AIFC

# Emissions Trading Systems and Voluntary Carbon Market: Global Overview and Prospects for Kazakhstan

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The Astana International Financial Centre creates favourable conditions to attract investment into Kazakhstan's economy, supporting the nation's Strategy for achieving carbon neutrality by 2060, the UN Sustainable Development Goals and the Paris Agreement.

In addition, the AIFC has established the Green Finance Centre to advance sustainable finance tools and encourage investment in environmental and social projects across Central Asia. Discover more about us at aifc.kz and in social media.

## Daniyar Kelbetov

Chief Product Officer

AIFC Authority

It is with great enthusiasm that we present this comprehensive report on carbon markets, with a special focus on Kazakhstan.

At the Astana International Financial Centre (AIFC), we are committed to spearheading the development of new market mechanisms and products that not only drive economic growth but also contribute to global sustainability efforts. Our state-of-the-art infrastructure and technological capabilities serve as the cornerstone for executing these initiatives, positioning AIFC as a premier destination for sustainable investments and innovative products.

Recognising the critical importance of reactivating Kazakhstan's Emissions Trading System (KAZ ETS), we have placed its development at the forefront of our decarbonisation efforts. This report underscores our commitment to revitalizing the KAZ ETS, presenting proposals inspired by global best practices to ensure its successful implementation and lasting impact.

Also, considering global climate commitments, the voluntary carbon market plays a crucial role in the decarbonisation journey. Article 6 of the Paris Agreement provides a crucial framework for these markets, opening pathways for countries and the Central Asian region to accelerate progress in this vital area.

This report also celebrates our milestones, including the launch of the AIFC Carbon Platform, which facilitates the trading of environmental instruments and underscores our dedication to sustainable and market-based solutions for carbon reduction.

We trust that the insights within this report will inspire further collaboration and innovation as we work together toward a sustainable and prosperous future.

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We reserve the right to modify or update this Report at any time without prior notice.

# Abbreviations and acronyms

| | |
|---|---|
| **AIFC** | Astana International Financial Centre |
| **ADB** | Asian Development Bank |
| **AFSA** | Astana Financial Services Authority |
| **AIX** | Astana International Exchange |
| **CBAM** | Carbon Border Adjustment Mechanism |
| **CO2** | Carbon dioxide |
| **CME** | Chicago Mercantile Exchange |
| **CDM** | Clean Development Mechanism |
| **ETS** | Emissions Trading System |
| **ENDEX** | Energy Derivatives Exchange |
| **EUA** | EU Allowances |
| **EU ETS** | EU Emissions Trading System |
| **EBRD** | European Bank for Reconstruction and Development |
| **EEX** | European Energy Exchange |
| **EU** | European Union |
| **GHGs** | Greenhouse gases |
| **GDP** | Gross domestic product |
| **HFCs** | Hydrofluorocarbons |
| **ICE** | Intercontinental Exchange |
| **I-RECs** | International Renewable Energy Certificates |
| **JI** | Joint implementation |
| **KAZ ETS** | Kazakhstan Emissions Trading System |
| **K-ETS** | Korea Emissions Trading Scheme |
| **KRX** | Korea Exchange |
| **LULUCF** | Land use, land-use change and forestry |
| **LDCs** | Least developed countries |
| **MSR** | Market Stability Reserve |
| **CH4** | Methane |
| **NDCs** | Nationally Determined Contributions |
| **NF3** | Nitrogen trifluoride |
| **N2O** | Nitrous oxide |
| **OTC** | Over-the-counter |
| **PFCs** | Perfluorocarbons |
| **RECs** | Renewable Energy Certificates |
| **SEEE** | Shanghai Environment and Energy Exchange |
| **SF6** | Sulfur hexafluoride |
| **tCO2-eq** | Tonnes of Carbon Dioxide Equivalent |
| **US** | U.S. Environmental Protection Agency |
| **UK ETS** | UK Emissions Trading Scheme |
| **UK** | United Kingdom |
| **UNDP** | United Nations Development Programme |
| **US** | United States of America |
| **VCM** | Voluntary Carbon Market |

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## Abstract

This report explores the regulation and development of Emissions Trading Systems (ETS) and Voluntary Carbon Market (VCM) with a focus on Kazakhstan.

The first chapter is dedicated to the Emissions Trading Systems (ETS). The first section provides a comprehensive overview of global ETS regulations, examining the systems in the European Union (EU), the United Kingdom (UK), the United States of America (USA), Canada, the Republic of Korea, the People`s Republic of China, and Japan. It then delves into the current legislative framework and operational status of the Kazakhstan ETS (KAZ ETS). The current status of KAZ ETS is evaluated with consideration of such aspects as the carbon price and the level of transactions. The current and historical levels of GHG emissions by sectors and the coverage of industries by KAZ ETS are also evaluated. Based on the analysis the main barriers and problems of existing ETS are identified. The international experiences are considered with the goal to identify best practices that could be applied to the KAZ ETS to solve similar problems. The last section offers potential solutions for enhancing the KAZ ETS, including the introduction of paid allocation of carbon allowances, providing an opportunity to trade carbon units on different platforms, expanding the coverage of ETS participants, and the creation of a carbon fund.

The second chapter shifts the focus from the compliance carbon market (i.e. ETS) to the voluntary carbon market (VCM). It reviews international VCM developments in terms of carbon standards and project types. Next, the development of the Renewable Energy Certificates (RECs) market globally is reviewed. The progress of VCM development and current success cases in Central Asia and the Caucasus are considered based on the data from international registries. In the following sections, current barriers hindering VCM development in Kazakhstan are identified, followed by market projections for VCM and I-RECs in Kazakhstan and Central Asia.

