and 0.12 million hectares are perennial plantations. At the same time, agriculture accounts for about 40% (91 million hectares) of the country's total agricultural land area, or 91 million hectares.

The development of agriculture without taking into account local climatic conditions has led to the loss of fertile soil and degradation. Approximately 70% of the country's territory is subject to soil degradation and desertification.

Most of the leased land is often not used for its intended purpose and no measures are taken to prevent soil deterioration.

Biodiversity is also affected by the negative impact of agriculture. Widespread use of chemical fertilizers creates problems in the form of pollution of lakes and rivers. To date, about 500 pesticides have been registered in Kazakhstan, and this list is supplemented annually by 15-20 new entries.

In addition, there are problems with the appearance of abandoned land and the lack of circulating and investment funds for the maintenance and development of farms. This, in turn, also affects the environment.

In the livestock sector, in addition to the problem of breeding stock, the lack of land for growing fodder crops is a limiting factor for the growth of meat production. One of the main causes of habitat destruction in most of the country's arid and semi-arid pastures is intensive grazing. The National Beef Livestock Development Programme 2018-2027 places great importance on the participation of family farms in beef cattle breeding. The main aspects of the programme, including increase in the number of farms and number of livestock were highlighted above. However, this in turn means increasing pressure on the ecosystem.

Organic farming is one of the priority directions in agriculture development. There are special laws on organic production[71] and development of agriculture[72], as well as a program[73], a roadmap[74] for the development of organic agriculture have been developed.

Agrarian business in Kazakhstan is experiencing four major obstacles[75]:

- unpredictability of the climatic conditions;
- limited availability of cheap and long term funding;
- insufficient provision of agricultural machinery in the required quantity and quality, which leads to an increase in production costs; and
- lack of qualified personnel.

The above problems lead to the conclusion that without the support of the Government, effective development of agriculture is impossible. For this purpose, the relevant program for the development of agriculture for the periods of 2017-2021 was developed and adopted[76].

[71] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[72] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[73] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[74] Ministry of Agriculture of the Republic of Kazakhstan
[75] Information portal zakon.kz
[76] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

To date, only about 5% of the country's GDP is being created in agriculture with more than 40 % of population residing in rural areas. However, in the next 5 years, the production and processing of agricultural products should become the main source of economy diversification and an impetus for the economic growth of the country. Fulfillment of the new role of agriculture will balance the sustainable development of Kazakhstan, increase labor productivity and ensure the improvement of living standards of the majority of the population. Rural residents, running subsidiary farms, will get new opportunities for involvement in commercial production through large-scale cooperation and targeted state support.

The total expenditure provided for in the national and local budgets for the implementation of the Program in 2017-2021 will amount to $7,1 billion:

2017: total – $1.0 billion
2018: total – $1.2 billion
2019: total – $1.3 billion
2020: total – $1.7 billion
2021: total – $2.0 billion.

These amounts are not final and will be specified in accordance with the state budget for the relevant fiscal year on the basis of investment programs, related to the agriculture subprograms and programs of development of agriculture in the regions.

Organic Agriculture in Kazakhstan

Since 2010, Kazakhstan has been transitioning to intensification of various green technologies. For instance, the use of various synthetic fertilizers has been minimized. Traditional agriculture uses a lot of different herbicides and pesticides. With zero tillage technology, the use of different chemicals is reduced to a minimum, up to and including the rejection of synthetic pesticides.

Thus, organic agriculture in Kazakhstan has been emerging. At present, Kazakhstan has more than 332 thousand hectares of organic land, officially certified according to international standards of organic farming. This is a very good indicator for Kazakhstan. However, at the international level it is very little to meet the needs of Chinese, EAEU, European and American markets.

Organic farming requires a lot of different efforts, including product certification. In order to obtain international certification, Kazakhstani agricultural producers and processors apply to certification organizations for certification. They are certified depending on the target market: under the terms of EU regulation 834/07 for the export of products to the European market or under the conditions of NOP for the export of products to the North American market. The certificate allows manufacturers to label their products abroad as "organic products". According to the European Union Regulation No 125/2013, 10 control bodies are accredited in the European Union for the import of organic products from Kazakhstan, which are competent to carry out inspection, certification and issuance of certificates of equivalence of manufactured products to EU regulations. These control bodies are accredited by the European Commission for certification under Regulation EC 834/2007 for the European market and by the USDA department for NOP certification in the US market. None of the foreign certification organizations is registered in Kazakhstan, despite the fact that they conduct business activities in the country (inspections).[i]

Over the past few years, there has been a growing interest among Kazakhstani agricultural producers in switching to organic farming methods. Production and processing of organic products is carried out in Akmola, Aktobe, Almaty and Kostanay regions. The main production is occupied by cereals, oilseeds, legumes, fodder crops and medicinal herbs.

[i] http://www.fao.org/3/a-i5454r.pdf

6.2.2. WATER MANAGEMENT

The water management issues are reflected in the State Program for the Development of Agriculture of the Republic of Kazakhstan for 2017-2021, which was updated in 2018. The Program indicates two main challenges in water management in the country[77]:

1) access to drinking water in rural areas (access to centralized water supply is provided to 1.5% of the total rural population)[78];
2) the wear level of irrigation and drainage networks (as per World Bank's calculations, the irrigation system will completely fail within 44 years at the existing pace of renovation)

One of the main reasons for those challenges is the low cost of water supply services for end users. This leads to inefficient water consumption by agricultural consumers and does not encourage the use of water-saving technologies and crops, and does not allow the full maintenance, operation and repair of water management and irrigation systems. Currently, water costs account for less than 1% of the cost of major crops (0.9% for wheat, 0.1% for cotton), which is significantly lower than in other countries (4-13% for wheat, 2-10% for cotton in countries such as India, PRC, Australia, South Africa, USA and Israel). In absolute terms, the current level of water tariffs in agriculture is one of the lowest in the world, 2-10 times lower than in countries such as Australia, China, Greece, the United Kingdom, and 20 times lower than in Israel. The water tariff for the end user is extremely low (the average tariff is 0.5 tenge[79]/m^3 in agriculture), the level of tariffs for industrial consumers varies between \$0.31-\$0.67 per m^3.

To address this issue, the Ministry of Agriculture (December 2018) proposed the Plan for the Development of Irrigated Land until 2028. According to the Plan, there will be a transition to the financing model involving private investment in PPP schemes in accordance with the international experience. The PPP financing provides for a private partner who establishes a special financial company to attract investments. It is planned to introduce economically justified tariffs to ensure the return on investment. These measures will be supported by the state in the form of subsidies for irrigation water supply services. As a result of this measure they are expecting to solve land use and turnover problems by increasing land tax; to remove land that is not used efficiently; to increase surface water accumulation through construction of reservoirs, collection of flood water and other measures at the expense of the Republican Budget.

Beside the State budget, international financial institutions are involved to addressing water challenges in Kazakhstan. To date, through international loans from the Islamic Development Bank (IDB) and the EBRD, there are several projects being implemented to restore the irrigation and drainage systems in the area of 128,000 hectares (in Almaty, Aktobe, Zhambyl and South Kazakhstan regions) for a total of more than \$262.2 million[80].

Beside the challenges mentioned above, there is an institutional weakness in water management structures of Kazakhstan. Before 2019 the Committee of Water Resources was under responsibility of the Ministry of Agriculture. Taking into account the fact that agriculture is the main water consumer, this institutional arrangement creates combination of the consumer and control functions in one body. Moreover, the Kazvodkhoz RSE and its branches, being representative of the Committee of Water Resources was responsible for water infrastructure construction and at the same time provides control function for services provided. In 2019, the Committee of Water Recourses was transferred to the newly established Ministry of Ecology, Geology and Natural Resources. However, the Kazvodkhoz functions remain same.

Another challenge that Kazakhstan is facing is related to transboundary waters. 45% of Kazakhstan`s water resources come from neighboring countries such as PRC, Russia and Central Asian countries (44.64 km^3 out of 100.6 km^3)[81]. The total amount of water resources coming from neighboring countries is steadily decreasing from 59.1 km^3 in 1998 to 44.64 km^3 in 2014, and it is expected to drop to 31.6 km^3 in 2030. The forecast is based on the analysis of the current situation of water usage by China, Uzbekistan and Russia. The Department of Transboundary water (under MEGNR) is managing this challenge in accordance with the norms of international water law, which were used in setting the goals for sustainable development and adopted by the UN General Assembly.

Thus, the country`s water management sector is facing a number of serious challenges, such as dilapidated infrastructure, imperfect system of

[77] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[78] Committee on Statistics
[79] Approximately \$0.001285
[80] InformBuro
[81] Committee of Water Resources

economic regulation, and shortage of water resources. The country is making efforts to introduce modern green technologies, attracting investments from international financial institutions to modernize infrastructure. The country is working on improving legislative and economic regulations, as well as negotiations on transboundary watercourses. Given the role of the governmental bodies in improving the water sector, the contribution of the PAGE Program is seen in enhancing the capacity of civil servants for integration of the principles of Green Economy in water resources management.

6.2.3. BIODIVERSITY CONSERVATION

Today, conservation of biodiversity of Kazakhstan faces following problems:

- pollution of flora and fauna;
- deforestation;
- irrational use of rivers for agriculture;
- poaching;
- illegal construction in protected areas;
- desertification.

Kazakhstan is characterized by a great variety of ecosystems in Central Asia, as shown in charts 5&6.

Chart 5. The areas of zonal ecosystems in Kazakhstan, mill. ha[82]

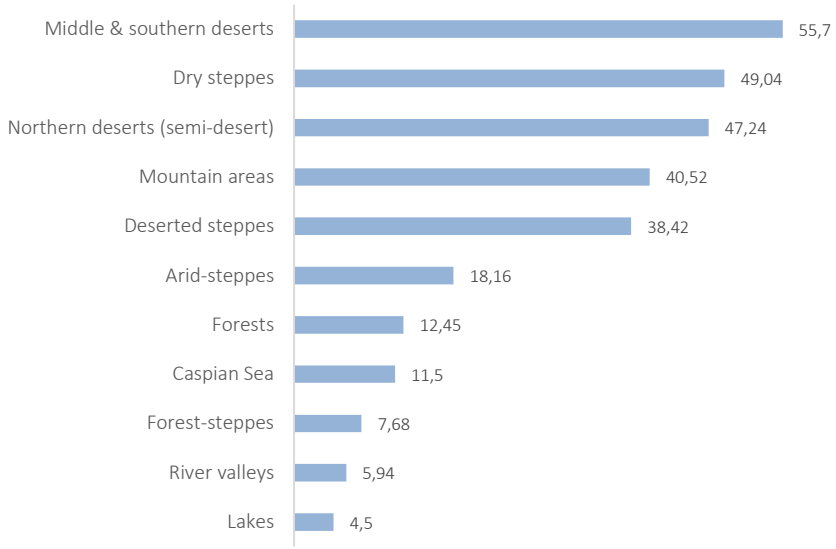
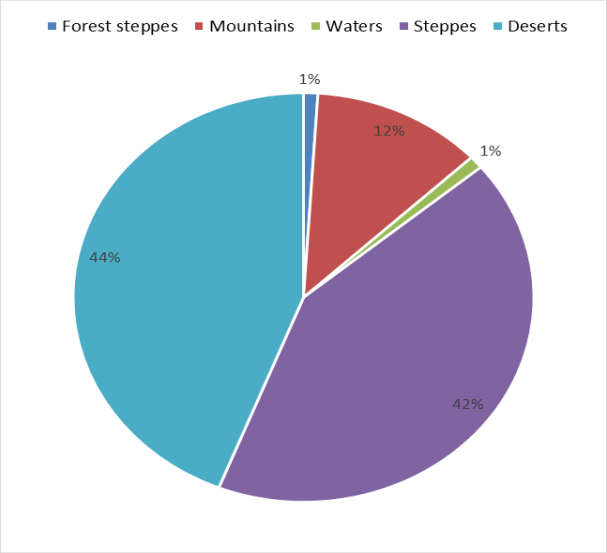


Chart 6. The areas of zonal ecosystems in Kazakhstan, mill. ha[83]

[82] Draft Concept of Conservation and Sustainable Use of Biological Diversity in the Republic of Kazakhstan (2016)
[83] Draft Concept of Conservation and Sustainable Use of Biological Diversity in the Republic of Kazakhstan (2016)



The world community adopted the Convention on Biological Diversity (CBD) in Rio de Janeiro in 1992, which Kazakhstan ratified on August 19, 1994[84]. Further, in 2010, in Aichi Prefecture, Japan, the Parties to the CBD adopted the Strategic Plan for Biodiversity (2011-2020)[85].

To date, 190 of 196 Parties to the Convention have developed an Action Plan for the implementation of Biodiversity Strategy.[86].

However, to date, there is no document in Kazakhstan that explicitly provides for the implementation of the Strategic Plan for Biodiversity (2011-2020) and targets for the conservation and sustainable use of biodiversity adopted in Aichi. Various strategic, sectoral, regional and other program documents set national goals and objectives that are directly or indirectly equivalent to Aichi's targets[87]. The UNDP CO in Kazakhstan has supported the development and now facilitates the adoption of a Concept on conservation and sustainable use of biodiversity.

During the following years, significant work in this direction was done to develop a natural-reserve fund, and the establishment protected areas in order to save the biodiversity of specific zones. A Law of the RK "On Specially Protected Natural Areas" was adopted, providing for the expansion of a network of protected areas, as well as the rational use of objects of the state natural reserve fund. As a result of this Law, the number of national parks has increased from 1 to 14[88]. Even the total area of specially protected areas has grown noticeably, It is still less than 8.81% of the total area of the country, which is lower than the generally accepted international standard of 10-12%, although only approx.5% of Kazakhstan's forests are included within the protected areas. Therefore, forest ecosystems are underrepresented in the national protected area systems. Kazakhstan has three main forest ecosystem types: alpine forests, tugai (riparian) forests, and saxaul landscapes (desert and semi-desert shrubs).