Finally, the report presents the progress and work done by AIFC in developing the I-RECs and VCM markets and establishing the AIFC Carbon platform. The platform will facilitate international cooperation and the development of the environmental instruments market in a wider region.

# Chapter One: Emissions Trading System (ETS)

# 1. Chapter One: Emissions Trading System (ETS)

## 1.1. ETS regulation

This section provides an overview of ETS regulations in leading emissions trading systems globally. The experiences of the following countries and jurisdictions are considered: the European Union, the United Kingdom, the United States of America, Canada, the Republic of Korea, the People`s Republic of China, and Japan.

Outside Asia, ETSs in the EU, UK, US, and Canada can be considered as developed due to their established trading mechanisms. A well-functioning market with trading functionalities and activities sets the basis for clear carbon price signals to emerge, informing the market on what a fair carbon price could be, and providing incentives and opportunities for the industry and markets to invest in decarbonisation projects.

Meanwhile, ETSs in Asia, i.e. the Republic of Korea, China, and Japan have similar features to the ETSs in Kazakhstan: there are plans to introduce auctions and to expand ETS coverage to other sectors, the carbon price is relatively low, etc.

These ETSs are currently in operation, their mechanisms and platforms for carbon trading, which seek to achieve decarbonisation goals, are being reviewed continuously for enhancement.

The experiences of all these above-mentioned ETSs discussed in section 1.1 will set the context for the challenges and perspectives for the Kazakhstan ETS in section 1.2 and offer useful lessons for the Kazakhstan ETS. These useful lessons are then translated into the recommendations in section 1.3.

### 1.1.1. Global experience of ETS regulation

The information on the country or jurisdiction ETS will be focused on these four main aspects as standalone subsections (except for the European Union ETS where information is mainly presented as a table).

- Scope
- Allowance allocation
- Offset credits
- Use of revenues

The objective is to present these international ETSs in a general and non-comprehensive manner, and further details of the ETS can be found in the references. The International Carbon Action Partnership (ICAP) status report and ETS factsheets are the main references used to compile the various ETS'

information and are cited at the start of each subsection. Other relevant resources are cited accordingly.

The following general information about the ETS is presented as a summary table:

- Emission reduction target
- Sectoral coverage
- Emissions coverage (as a share of the country or jurisdiction total GHG emissions)
- Average price per carbon unit
- Auction share
- GHG coverage
- Maximum allowed offset limit

## European Union[1, 2]

| EU ETS | |
|---|---|
| Emission reduction target | 2030 – Reduce net emissions to at least 55% below 1990 GHG levels<br><br>2050 – Climate neutrality |
| Scope | power, industry, aviation, maritime |
| Emissions coverage | 38% |
| Average price per carbon unit (2023) | 90 USD/tCO2-eq |
| Auction share (2023) | 57% |
| GHGs coverage | CO2, HFCs, N2O, PFCs, SF6 |
| Maximum allowed offset limit | 0% |

The emissions trading system of the European Union is one of the world's most developed and integrated systems, uniting 31 countries[3]. The EU ETS was launched in 2005 and is currently in the implementation of the 4th phase (2021-2030).

[1] ICAP. EU ETS. https://icapcarbonaction.com/es/ets_system/43
[2] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report. https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report
[3] All EU Member States, plus Iceland, Liechtenstein, and Norway (plus power generators in Northern Ireland)

Table 1.1.1. EU ETS[4, 5]

| | Phase 1 (2005 – 2007) | Phase 2 (2008 – 2012) | Phase 3 (2013 -2020) | Phase 4 (2021 – 2030) |
|---|---|---|---|---|
| Scope | - Power generators,<br>- Energy-intensive industries | - Power generators,<br>- Energy-intensive industries,<br>- Aviation | | - Power generators,<br>- Energy-intensive industries,<br>- Aviation<br>- Maritime (from 2024) |
| Free allocation | 100% | 90% | 43% | Phasing out after 2026 from a max 30%<br>to 0% by 2030<br>*for sectors at the highest risk of relocating* |
| Allocation | Through grandparenting. Some Member States used auctioning and some used benchmark-based allocation | - Auctioning<br>- Free allocation for:<br>- industries with a risk of carbon leakage<br>- most efficient installations[6] | | |
| Infrastructure | National registries | Union registry | | |
| Penalty for non-compliance | 40 euro per tonne | 100 euro per tonne | | |
| Revenue | | | 184 billion euro since 2013 | |
| | | | | 43.6 billion euro in 2023 |

[4] European Commission, Development of EU ETS (2005-2020) https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/development-eu-ets-2005-2020_en

[5] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

[6] European Commission. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/free-allocation_en#how-free-allocation-is-calculated

| | | | | |
|---|---|---|---|---|
| Offset credits | Clean Development Mechanism (CDM), Joint implementation (JI) credits are allowed for use | CDM, JI credits **excluding:**<br>- LULUCF[7]<br>- nuclear power.<br><br>Strict limitations for hydro plants >20 MW | International credits from the projects in the **least developed countries** (LDCs), CDM, JI credits<br>- only originated in LDCs;<br>- from other countries – if implemented before the end of 2012.<br>Industrial gas projects excluded regardless of the host country | Offsets and international credits are not allowed |

*Use of revenues*

The revenues from allowances auctioning are directed to EU Member States to perform decarbonisation projects. Member States are encouraged to use at least 50% of revenues to implement climate- and energy-related projects. The experience of EU ETS in the management of carbon funds is presented in detail in Section 1.2.2.4.