The Forest Governance system in Kazakhstan has deficiencies that hamper the sound management of forests. The central forest governing body (Forestry and Wildlife Committee) controls only 20 % of the forested area with a fixed annual budget and relevant competences. These are mainly the forests within the protected areas. While the remaining 80% of forests are managed by the regional governments that are usually have less resources and competences, while the management objectives of both types of managed forests is to maintain of ecological and socio-economic functions of the forest ecosystems. The forests outside of protected areas, having the same protection functions, are more vulnerable both in terms of natural and human caused threats.

To protect its globally significant biodiversity, Kazakhstan has established a system of protected areas covering 22,121,641 ha (8.1% of the total area of country). At the moment, the PA system coverage includes only 4.89% of the forested areas. Some of the ecosystems, which have globally important species, remain outside the PA system, for example, the unique riparian (tugai) forest and floodplain ecosystems (have 0% representation country-wide), which support a number of endemic and threatened species, large stands of valuable coniferous forests in the Altai region, representing an important CO_2 pools, and saxaul forests, playing critical role in

[84] Convention on Biological Diversity
[85] Convention on Biological Diversity
[86] Convention on Biological Diversity
[87] Sixth National Report to the Convention of Biological Diversity prepared by the RK
[88] E-newspaper "Kazakhstanskaya Pravda"

supporting local communities in drylands zones. The current estate does not fully cover the habitat of the snow leopard population groups. Only 30-35% of its range in Kazakhstan is protected within the PA network, which bars effective protection from poaching. Huge areas that provide a natural bridge and genetic interactions between the Tien Shan, Zhungar and Altai population groups of snow leopard stay outside of the existing protected areas network.

According to experts, Kazakhstan makes insufficient efforts for biodiversity conservation. An analysis, based on the BIOFIN methodology, has revealed a funding gap for biodiversity conservation over the past 5 years, which reached 158 billion tenge.

6.2.4. CLIMATE CHANGE THREATS FOR AGRO-BIODIVERSITY

Climate change has been manifested in the form of an increase in average temperatures. In the south, the climate is becoming more arid and hot, which increases water consumption for both crop irrigation and livestock.

In Kazakhstan, agriculture is the most vulnerable economic sector affected by climate change. The contribution of agriculture to GDP is about 5%. The sector employs about 25% of the country's working population, and this share is even higher in agricultural-oriented regions. At the same time, according to experts, since the 50s of the last century the country has been in the process of land degradation. Today about 70% of the sowing lands are considered degraded. The associated damage to the country is about $3.6 billion annually – about 3% of Kazakhstan's GDP[89].

In 2018, the wheat yield in the country reached 14.3 centners per hectare against 12.4 centners per previous year. The maximum yield (15.2 kg/yr) was achieved in 2016 with a record yield (over 23 million tons), while the average yield of wheat in the last seven years did not exceed 10.5 centners per hectare. At the same time, in the north of the country there are mostly rainfed crops.

According to experts' forecasts, by 2050 the heat resource during the growing season will increase by 12%, the amount of precipitation during the growing season will also grow by 8%, but in total the moisture supply of crops during the growing season will decrease by 10%. There will also be an increase in the aridity of the climate by 7-10%.

More favorable conditions will be created for thermophilic crops in the north of Kazakhstan: the thermal regime will be optimized and the sowing terms will become earlier, which will lead to more efficient use of spring moisture reserves in the soil. This will lead to the fact that the yield, for example, of sunflower in the north and north-east may increase by 5% by 2050[90].

Climate change in Kazakhstan could lead to a significant reduction in wheat yields. Wheat exports are about $1 billion and are grown on 85% of Kazakhstan's grain sown area. Rising temperatures, reduced rainfall in spring and summer and reduced soil moisture during the most important growing season could lead to a decline in yields to 63% by 2030 and about 50% by 2050 if no adaptation measures are taken. Rice and cotton, which are irrigated crops, are at great risk, as irrigation technologies are rather ineffective, with about two thirds of the water used is lost during transportation.

There is a need to consider a shift to crops that consume less water than cotton and rice, and to change the entire agricultural system and the associated water supply and irrigation system with climate change, because the current system is designed for traditional agriculture, which was developed back in the 1950s, 60s and 70s.

Today, local research is insufficient to provide suggestions on how to adapt to climate change in Kazakhstan. The data available at the country level make it possible to assess approximately what will change in the country, but the next step should be local studies at the district and oblast levels, which would show what changes are needed in agriculture.

Human activity, especially over the last couple of centuries, has become a major threat to the environment. Species and their diversity are facing serious threats. Air, water and soil have been polluted and contaminated.

Only in the last 30-40 years the world community finally recognized the state of the environment as a problem and began to take measures to address it. In Kazakhstan more can be done to protect biodiversity, ensure sustainable use of natural resources, promote resilient and low carbon development.

Environmental legislation has been developed and implemented, environmental strategies are integrated into sectoral documents. However, it is necessary to continue the process of improving national legislation and increase the level of ambition. The PAGE program can make a significant

[89] E-newspaper "Vlast"

[90] E-newspaper "Kursiv"

contribution to the process of reviewing and improving strategic and regulatory acts in the field of environmental protection, low carbon development and Green Economy.

6.3. WASTE MANAGEMENT

Waste sector is identified as one of the key drivers of Green Economy in the country and extensively covered in the Green Economy Concept till 2030.

The main development indicators that listed in the Concept of Green Economy are: by 2050 the recycling portion should be increased till 50%, the population should be covered by waste collection services till 100% and 95% of waste landfills should comply with environmental and sanitary requirements[91].

In 2019, the waste recycling portion was 13.5%, only about 17% of landfills comply with sanitary norms and 70% of population is covered by waste collection services[92].

In 2016, the National Program for Modernization of the MSW Management System 2014-2050 lost its validity. The main objective of the program was the reclamation of existing and the construction of new solid waste landfills. The goals and indicators of the program were transferred to the territory development programs of the regions. However, the indicators such as portion of recycling and number of landfills complying sanitary requirements are not linked to the Green Economy Concept indicators.

The legal base of the waste management sector is being coordinated within respective parts of Environmental Code. The Code was amended in 2015. According to the amendment, starting from 2016, the "principle of extended producer responsibility"[93] (EPR) was introduced in Kazakhstan.

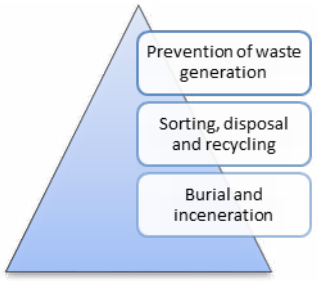
In December 2015, the GoK approved an exhaustive list of products and goods recognized as objects of extended producer responsibility[94] and in 2016 it adopted the Rules for Implementation[95].