## United Kingdom[8, 9]

| UK ETS | |
|---|---|
| Emission reduction target | 2030 – At least a 68% reduction in UK net GHG emissions from 1990 levels, including emissions from LULUCF (NDC)<br>2050 – Net-zero UK GHG emissions, including emissions from LULUCF and international aviation and shipping |
| Sectoral scope | power, industry, domestic aviation |
| Emissions coverage | 25% |
| Average price per carbon unit (2023) | 67 USD/tCO2-eq |
| Auction share (2023) | 54% |
| GHGs coverage | CO2, N2O, PFCs |
| Maximum allowed offset limit | 0% |

[7] LULUCF - land use, land-use change and forestry
[8] ICAP. United Kingdom. https://icapcarbonaction.com/en/ets/united-kingdom
[9] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

Due to the UK's withdrawal from the European Union, a separate UK Emissions Trading Scheme was introduced to replace the EU ETS from January 1, 2021. However, electricity generators located in Northern Ireland remain subject to the EU ETS.

The UK ETS[10] is based on the EU ETS mechanism, and therefore there are no significant differences between the two systems, including the coverage of sectors and other design aspects. Currently, the UK ETS is in its first phase of implementation, 2021 – 2030.

*Scope*

The system covers 1,000 installations in the power and industrial sectors and around 400 aircraft operators. There are plans to expand the industry coverage by including domestic maritime from 2026, and emissions for waste incineration and waste-to-energy conversion processes from 2028.

*Allowance allocation*

Allocation of allowances is carried out mainly through auctioning. A portion of allowances is freely allocated for industries with a risk of relocating.

*Offset credits*

The use of offset credits is not allowed.

*Use of revenues*

The revenues contribute to the general budget and are not earmarked for specific purposes.

### United States of America[11]

Given the specifics of legislative regulation in the United States, emissions trading programs can be implemented both at the state and federal levels. The main regulator in the field of combating climate change is the federal US EPA (U.S. Environmental Protection Agency), which oversees individual programs and develops recommendations and regulations at the federal level for application by states.

In the United States there are several state-level carbon emissions trading programs. The most mature ones are California's AB-32 Cap-and-Trade program, and the Regional Greenhouse Gas Initiative (RGGI) for the power sector across 11

[10] UK Department for Energy security and Net Zero, Guidance on Participating in the UK ETS (updated 21st of March, 2023)
https://www.gov.uk/government/publications/participating-in-the-uk-ets/participating-in-the-uk-ets

[11] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

states[12]. The state of Washington launched a cap-and-invest program in 2023 and Massachusetts launched its cap-and-trade program in 2018[13]. Several other states such as New York, Colorado, Oregon, Pennsylvania are actively developing and preparing to launch ETSs. The state of Maryland is also considering launching a carbon trading system.

In this paper, we consider the experience of California's AB-32 Cap-and-Trade program, as it is the broadest carbon pricing system in the US and one of the largest and most developed carbon markets in the world. California's AB-32 Cap-and-Trade program is also linked with Québec's Cap-and-Trade System since 2014, forming a joint California-Québec carbon market where the carbon units issued in both jurisdictions are fully fungible[14].

California's AB-32 Cap-and-Trade program[15]

| California's AB-32 Cap-and-Trade | |
|---|---|
| Emission reduction target | 2030 – 40% reduction from 1990 GHG levels<br>2050 – Carbon neutrality and an 85% reduction from 1990 anthropogenic GHG levels |
| Sectoral scope | power, industry, buildings, transport |
| Emissions coverage | 75% |
| Average price per carbon unit (2023) | 33 USD/tCO2-eq |
| Auction share (2023) | 50% |
| GHGs coverage | CO2, CH4, N2O, SF6, HFCs, PFCs, NF3 |
| Maximum allowed offset limit | 4% |

California's Cap-and-Trade Program is one of the most well-known in the world because of its complexity. The program was launched in 2013 and currently covers around 400 facilities and emissions from the power, industrial, transport, and buildings sectors. The system covers 76% of emissions in the state.

The goal of the program is to reduce emissions in the state of California to 40% of the 1990 level by 2030 and to reach carbon neutrality by 2050.

[12] RGGI. https://www.rggi.org/program-overview-and-design/elements
[13] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report
[14] The California Air Resources Board. https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/auction-information
[15] ICAP. USA - California Cap-and-Trade Program. https://icapcarbonaction.com/en/ets/usa-california-cap-and-trade-program

Since 2014, the program has been connected to the emissions trading program of the province of Quebec, Canada. Transactions are possible in both American and Canadian dollars.

There are 5 compliance periods (phases), which are synchronised with Quebec's Cap-and-Trade System:

Phase 1: 2013-2014
Phase 2: 2015-2017
Phase 3: 2018-2020
Phase 4: 2021-2023
Phase 5: 2024-2026

*Scope*

In the first compliance period (2013-2014), the program was launched for large industrial facilities and electricity generators and importers. From the second compliance period, since 2015, the program also covers suppliers of transport fuels, natural gas, and other fuels. Facilities emitting ≥25,000 tCO2-eq per year are covered by the system and participate as compliance entities. There is also an option to participate voluntarily in the program: facilities emitting less than 25,000 tCO2-eq can participate as opt-in entities, which are subject to all reporting and verification procedures.

*Allowance allocation*

The allowances are allocated through free allocation, free allocation with consignment, and auctioning. Free allocation with consignment implies the following: electrical distribution utilities and natural gas suppliers receive free allowances, which are covered by the taxpayers. The enterprises must invest in GHG emissions reduction projects to benefit the taxpayers.

*Offset credits*

Offset units are also allowed in the system and managed under the Compliance Offset Program administered by the ETS operator, the California Air Resources Board; the scope of offset projects covers[16]:

- forestry, urban forestry,
- livestock projects,
- ozone-depleting substances projects,
- mine methane capture,
- rice cultivation.

From 2021 to 2025 the share of offsets that can be used to fulfill the compliance obligation is 4%, for the period 2026-2030 the share is 6%[17].

[16] The California Air Resources Board. https://ww2.arb.ca.gov/our-work/programs/compliance-offset-program/compliance-offset-protocols
[17] ICAP. https://icapcarbonaction.com/en/ets/usa-california-cap-and-trade-program

*Use of revenues*

The amount of revenue since the launch of the system until 2023 amounted to 26.97 billion USD, including 4.72 billion USD in 2023. Most of the revenues are sent to the Greenhouse Gas Reduction Fund to finance green projects, where at least 35% of funds are used to support disadvantaged and low-income communities.

## Canada[18]

Similarly to the USA, ETSs in Canada can be implemented both at the federal and provincial levels.

The Federal Government sets minimum national standards that all systems must meet to ensure their comparability and effectiveness in reducing greenhouse gas emissions. Standards for 2023-2030 at the federal level were developed in 2021[19].

Canada has in place a federal-level carbon pricing mechanism, the Output-Based Pricing System (OBPS), which sets a performance (output-based) standard (i.e., GHG emissions per unit of output) based on the national production weighted average emissions intensity for a given activity in covered sectors. This is one part of the federal carbon pollution pricing 'backstop' system, which applies to provinces and territories where the carbon pricing system for the 2023-2030 period does not meet the federal benchmark criteria of CAD 80 (USD 59.26) per tCO2-eq in 2024. The other part of this 'backstop' system is a regulatory charge on fuel (federal fuel charge).

Having taken effect in 2019, the OBPS sets an emissions-intensity threshold, or output-based standard (OBS), for each sector under the system. Each facility calculates an emissions limit based on the relevant standard(s) and its level of production. OBSs are set per industrial activity based on the sectors' average emissions intensity.

There are many state-level ETSs in the country, and the largest ETS is the Quebec Cap-and-Trade System.

[18] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

[19] Government of Canada publications, Carbon pollution pricing https://www.canada.ca/en/environment-climate-change/services/climate-change/pricing-pollution-how-it-will-work.html

Quebec Cap-and-Trade System[20]

| Quebec Cap-and-Trade | |
|---|---|
| Emission reduction target | 2030 – 37.5% reduction from 1990 GHG levels<br>2050 – Carbon neutrality |
| Sectoral scope | power, industry, buildings, transport |
| Emissions coverage | 79% |
| Average price per carbon unit (2023) | 33 USD/tCO2-eq |
| Auction share (2023) | 61% |
| GHGs coverage | CO2, CH4, N2O, SF6, HFCs, PFCs |
| Maximum allowed offset limit | 8% |

Quebec's Cap-and-Trade System was launched in 2013 and in 2014 it was connected to California's Cap-and-Trade Program. The system covers 132 entities representing 174 facilities.

*Scope*

In the first compliance period (2013-2014), the program was launched for producers and importers of electricity and industrial facilities. In the second compliance period (from 2015), the coverage was expanded: distributors and importers of fuels (used in the transport and buildings sectors), and small and medium-sized enterprises were included. Entities emitting ≥ 25,000 tCO2-eq per year participate as compliance entities. Similarly, as in California's Cap-and-Trade Program, enterprises producing GHG emissions in a range of 10,000-25,000 tCO2-eq can voluntarily participate in the system.

*Allowance allocation*

The allowances are allocated through auctioning and on a free allocation basis. In 2023 around 61% of the allowances were allocated through auctioning or directed to reserves. According to the rules adopted in 2022, the level of free allocation of allowances is expected to decrease from 2024.

*Offsets credits*

The use of offset credits to meet compliance obligations is allowed. The types of offset projects that are allowed are:

- Methane reclamation and destruction from landfill sites,
- Halocarbons destruction,
- Carbon sequestration through afforestation or reforestation on private lands,
- Anaerobic digestion of manure.

[20] ICAP. Canada – Québec Cap-and-Trade System. https://icapcarbonaction.com/en/ets/canada-quebec-cap-and-trade-system

The entities can use offset credits to meet up to 8% of their compliance obligations.

*Use of revenues*

The amount of revenue since the launch of the system until 2023 amounted to 6.46 billion USD, including 1.05 billion USD revenue in 2023.

The revenues are directed to electrification and climate change purposes, which are aimed at financing climate mitigation and adaptation measures and sustainable projects in energy efficiency, electrification, and public transport sectors.