In fact, the EPR regulations oblige manufacturers to conclude a contract with the EPR Operator in case of absence of their own recycling system.

Besides the EPR Operator, there are many other companies in Kazakhstan that recycle wastes. The Government is introducing new instruments to stimulate waste recycling sector. For example, in 2019 the first Kazakhstani Waste Exchange platform was established (see box below). However, the recycling portion of waste is still very low. In Sweden, 90% of waste is recycled, while in Kazakhstan the same amount is disposed at landfills.

This practice is in fully opposite to the waste hierarchy approach, following which the waste management sector can be developed in sustainable manner. The figure below shows the hierarchy levels of waste management practices. The higher the level, the greater preference must be given to the proposed method. This approach calls for maximum efforts to prevent the generation of waste, but when it is impossible, materials must be sorted and processed. Burial or incineration are extreme measures in waste management practice.

Chart 7. Waste management hierarchy



[91] Concept on Green Economy, 2013
[92] Committee for Statistic
[93] Environmental Code of the RK
[94] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"
[95] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

The first Kazakhstani Waste Exchange (KazWaste Exchange)

The main idea of KazWaste Exchange is to provide a convenient interface between buyers and suppliers of various types of waste in Kazakhstan and the CIS.

The Exchange website operates on the principle of a platform for free placement of ads from individuals and legal entities. In order to place the announcement about the available waste, it is enough to register on the site, to specify the volume of waste, price, region and upload a photo. The announcement will appear immediately in the section "Hot Announcements" on the home page and the offer will be easy to find for all interested parties. On the website of the exchange announcements are also conveniently divided into types of waste (paper, cardboard, plastic, used tires, waste oils, electronic waste, etc.).

Recycling companies have already registered on the site, and they are ready to buy secondary raw materials. Next year, a mobile application is expected to be launched to improve the platform's performance

Source: Self-regulated organization "KazWaste" Kazakhstan waste management association

Although Kazakhstan is making steps forward to increase waste recycling. Since 2016 it is prohibited to store mercury-containing lamps and devices at landfills; scrap metal; waste oils and fluids; batteries electronic waste, since 2019 plastic, wastepaper, cardboard, paper waste and glass have also been banned from landfills in the country[96].

Meanwhile, there are about 160 enterprises in Kazakhstan processing almost all major types of waste: paper, transparent glass, plastic, rubber (car tires), aluminum and tin cans. The only things that are not recycled in the country are textiles and food waste.

Lessons learned from few years of waste management sector development created need for the revision of the Environmental Code accordingly. The MEGNR is finalizing a new version of the Environmental Code, under which some measures to improve the situation regarding waste recycling are envisioned. For example, Kazakhstan plans to introduce the European classification of wastes.

Currently, there are some challenges in waste classification. For instance, the definition of hazardous waste used in Kazakhstan is based on a combination of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the EU approach. However, the Soviet approach, dividing hazardous waste into three categories based on toxicity, remains valid, since the legislation recognizes three groups of hazardous waste: green, amber and red. These three categories were introduced in the EU to define the customs regime for transboundary movement of waste, not for defining the level of hazard, as the system is used in Kazakhstan. However, this approach can be used currently for focusing the national waste management strategy on the most hazardous waste defined in the red list as the top priority[97].

Another challenge of the waste sector is industrial waste. To date 709 million tons of industrial wastes were generated in the country and only 32.2% was safely recycled in 2018. The main sources of industrial waste generation are mining, fuel and energy industries. Waste from the energy sector remains a critical issue with approx. 4 tons of ash and slag being produced for every 10 tons of coal burned. To date, more than 300 million tons of wastes have been accumulated in ash dumps[98].

In addition to this, there are other urgent issues that should be addressed, among them: chemicals management, problems of historical pollution and in particular, persistent organic pollutants (hereinafter POPs), as well as mercury and other chemicals. In terms of stockpiles of waste containing POPs, Kazakhstan occupies one of the first places among the countries of Eastern and Central Europe. Today in Kazakhstan the total amount of POPs containing waste, according to the initial inventory, is estimated to be around 250 thousand tons. These are obsolete pesticides, equipment containing PCBs and contaminated sites. This problem remains relevant for the country, since these substances are used in production and are currently formed in the technological processes of ferrous and non-ferrous metallurgy and in the chemical industry.

Considering the importance of addressing the environmental impact of POPs in 2007, Kazakhstan became a party of the Stockholm Convention. Today, the country is taking measures to fulfill these obligations by creating an inventory and the creation of database of POPs. (The Plan for Fulfilling the

[96] There is a ban on food and construction wastes since 2021

[97] The third Environmental Performance Review, Kazakhstan, 2018

[98] Committee of statistics

Obligations of the Stockholm Convention of the Republic of Kazakhstan for 2017-2028 was approved by order of the Minister of Energy of the Republic of Kazakhstan dated September 14, 2017 No. 312).

The analysis shows that there is strong necessity of the development of comprehensive national document on waste management with clear determination of responsibilities and mandates among actors and efficient allocation of resources, authority, and power to fulfill these responsibilities. The document should consider the complexities and inter-relationships both within and outside the government, reconciling a wide range of different interests, covering private sector, workers, including the informal sector, community, civil society and others.

The waste management hierarchy, the concept of the life-cycle of a product and rethinking waste as a resource should be fundamental guiding principles of the Document.

Expertise, available within the PAGE, in terms of MSW management, medical, industrial and hazardous waste, can be a valuable resource for development of such comprehensive document.

6.4. GREEN INDUSTRY

UNIDO defines "green" industry as the economy, striving for a more sustainable pathway of growth by undertaking "green" public investments and implementing public policy initiatives that encourage environmentally responsible private investments[99].

According to UNIDO, "greening" of industry is one of the methods to achieve sustainable economic growth and to promote sustainable economy. It includes policy development, improved industrial production processes and resource-efficiency.

Industrial operations in Kazakhstan are also regulated by environmental legislation. The main law in this area is the Environmental Code, adopted in 2007, which comprehensively regulates business activities. In addition to this law, there are other documents, including the Paris Agreement on Climate, ratified by Kazakhstan in November 2016[100]. This Agreement envisaged reduction of GHG emissions into the atmosphere, reducing the average temperature growth of no more than 2˚C in relation to pre-industrial indicators, and, if possible, reducing it to 1.5˚C. As part of the agreement, Kazakhstan is committed to reducing greenhouse gas emissions by 15% by 2030.