## Republic of Korea[21, 22]

| Korea Emission Trading System (K-ETS) | |
|---|---|
| Emission reduction target | 2030 – 40% reduction below 2018 levels (updated NDC)<br>2050 – Carbon neutrality |
| Sectoral scope | power, industry, buildings, transport, domestic aviation, maritime, waste |
| Emissions coverage | 89% |
| Average price per carbon unit (2023) | 8 USD/tCO2-eq |
| Auction share (2023) | 3[23] |
| GHGs coverage | CO2, CH4, N2O, HFCs, PFCs, SF6 |
| Maximum allowed offset limit | 5% |

Launched in 2015, the Korea Emissions Trading Scheme (K-ETS) is the first nationwide ETS in East Asia. The system covers 804 emitters from power, industrial, buildings, waste, transport, domestic aviation, and domestic maritime transportation sectors. 89% of the country's emissions are covered, which gives the K-ETS the ETS with the widest emissions coverage in the world.

*Scope*

The K-ETS also has the widest industry coverage. At the initial stage, heat and power, industry, buildings, waste, and transportation (domestic aviation) sectors were covered by the system. From phase 3 (from 2021) the construction sector was included. The coverage of the transport sector was also expanded to freight, rail, passenger, and maritime shipping.

[21] ICAP. Korea Emissions Trading Scheme. https://icapcarbonaction.com/en/ets/korea-emissions-trading-scheme

[22] ICAP. Korea Emissions Trading Scheme. https://icapcarbonaction.com/en/ets/korea-emissions-trading-scheme

[23] based on the overall annual allocation

*Allowance allocation*

Allowances were allocated for free fully in phase 1, and since phase 2 to the present phase 3, the share of free allocation has decreased to 97% for identified sub-sectors while allowances remain free for Emissions Intensive Trade Exposed industries (EITE) sectors. During phase 3 from 2021 to last year (2023), the total volume of auctioned allowances is set at 3% of the total cap. It is planned to increase the share of the auctioned allowances in the coming years.

*Offsets credits*

Domestic offset credits and international credits can be used to meet compliance obligations since phase 2 (since 2018). The use of Certified Emission Reductions generated from international CDM projects developed by Korean companies is allowed: 1) if the generating companies are at least 20% owned by Korean companies; or 2) if the low-carbon technology was provided by a Korean company with a value of at least 20% of the project cost.

There is also a quantitative limit for offset use: companies can use offset credits to meet up to 10% of their compliance obligations, a maximum of 5% of which can be generated internationally.

*Use of revenues*

The revenues from auctioning of allowances are directed to the Climate Response Fund. The fund supports projects in the areas of mitigation infrastructure, low-carbon innovation, and technology development.

## People`s Republic of China[24, 25]

| China ETS | |
|---|---|
| Emission reduction target | 2030 –> 65% reduction in $CO_2$ emissions per unit of GDP compared to 2005 levels<br>2050 – Carbon neutrality |
| Sectoral scope | power |
| Emissions coverage | 40% |
| Average price per carbon unit (2023) | 10 USD/tCO2-eq |
| Auction share (2023) | 0% |
| GHGs coverage | CO2 |
| Maximum allowed offset limit | 5% |

[24] China National ETS, ICAP
https://icapcarbonaction.com/en/ets/china-national-ets
[25] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

China's ETS is the largest in the world in terms of emissions volume (5 billion tCO2-eq), which accounts for 40% of emissions of the country.

China National ETS was launched in 2021. Since 2013, 8 different regional pilot projects have been functioning in the country. The national ETS is built based on the experience of regional pilot projects. Currently, national ETS and pilots are operating in parallel: pilots cover sectors and entities that are not part of the national ETS. With an expansion of the national ETS, it is expected to integrate the entities, that are covered by regional pilot systems.

*Scope*

As of 2023, the national system covers about 40% of the country's CO2 emissions. The system covers more than 2,000 companies from the power sector, including combined heat and power, as well as captive power plants in other sectors, emitting ≥26,000 tCO2-eq. It is planned to expand the coverage to seven other sectors in the future: petrochemicals, chemicals, building materials, steel, nonferrous metals, paper, and domestic aviation. However, there is no specific timeline for the expansion.

*Allowance allocation*

The national system provides only free allocation for the relevant entities using benchmarks based on actual production levels. There are plans to introduce auctioning and to expand it gradually.

*Offset credits*

The use of offset units is allowed. The domestic offsetting scheme, the Chinese Certified Emissions Reduction scheme (CCER), earlier suspended, was launched in January 2024. The scheme covers forestation, mangrove cultivation, solar thermal power, and grid-connected offshore wind power projects. The entities can use offset credits (CCERs) up to 5% of their verified emissions from projects, that are not covered by the national ETS.

*Use of revenues*

Currently, the arrangement for the use of revenues is not yet envisaged.

### Japan[26]

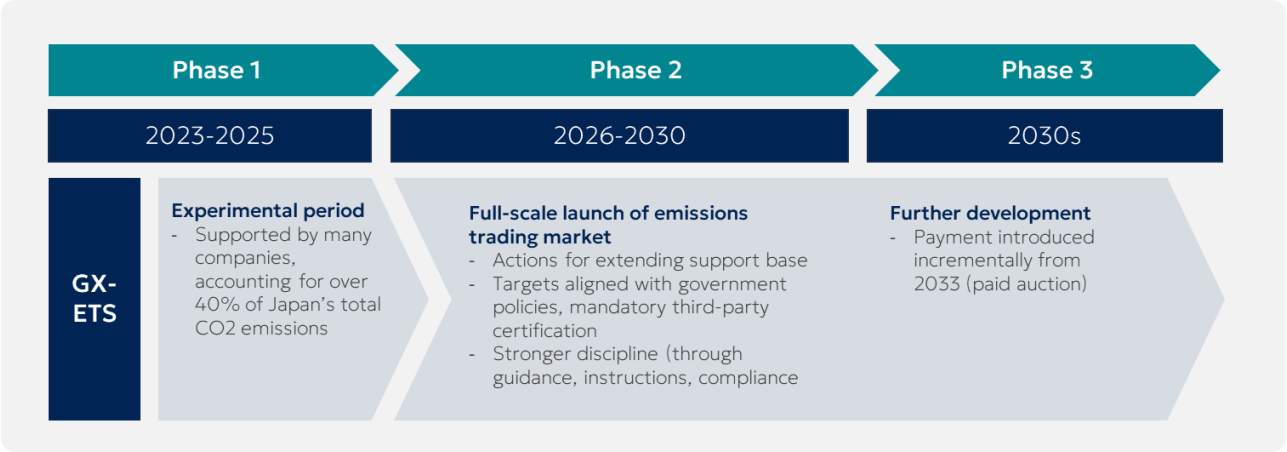
In Japan, there is a combination of carbon pricing instruments aimed at achieving carbon neutrality by 2050: an existing carbon tax, a voluntary baseline-

[26] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

and-credit emission trading system - “GX-ETS”, and a carbon levy on fossil fuel importers, which is to be introduced in 2028.

GX-ETS was launched in 2023 by the government in consultation and partnership with the industry. Around 570 companies, cumulatively producing more than 50% of the country’s emissions, participate in the system. Starting as a voluntary scheme, companies who choose to participate need to set their emission reduction targets for 2025 and 2030, based on the baseline emissions in certain years. If companies could not achieve their emission reduction targets, they could either trade reduction allowances from other companies, purchase eligible carbon credits (up to 5% of their total emissions) or provide explanations and reasons for not being able to meet their targets. The eligible carbon credits are J-Credits from the domestic J-Credit Scheme[27], or the Joint Crediting Mechanism (JCM) where Japan has bilateral agreements with around 30 countries[28]. It is planned to transform GX-ETS into a mandatory ETS from 2026. Phases of GX-ETS are presented in Figure 1.1.1 below.

Figure 1.1.1. GX-ETS phases




Besides the nationwide voluntary emission trading system, there are regional mandatory ETSs in Tokyo and Saitama Prefecture. Here, we consider Tokyo ETS, which is linked with Saitama Prefecture ETS. The carbon credits can be exchanged between the two jurisdictions.

[27] J-Credit Scheme. https://japancredit.go.jp/english/
[28] JCM. https://www.jcm.go.jp/

Tokyo Cap-and-Trade Program[29]

| Tokyo Cap-and-Trade | |
|---|---|
| Emission reduction target | 2030 – 50% reduction from 2000 GHG levels<br>2050 – Carbon neutrality |
| Sectoral scope | industry, building |
| Emissions coverage | 18% |
| Average price per carbon unit (2023) | 5 USD/tCO2-eq |
| Auction share (2023) | 0% |
| GHGs coverage | CO2 |
| Maximum allowed offset limit | 100%[30] |

Tokyo Cap-and-Trade Program was launched in 2010 as the first Japan's mandatory ETS. It covers 18% of metropolitan emissions. The program covers CO2 emissions from 1,200 facilities, about 1000 office/commercial buildings, about 200 factories.

Currently the program is in its third compliance period (2020-2024). Facilities are required to reduce emissions to 25-27% relative to the base-year emissions.

*Allowance allocation*

All allowances are allocated for free. Each facility has an individual cap, which serves as a 'baseline'. Depending on a baseline, emissions reduction targets are determined for each facility. Facilities emitting less than their baseline earn excess credits. Facilities exceeding their baseline must purchase or surrender credits from other sources to meet their compliance obligation.

*Offset credits*

The use of offset credits is permitted to fulfill the compliance obligations when the emissions level exceeds the baseline. The types of offset projects allowed are:

- Emissions reduction from small and mid-size facilities that are not covered by the ETS;
- Emissions reduction from large facilities outside Tokyo;
- Renewable energy generation from solar (heat, electricity), wind, geothermal, hydropower, biomass;

[29] ICAP. Japan - Tokyo Cap-and-Trade Program. https://icapcarbonaction.com/en/ets/japan-tokyo-cap-and-trade-program

[30] In Saitama, quantitative limits apply for "outside Saitama" credits. In Tokyo, quantitative limits apply for "outside Tokyo" credits

Renewable energy credits such as Environmental Value Equivalent, Renewable Energy Certificates, and New Energy Electricity, generated under the Renewable Portfolio Standard Law can be used;
- Emissions reductions from non-covered small and medium-sized facilities and excess credits generated in the Saitama Prefecture.

### Summary

To summarise the international experiences of ETSs, it should be noted that in all considered ETSs, the ETS policy clearly states that not all allowances are free, and they come at a price. The partial **distribution of allowances through auctioning is either in place or is planned to be introduced.** Although all ETSs start out with free allocation of allowances to ease facilities into the ETS, free allocation is still being practised for the most Emissions-intensive trade-exposed (EITE) industries to safeguard competitiveness and avoid carbon leakage. Free allowances are also used as an incentive for the best-performing facilities that meet certain emissions efficiency requirements. Auctioning is gradually introduced alongside free allocation, which is necessary to allow for carbon price discovery and for the creation of a carbon price to incentivise emissions reductions among facilities.