Kazakhstan's international obligations to reduce GHG emissions are implemented through the Environmental Code, in particular under the Chapter 9-1. For instance, according to the Article 94-2 of the Code, operation of a plant is forbidden without obtaining GHG emission quotas by the operator of a plant with emissions exceeding the equivalent of 20,000 tons of CO_2/year in the following regulated areas: oil and gas, electricity, mining, metallurgy, chemical, building materials production: cement, lime, gypsum and bricks. The GHG emission quota is credited to the plant operator's account in the State Register of Carbon Units in accordance with the amounts specified in the National Greenhouse Gas Allocation Plan. The operator of the plant is prohibited from exceeding the quota for GHG emissions established in the National Plan for the distribution of GHG emissions. Quotas on GHG emissions, issued for the period of validity of the National Plan of Distribution of Greenhouse Gas Emissions Quotas, shall be subject to repayment in accordance with the Rules of Issuance, Changes and Redemption of Greenhouse Gas Emissions Quotas.

In Kazakhstan, the emissions trading system (ETS) was introduced in 2013, but suspended in 2016 due to deficiencies in the system. Later, in 2018, the work of the ETS was resumed and is functioning today.

However, the current Environmental Code also has a drawback – it is mainly aimed at replenishing the budget, but not at improving the quality of the environment. Only a small share of the funds, paid by businesses for environmental payments, is allocated for environmental protection measures. Local executive bodies do not have an incentive to introduce clean technologies as this will decrease the inflow of funds to local budgets[101].

One of the key pillars of new Environmental Code is the revision of Complex Ecological Permits (CEP)system and introduction of Best Available Technics (BAT) as effective instrument stimulate transition of industry to lower carbon production. New Environmental Code envisages:

1. Mandatory transition to CEP for all facilities of category I. The transition period is 10 years.

2. Development of BAT reference books on the basis of the BREF European reference books (higher level of environmental protection and lower costs for developing reference books, either of the Russian Federation or the Republic of Kazakhstan).

[99] United Nations Industrial Development Organization (UNIDO)

[100] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

[101] E-newspaper "Kursiv"

Effective development of Green Industry and the transition to Green Economy requires green technologies. For this purpose, the International Green Technologies and Investment Project Center (IGTIPC) and based in IGTIC the Bureau for BAT were established in Kazakhstan in 2018. For successful promotion of green technologies, IGTIPC is expected to adapt relevant technologies to the country`s conditions and develop reference resources on best available technologies[102].

As the IGTIPC is still in its infancy, it still needs to be supported by legislation, for example, in the form of relevant norms in the new Environmental Code. Additionally, it is necessary to create a legislative regulatory framework to stimulate the transfer of green technologies, which will facilitate the IGTIPC's activities in the field of promotion of green technologies in Kazakhstan.

PAGE can rely on national partners, such as IGTIPC, to facilitate the adoption of clean and efficient technologies. Supporting IGTIPC to strengthen their capacity and the legislative basis for their activities can ensure a strong and sustainable foundation for enabling green industry in the country. Similarly, PAGE can foster a dialogue and help create a common understanding between business and local authorities on the benefits of enabling green technologies. The emission payments scheme could be used to fund green businesses going forward.

6.5. FINANCING GREEN ECONOMY TRANSITION

Countries' transition to the Green Economy model requires introduction of appropriate financial instruments. These instruments include, but are not limited to: fiscal support measures, adaptation of sustainable public procurement, "green" bonds etc.

6.5.1. BUDGETARY AND FISCAL MEASURES

In order to address its dependence on the oil and gas sector as a driver of economic growth, exports and public finances, Kazakhstan introduced structural reform. Recognizing the implications of this dependence the country starts introducing fiscal measures to foster long-term economic diversification, using natural resource revenues to support this transformation.

The Government has announced a substantial programme of tax reform to support industrialization and economic growth. In 2018 a revised Tax Code was launched, aimed at rationalization of tax expenditure, broadening the tax base and increasing reliance on indirect taxes (such as value-added tax). The Code includes wider elements of reform, with benefits for tax administration and non-oil sectors. For example, the tax administration reforms to "horizontal monitoring" to benefit the small and medium-sized enterprise sector through the removal of tax audits and the introduction of automatic VAT refunds. Changes to the tax benefits for special economic zones and priority investment projects may stimulate inbound investment in the non-oil economy[103].

Another example of the implemented measures is the establishment of Financial Settlement Center of Renewable Energy LLP. Main idea is to stimulate wider introduction of the RES projects. This subsidiary of the KEGOC purchases electricity produced by RES on a long-term basis (up to 15 years) at fixed tariffs and at the time resells it to usual consumers[104]. The costs of electricity incurred by an energy transmitting company in connection with the gratuitous transfer of electricity to entities using RES are subject to tax deductions (reducing Corporate Income Tax)[105].

Another incentive measure is providing free quotas on GHG emissions in accordance with the National Plan[106]. According to the legislation[107], if the value of property received free of charge is zero, there is no recognition of income and there is no obligation to pay the relevant tax. This motivates enterprises to gradually switch to green technologies, making the obtaining of quotas on GHG emissions dependent on emissions reduction.

Beside the positive fiscal measures, also negative ones have taken place within current financial system. For example, consumer subsidies for energy amounted to USD 5.85 billion in 2011 (3.3% of GDP) with most subsidies for the consumption of oil and petroleum products (55%), electricity (30%), and coal (10%). Between 2009-2015, investment subsidies for the development and modernisation of energy infrastructure, and for the development of the oil and gas sector amounted to USD 2.19 billion while support to the operation and maintenance costs of energy producers between 2008-2012 was

[102] NJSC "International Green Technologies and Investment Projects Center"

[103] The fiscal implications for Kazakhstan of worldwide transition to a greener global economy, EBRD 2018

[104] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

[105] Tax Code of the RK

[106] Tax Code of the RK

[107] Tax Code of the RK

USD 0.1 billion. These figures are expected to underestimate the total volume of producer subsidies as they do not consider the support provided through the Sovereign Wealth Fund (Samruk Kazyna) and some of its subsidiaries[108].

Fiscal measures listed above are just part of wider available policy responses. Currently, the government has taken a number of steps to address the fiscal risks posed country's continued reliance on oil. Recent reforms provide a strong basis for further reform and include measures on both the revenue and expenditure sides of the budget. These fiscal measures create opportunities to the country to develop under the "green" global economy scenario model. However, further reform is required to generate the required fiscal flexibility and public financial management structure required to manage the significant existing risks.

6.5.2. SUSTAINABLE PUBLIC PROCUREMENT

The volume of procurement in the Republic of Kazakhstan is about $33.4 billion; of which about $8.5 billion (about 4.7% of GDP) is public procurement and three quarters is procurement of quasi-state sector and subsoil users.[117]

Over the past decade, understanding of public procurement has shifted from a compliance-based administrative task to a strategic and results-oriented function that involves the active participation of many stakeholders, including the public. This has led to the emergence of a new generation of public procurement systems, with a focus on efficiency, strengthened oversight and accountability, effective anti-corruption mechanisms, and innovative approaches to procurement.