In the mature ETS systems studied, **revenues from trading allowances are channeled into specific funds.** Majority of the funds are directed towards climate change and environmental objectives, such as to implement decarbonisation projects in various sectors covered and not covered by the ETS. Other purposes of the funds include socio-economic causes.

The use of offset credits is allowed in all the considered ETS systems (except the EU and the UK) but is limited through a quantitative percentage of the facility's emissions that can be offset through carbon credits. These ETS systems also set qualitative eligibility requirements in terms of the types of eligible offset projects the crediting methodologies and the crediting program. Eligible offset projects are mainly implemented in such sectors as forestry and agriculture. Lastly, most ETSs currently do not allow international offset projects.

If we consider the scope of the covered industries, most of the world's ETSs cover industry and power sectors (see Figure 1.1.3). In almost half of the world's ETSs transport and buildings sectors are covered. In some ETSs, other sectors like maritime, domestic aviation, waste are covered.

Figure 1.1.2. Key metrics from carbon markets (in selected countries)[31]

| Country | Emissions coverage, % | Carbon price , 2023 (USD/tCO2-eq) | Proportion of auctioned allowances, 2023 | Maximum allowed offset limit, % |
|---|---|---|---|---|
| EU | 38% | 90 | 57% | 0% |
| UK | 25% | 67 | 54% | 0% |
| California | 76% | 33 | 50% | 4% |
| Québec | 79% | 33 | 61% | 8% |
| Korea | 89% | 8 | 3% | 5% |
| China | 40%* | 10 | 0%** | 5% |
| Tokyo | 18% | 5 | 0% | 100%*** |
| Kazakhstan | 47% | 1 | 0% | 100% |

**Of CO2 emissions; **In China auctioning is to be introduced and gradually expanded; ***In Tokyo, quantitative limits apply for "outside Tokyo" credits.*

Figure 1.1.3. Sectors covered by ETSs[32]

| Country | Emissions coverage, % | Power | Industry | Buildings | Transport | Maritime | Domestic Aviation | Waste | Forestry |
|---|---|---|---|---|---|---|---|---|---|
| EU | 38% | | | | | | | | |
| UK | 25% | | | | | | | | |
| California | 76% | | | | | | | | |
| Québec | 79% | | | | | | | | |
| Korea | 89% | | | | | | | | |
| China | 40%* | | | | | | | | |
| Tokyo | 18% | | | | | | | | |
| Kazakhstan | 47% | | | | | | | | |

***Of CO2 emissions*

[31] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report
[32] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

### 1.1.2. ETS regulation in the Republic of Kazakhstan

| Kazakhstan Emission Trading System[33] | |
|---|---|
| Emission reduction target | *2030: 15% (unconditional) to 25% (conditional) reduction from 1990 GHG levels (NDC)*<br>*2060: carbon neutrality* |
| Sectoral scope | Power, industry |
| Emissions coverage | 47% |
| Average price per carbon unit | 1 USD/tCO2-eq |
| Auction share | 0% |
| GHGs coverage | CO2 |
| Maximum allowed offset limit | 100% |

The main legislative regulation in the field of greenhouse gas emissions and absorption in the Republic of Kazakhstan is the **Environmental Code of the Republic of Kazakhstan**[34] dated by January 2, 2021.

Today the Government is implementing a policy to regulate the sphere of greenhouse gas emissions and removals by:

1) applying instruments of state regulation, which are: setting a carbon budget, allocation of carbon allowances, and administration of emitting facilities and other procedures.

2) establishing a market mechanism for trading carbon units.

**"The Rules of state regulation in the field of emissions and absorption of greenhouse gases**[35]**"** (Order of the Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan dated March 28, 2022 No. 91) define the main rules related to the GHG emissions management, which include the areas:

- Setting a carbon budget;
- Procedure for carbon allowances allocation;
- The procedure for forming the National Carbon Allowances Plan;
- The procedure for including installations in the category of compliance entities;
- Procedure for issuing carbon allowances;
- Procedure for monitoring and inventory of greenhouse gases;
- Administration of installations;

[33] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report
https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report
[34] Environmental Code of the Republic of Kazakhstan dated January 2, 2022.
https://adilet.zan.kz/rus/docs/K2100000400
[35] The Rules of state regulation in the field of emissions and absorption of greenhouse gases
https://adilet.zan.kz/rus/docs/V2200027301

- Etc.

*Carbon budget*

The carbon budget is defined as the maximum allowable volume for the carbon balance of the Republic of Kazakhstan for the period of carbon budgeting. This carbon budgeting period is five consecutive calendar years and is developed based on the need for the Republic of Kazakhstan to comply with national contributions in accordance with international treaties.

The carbon budget determines the aggregate amounts of greenhouse gas emissions allowances, which are referred to as carbon allowances. The total number of carbon allowances, as well as the volumes of the reserve carbon allowances, are approved by the **National Carbon Allowances Plan**[36] (Order of the Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan dated July 11, 2022 No. 525), which is being developed for the period of the carbon budget by the authorised state body (the Ministry of Ecology and Natural Resources).

Finally, the regulation sets out the Kazakhstan ETS as the market mechanism that provides the platform and incentives to reduce GHG emissions amongst the emitting enterprises.

*KAZ ETS*

Kazakhstan's ETS (KAZ ETS) was launched in 2013. The system covers 47% of emissions from 212 installations of 135 companies[37]. Compliance entities (emitting enterprises), individuals and legal entities implementing offset projects, and the operator of the carbon trading system are defined as participants of the ETS. The operator of the ETS is JSC "Zhasyl Damu" (subsidiary company of the Ministry of Ecology and Natural Resources).