The Public Procurement Rules of Kazakhstan[109] initially provided for standards[110], designed to encourage suppliers to supply environmentally friendly products. These measures take the form of a conditional discount of 1% to a supplier, whose products meet the standards of environmentally friendly products.

The conditional discount does not affect the actual amounts in the public procurement contract; it affects the decision of the commission when selecting a supplier. It is believed that if a conditional discount is applied to a supplier, then the price offer is considered 1% "cheaper". According to the Rules, the winner is the supplier who offers a lower price[111].

In 2018, the Public Procurement Rules were amended[112] to add the following requirements for suppliers[113]:

- Availability of a document confirming the compliance of the environmental management system with the national standard;
- Availability of a document confirming the compliance of the proposed goods with the standard of ecologically clean products (СТ РК 1618-2007[114]).

An important part of the Green Economy is the improvement of Kazakhstan's legislation on public procurement, adopted by the Law of the Republic of Kazakhstan No. 434-V of December 4, 2015, aimed at increasing the transparency of procurement procedures and minimizing corruption, especially in the functioning of a single web portal and the organization of the e-procurement system[115].

The public procurement system is based on the principles of decentralization and transparency. In particular, open tendering is defined as a standard procurement method; Internet resources are widely used as a means of communication and streamlining processes; units responsible for public procurement in the Ministry of Finance are well organized and endowed with regulatory, advisory, monitoring and supervisory functions. Basic principles of public procurement are defined in the Article 3 of the Public Procurement Law. The Law provides for the principle of equal opportunities for potential suppliers who participate in procurement procedures and contract execution. Article 1 of the Law, in the definition of customers, excludes from the scope of the Law national management holdings, national holdings, national management companies, national companies and affiliated legal entities.

In 2018, the World Bank, jointly with the Organization for Economic Cooperation and Development, the European Bank for Reconstruction and Development, the Islamic Development Bank and the Asian Development Bank launched the assessment of Kazakhstan's public procurement

[108] OECD (2014) Energy Subsidies and Climate Change in Kazakhstan, Final draft report

[109] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

[110] State Procurement Rules of the RK

[111] State Procurement Rules of the RK

[112] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

[113] State Procurement Rules of the RK

[114] Information portal zakon.kz

[115] Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет"

system. This work was supported by the Ministry of Finance of the Republic of Kazakhstan and the results were presented to the representatives of government agencies, private sector and civil society. Universal methodology assessment procurement system (MAPS) was used[116] for this assessment.

In 2018 UNEP, in close cooperation with the Ministry of Energy and participation of the Ministry of Finance organized a special session on Sustainable Public Procurement (SPP) during the National Roundtable on Sustainable Consumption and Production, organized by the One Planet Network[126]. The objective of this session was to present the concept of SPP and examples of successful implementation, introduce the SPP programme of the One Planet Network, and collect ideas on the possible development of the SPP policy in Kazakhstan. The session consisted of two parts – (i) presentation of cooperation opportunities, experience sharing, working groups' brainstorming and (ii) overview of the national ongoing activities and possibilities for implementing SPP in Kazakhstan.

Considering the large share of public procurement as part of the national budget and the transformative impact of procurement on national economic actors, PAGE may consider building on work already initiated by UNEP, the World Bank, OECD and EBRD to help the Ministry of Finance to set up a system for sustainable public procurement in the country.

6.5.3. GREEN FINANCE

Green Financial System refers to a series of policies, institutional arrangements and related financial infrastructure that through loans, private equity, issuance of bonds, insurances and other financial services and instruments, such as emissions trading, steer finance towards environmentally friendly projects and activities.

In 2017, the Concept for the Development of a Green Financial System was adopted by Kazakhstan. The long-term Roadmap on green finance includes main financial tools such as green bonds development, creation a pool of green projects, capacity building, including trainings of experts and trainers in green finance, introduction of academic courses, etc.

Within this roadmap, development banks and international organizations can support low carbon projects by subsidizing 10% of the interest rate of the loan. For example, within the current UNDP initiative, there is an opportunity to receive the loan under the 5% interest rate (an average bank rate is 15%). The rate is comparable to the rates for projects in OECD countries.

The mechanism also provides technical support to project stakeholders – property owners, enterprises, banks, local executive bodies – for the successful preparation and implementation of energy service projects, including promotion of previously approved standard energy saving solutions in cities, such as: installation of automated heat supply points, modern pumps, modernization of boiler equipment, high-efficiency street and indoor lighting, etc. As of October 2019, 94 projects have already been approved for a total of $48.1 million for financing and support by reducing the bank rate by $3.1 million and a cumulative reduction in energy consumption by 15-70%, or by 50 thousand UAH tons of CO_2 equivalent/year[117].

The Astana International Financial Centre (AIFC) is actively promoting the concept of green finance in Kazakhstan. AIFC is envisaged as a platform for investment in environmental projects, creating enabling conditions for both public and private environmentally friendly projects.

The AIFC had developed a Green Project Taxonomy, as a unified system of classification to differentiate green projects and conventional ones.

Despite progress in the country on using economic and financial incentives to promote Green Economy, there is a lot of work to be done to redirect financial flows from "brown" to "green" projects and practices in the country. One of the main barriers appears to be the lack of evidence for the effectiveness of green finance, as well as the lack of common understanding among financial actors, policy makers and market agents on the benefits of green finance. PAGE can carry out capacity development activities, dialogues, and public debates, as well as conduct analytical work to produce the necessary evidence base for sustainable finance.

6.6. EDUCATION

Kazakhstan has recognized the need to integrate environmental and sustainable development issues into education. In 2002 the Minister of Education and Science jointly with the Minister of Environmental Protection adopted the Concept of Ecological Education. However, this initiative was not followed by the development of action plans or any institutional arrangements.

[116] Information and analytical portal Platon.Asia

[117] Damu JSC

Beside, various measures are being taken in Kazakhstan to implement the ecological education at all levels of the educational system, including primary and secondary education, higher education, vocational training, and training of civil servants.

Primary and secondary education in Kazakhstan has ecological education in a form of extra classes for interested pupils. Nevertheless, some schools have remarkable achievements in this area. Best example is a secondary school in Arnasai village of Akmola oblast, which has developed and applies a new model of environmental education. Teachers and students of Arnasay school learn how to work with green technologies, that are available in the school and adjacent territory. Successful practices and achieved results are disseminated among the parents of schoolchildren. At the initiative of the Ministry of Education and Science, the school became a starting point for the dissemination for this learning experience among the Nazarbayev Intellectual Schools all over Kazakhstan. For example, Arnasay school has a unique pyrolysis furnace with 97% efficiency, LED lamps, solar panels and collectors, sensor taps and water purification filters. Three greenhouses and a photo-dynamic greenhouse where ecologically clean vegetables are grown are located on the school territory. The use of these technologies allows school to save for the district budget more than $7.7 thousand per year[118].

The Ministry of Education and Science as a responsible body is developing and approves the template curricula and educational programs for each level of education. The current status of these curricula and programs is partially related to environmental education, especially in the level of higher education. The country has the following priority specialties as Bachelor, Master and PhD degrees with the potential of green transition in power engineering, heat and power industry, energy supply of agriculture, agronomy, water resources and water use, forest resources and forestry, fruit and vegetable farming.

The needs of the student for each specialization are identified based on regional needs and directed on maintenance of the state programs. In higher education approaches of transition to Green Economy may be promoted effectively through introduction into curricula of ecology- or sustainability-oriented disciplines by the higher education institutions themselves, as elective or extra courses for example. There is a possibility to reorient the existing disciplines as well. The Universities may do so during the development of Modular educational program and approve it by the order of the Rector. However, there is a lack of qualified teaching staff in regular universities, which is considered a serious barrier.

Beside the educational process itself, the promotion of student's "green" lifestyle can play a crucial role in attraction of the public attention to the sustainable development pathway. This idea became a basis for creating Green Campuses for students in Kazakhstan. Such programs are being successfully implemented in the USA, Great Britain, Denmark, Switzerland, Australia, China, Japan and Singapore. The aim of green campuses is not only the development of cultural projects, but also the creation of infrastructure solutions for the living space based on eco-principles.

There are advanced training courses on Green Economy for civil servants organized annually. Considering the role of public servants in development of state programs, it is important to ensure their competence in the ecology and sustainability area. However, there can be challenges such as lack of time to gain extra knowledge.

In 2020, UNDP, the Ministry of Ecology, Geology and Natural Resources and the Ministry of Education have launched a new project on ecological education. The project envisages the systemic introduction of environmental aspects into educational programs of all levels, including kindergartens, schools and universities.

Considering PAGE`s aim to provide transformative changes, the Program can assist in capacity building of civil servants, including both middle management and senior management in all areas of state regulation. Such approach will contribute to the integration of "green" aspects in the planning, regulation and implementation of the national policy of Kazakhstan at all levels.

6.7. GREEN JOBS

The Concept of Green Jobs officially does not exist in Kazakhstan. To ensure a sustainable transition to Green Economy, the country should consider the following issues:

- there is no clear definition of "green jobs"
- there is no green jobs monitoring system
- there is no system of indicators for statistics on green jobs.

Thus, it is important to conduct a comprehensive assessment of the green jobs potential and introduce special indicators for statistics, including

[118] Information platform «G-Global»

at industrial enterprises. There is a need to develop a national policy on this issue as well as methodology and state requirements.

The International Labor Organization[119] gives the following definition of "green jobs": "Green jobs" are drivers for sustainable development and respond to the global challenges of environmental protection, economic development and social inclusion". The organization actively engages governmental and business workers in the active promotion of "greening" of enterprises, working methods and the labor market as a whole. Such actions open employment prospects, improve resource saving and build low-carbon sustainable societies.

The potential for green jobs in Kazakhstan is enormous. Sources for creating "green jobs" may include projects for the introduction of renewable energy sources, production of environmentally friendly products (but technological processes may be "non-green"), production through environmentally friendly technological processes (but products may be "non-green"), ecotourism, education, etc.

Great potential for the development of this direction lies in the promotion of green technologies, i.e. expanding of the network of Green Technology Centers and in cooperation with the Employment Center for training, including specialized universities, for the exchange of technological experience.

It is necessary to monitor, popularize and support the emergence in Kazakhstan of a new class of entrepreneurs who are the making use of green technologies and creating green and decent jobs.

The PAGE program can help in advancing social dialogue between the government, employers and employees on the need of transition to green and decent jobs. PAGE can also help in improving the monitoring system of green jobs, by revising regularly conducted labor surveys. Lastly, PAGE can help create synergies between Employment Centers and Green Technology Centers through the implementation of public information campaigns.

[119] International Labor Organization (ILO)

7. FINDINGS AND RECOMMENDATIONS

Being an oil-producing country, Kazakhstan moves towards inclusive economic growth while conserving natural resources and lowering carbon dioxide emissions. The ambitious strategic goals in the field of Green Economy are possible due to the strong political support. Despite governmental support and achievements on national and sectoral level, Kazakhstan still faces challenges and barriers to implement the political vision and enable the transition in practice.

The key challenges include:

- Institutional challenges with prevailing dominance of the public and quasi-public sector over the private;
- Remaining inconsistencies between economic and environmental goals;
- Economic development policies continue to prioritize short-term economic growth;
- Education system provides only limited training for specialists able to participate in an economy of new type;
- Social challenge of population growth and, accordingly, consumer ability against the background of outdated production methods.

The launch of the PAGE program coincides with the process of reviewing key strategic programs and initiatives that support the country's transition to a green growth model. PAGE expertise can provide targeted support for these processes and help integrating principles of the Green Economy and the SDGs into key strategic and sectoral documents.

The mandate of the Partnership for Action on Green Economy is to provide services that enable countries` transition towards green economies, including provision of technical and expert support, conducting diagnostics and evidence-based analysis, helping to define policy measures and tools. Based on the study and consultations with a wide range of stakeholders, several areas were identified as priorities where PAGE can assist Kazakhstan in this process. The criteria for identifying an intervention as a priority for PAGE include:

1. Transformational potential for the economy – i.e. does the intervention affect large part of the economy or the population?
2. Strong political support and access to policy process, - i.e. is there a "home" for the intervention within the Kazakh Government?
3. Relevance for PAGE – i.e. is the intervention aligned with the mandate, services, and budget of the Partnership?
4. Potential for building synergies and collaborations with international and national partners, with consideration of prior projects and programmes.

Based on the criteria listed above, the main areas/interventions where PAGE can provide support and value added have been identified as follows:

1. **Support for the development and adoption of a low-carbon economic development strategy (LCDS)** reflecting the country's long-term vision to diversify and decarbonize the national economy and key industries. In the short term, the LCDS can provide a basis and a rationale for updating/raising the ambition of the Green Economy Concept. Besides transformational impact, the LCDS offers possibilities to collaborate with GIZ as a key international partner (see chapter 4 of this report) and sets a strategic direction within the PAGE mandate.
2. **Update of the Concept for the transition to Green Economy**. Since the Concept was adopted in 2013, Kazakhstan has ratified the Paris Agreement and the 2030 Agenda for Sustainable Development. Climate and SDG goals need to be better integrated in the country's Green Economy policy in accordance with the commitments made.
3. **Improve envirinmnetal governance by supporting the adoption of a new Environmental Code**. The new «greener» environmental regulatory document will ensure that environmental principles and methods

such as Strategic Envirinmnetal Assessment and Best Available Technologies become mainstream practices. Leading to transformational effect across the economy.

4. **Support the development of a new Waste management programme.** Sustainable waste management was one of the priorities in the Kazakhstan's application to PAGE and figures as one of the seven priorities in the new Environmental Code. There is no overall strategy for the management of various waste streams and the stocktaking analysis revealed a lack of common vision across government agencies, private sector and civil society for the development of the waste sector. Wholistic, systemic approaches, built around preventive measures and circularity, have received relatively little attention. PAGE can provide catalytic, technical support for the development of the waste sector, incorporating the principle of circularity at national, regional, and local level. Moreover, PAGE is uniquely suitable to support such work due to the combined expertise of PAGE agencies (e.g. UNEP in the areas of municipal waste, UNIDO on industrial waste, UNDP's access to regions, etc.)
5. **Introduction of green public procurement.** This study revealed that in Kazakhstan the potential of sustainable public procurement is not fully utilized. Considering that the main share of procurement falls on the state and quasi-state sectors, the introduction of the principles of green procurement can be an effective tool to stimulate demand and supply for sustainable products ad services and the creation of green jobs.
6. **Support for Green Industry and access to the best available technologies (BAT)**. In recent years Kazakhstan has taken steps to promote access to green technologies. For this purpose the International Green Technologies and Investment Center was established (IGTIC). More can be done to promote green business and green technologies through legal acts and norms, as well as via the piloting of projects and initiatives that demonstrate the potential of the sector. PAGE can support the development of standards, taxanomy, procedures to enable flow of investment and the proliferation of BAT. Collaboration with international and national partners, such as IGTIC, GIZ, regional authorities and others can be explored.
7. **Making the case for fossil fuel subsidy reform**. The Government of Kazakhstan has reconfirmed commitment to increase energy efficiency and share of renewables. However, with reforming inefficient fossil fuel subsidies, progress will be limited. Fossil fuel subsidy reform will ensure Kazakhstan can meet NDC commitments, and release revenue to support energy efficiency and renewable energy investment. PAGE can carry out diagnostics and analysis to make the case for fossil fuel reform. Collaboration with GIZ and UNDP can be explored.
8. **Capacity building for an effective transition to Green Economy**. Despite the fact that Green Economy has been a concept in the public space in Kazakhstan for some years now, concerted capacity development efforts are needed empower middle and senior officials to develop and implement green economy policies and actions. The stocktaking revealed that various government agencies have different understanding of what the green economy means. PAGE can help build common understanding and competencies across the public sector, by working closely with the Academy of Civil Service. In addition, measures that promote green economy education and awareness raising among youth and the public at large, can stimulate public debate and support on national level.

As identified in this stocktaking report, the priority areas for PAGE include support for overarching strategies and policies aimed at diversification and decarbonization the economy, as well as sector/thematic specific actions in the energy, waste, public procurement, and industry sectors. Action in these areas will increase the competitiveness of the Kazak economy, help create green and decent employment, preserve and restore natural capital, and increase people's wellbeing and social equality.

REFERENCES

1. «Reforming Kazakhstan: Progress, Challenges and Opportunites» OECD, 1995
2. Analyses of the Population situation in Kazakhstan, UNFPA-2019.
3. «Energy Efficiency Law», 2012.
4. «Air quality and health», WHO 2018
5. «Concept of the transition of the Republic of Kazakhstan to Green Economy», Astana, 2013.
6. «Қазақстан және оның аймақтарындағы шағын және орта кәсіпкерліктің даму жағдайы туралы есеп», «Даму» кәсіпкерлікті дамыту қоры – 2017г. (Report on the state of development of Small and Medium Entrepreneurship in Kazakhstan and its regions – Damu EDF JSC, 2017)
7. «National Report on transition of the Republic of Kazakhstan to Green Economy for 2017 -2018»
8. "On approval of the Forecast Scheme of the spatial development of the country until 2020", Decree of the President of the Republic of Kazakhstan dated July 21, 2011 No. 118.
9. "Regional Development Program until 2020", 2018
10. WHO Air quality guidelines for particular matter, ozone, nitrogen dioxide and sulfur dioxide. 2005.
11. «Reforming Kazakhstan: Progress, Challenges and Opportunites» OECD - 2018г.
12. Sarbaz" Republican military-patriotic weekly newspaper, 2019
13. «Third Review on Environmental Activity of Kazakhstan», UNECE, 2019.
14. «Environmental Code», 2007.
15. Sixth National Report on biological diversity of the RK
16. Association of Environmental Organizations of Kazakhstan
17. The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH website, 2019 г.
18. UNECE Website
19. EBRD website, 2019.
20. IEA website, 2019.
21. OECD website, 2019
22. Central Intelligence Agency website
23. World Nuclear Association website
24. World Bank website, 2019 г.
25. KazTransGaz website, 2019 г.
26. Coalition for Green Economy and development G-Global website, 2019 г.
27. US Emergency Information Administration website, 2019 г.
28. Sovereign Wealth Fund «Samruk-Kazyna» JSC website, 2020 г.
29. State program for the development of the agro-industrial complex for the period 2017–2021, dated July 12, 2018 No. 423.
30. State Energy Register of the Republic of Kazakhstan, 2019.
31. "Alina" group of companies
32. Law of the Republic of Kazakhstan dated February 9, 2015 No. 285-V ЗРК. "On state youth policy"
33. Institute of Economic Research
34. E-magazine «Climate Action traker» 2020
35. E-source «Informburo RK», 2019
36. E-source «baigenews.kz» – 2019
37. Information Platform «G-Global»
38. Information and analytical portal Platon.Asia
39. Information and legal system of normative legal acts of the Republic of Kazakhstan "Әділет" 2019
40. Newsletter on the state of the environment of the Republic of Kazakhstan, RSE "KazHydromet", 2019
41. Information portal inform.kz
42. Information portal zakon.kz, 2019
43. Committee for Industrial Development and Industrial Safety of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan
44. Statistics Committee of the Ministry of National Economy of the Republic of Kazakhstan -2020.
45. Convention on biodiversity
46. Constitution of the Republic of Kazakhstan

47. Iinternational Labour Organization
48. International Green Technologies and Investment Projects Center
49. Ministry of Agriculture of the RK
50. Tax Code of the RK
51. National resource in the field of energy conservation and energy efficiency, 2019
52. United Nations Industrial Development Organization (UNIDO)
53. United Nations Development Programme in the RK (UNDP), 2019
54. Draft Concept of the conservation and sustainable use of biodiversity of Kazakhstan, 2016
55. Self-regulated organization "KazWaste" Kazakhstan waste management association
56. Central Communications Service under the President of the Republic of Kazakhstan
57. Statistics of Eurasian Economic Union. Express-information – 2019
58. Strategy «Kazakhstan-2050»
59. E-newspaper «TengriNews»
60. E-newspaper «Vlast»
61. E-newspaper «Interfax», 2019
62. E-newspaper «Kazakhstanskaya Pravda», 2019
63. E-newspaper «Курсив», 2019
64. E-magazine «Forbes», 2020
65. E-magazine «InBusiness», 2020

For more information, visit the PAGE website and follow us on Twitter and Facebook.

www.un-page.org twitter.com/PAGEXchange facebook.com/unepgreeneconomy