The first (pilot) phase of the emissions trading system in the Republic of Kazakhstan was launched in 2013; the second phase took place in 2014-2015; the third phase, due to the need to update the allowance allocation mechanism, was suspended until 2018; the fourth phase was transitional in terms of allocation principle and was carried out in 2021. Currently, KAZ ETS is in its fifth phase, since 2022 and until 2025. Meanwhile, the first trading of carbon units on the exchange took place in the second phase (2014-2015) and was suspended in 2022 due to

[36] On approval of the national carbon allowances plan dated July 11, 2022. https://adilet.zan.kz/rus/docs/V2200028798

[37] JSC Zhasyl Damu presentation «Emissions Trading System of the Republic of Kazakhstan», 2024

legislative constraints (see details in the subsection ‘Legal status of allowances’ below).

*Scope*

From the initial stage power sector and centralised heating, extractive industries and manufacturing (oil and gas mining, metallurgy, chemical industry) were covered by the system. From the phase 3 processing industry (production of building materials: cement, lime, gypsum, and brick) also became a part of ETS.

Table 1.1.2. Periods of the National allocation plan

| | Phase 1 | Phase 2 | Phase 3 | Phase 4 (transitional) | Phase 5 (active) |
|---|---|---|---|---|---|
| Years | 2013 | 2014–2015 | 2018–2020 | 2021 | 2022–2025 |
| Scope (economy sectors) | - Power sector and centralised heating<br>- Extractive industries and manufacturing:<br>  - oil and gas mining,<br>  - metallurgy,<br>  - chemical industry. | | - Power sector and centralised heating<br>- Extractive industries and manufacturing:<br>  - oil and gas mining,<br>  - metallurgy,<br>  - chemical industry<br>  - processing industry (production of building materials: cement, lime, gypsum, and brick). | | |
| Number of installations | 178 | 166 | 225 | 218 | 212 |
| Principle of allowance allocation | Historical Base year - 2010 | Historical Baseline – average 2011–2012 | Historical – 76 installations. Benchmarking – 149 installations | Benchmarking (baseline - 2017–2019) | Benchmarking |
| Reduction obligations | 0% (from the base year) | 0%–2014<br>1,5%–2015 | 5% by 2020 (from base 1990 year) | 0% (base years 2017-2019) | 1,5% |
| Number of allowances[38], in CO2-eq<br><br>(excluding reserved amount) | 147 190 092 | 307 673 670<br><br>(2014 – 154 883 190<br><br>2015 – 152 790 480) | 485 909 138 | 169 187 227 | Total - 650 134 553<br>2022 - 166 159 995<br>2023 - 163 663 379<br>2024 - 162 087 248<br>2025 - 158 223 931 |

*Offset credits*

Offsets generated by domestic projects (GHG reduction or absorption activities) in all economic sectors outside the scope of the ETS can be used to meet compliance obligations. There are no quantitative limits, 100% of emissions can be covered using offset credits.

[38] National Plan of the Republic of Kazakhstan on allocating emission allowances
for 2013: https://zakon.uchet.kz/rus/history/P1200001588/13.12.2012;
for 2014-2015: https://adilet.zan.kz/rus/docs/P1300001536;
for 2018-2020: https://adilet.zan.kz/rus/docs/P1700000873;
for 2021: https://adilet.zan.kz/rus/docs/P2100000006;
for 2022-2025: https://adilet.zan.kz/rus/docs/V2200028798.

*Allowance allocation*

The emissions trading system in the Republic of Kazakhstan consists of primary and secondary carbon markets. Procedures for carbon units trading on the primary and secondary carbon markets are defined by the legal act **"Procedure for trading carbon units on the secondary carbon market**[39]**"** (Order of the acting Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan dated June 29, 2021, No. 221).

As stated in the Article 299 of the Environmental Code: "*In the primary carbon market, the operator of the carbon trading system shall sell carbon units from the appropriate category of the National Carbon Allowances Plan reserve to the carbon market entities* ***on an auction basis".*** **In fact, 100% of allowances are allocated on a free basis** based on the current benchmarking principle.

In phases 1 and 2 the allocation of allowances was based on a grandparenting principle – entities received emission allowances based on their historical emissions in a base year or base period[40]. In 2021 the allowance allocation method was changed to benchmarking, where the benchmark is an indicator with the metric of emissions per unit of output. The legal act **"On approval of the list of benchmarks in regulated sectors of the economy"**[41] (Order of the acting Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan dated July 19, 2021, No. 260) provides the list of benchmarks, in regulated sectors of the economy.

*Secondary market*

To implement a market mechanism for emissions trading, it is possible to conduct transactions for the purchase and sale of carbon units on a commodity exchange as defined by the Article 299 of the Environmental code: *"In the secondary carbon market, carbon market actors shall buy and sell carbon units between themselves through a direct transaction or* ***through a commodity exchange".***

The legal status of emission allowances is a **commodity** allowed for turnover between participants of the carbon market of the Republic of Kazakhstan.

Transactions for the purchase and sale of carbon units are regulated by the legislation of the Republic of Kazakhstan on commodity exchanges, including the Law of the Republic of Kazakhstan **"On Commodity Exchanges"** (dated May 4,

[39] Procedure for trading carbon units on the secondary carbon market. https://adilet.zan.kz/rus/docs/V2100023719

[40] ICAP. Allocation. https://icapcarbonaction.com/en/allocation

[41] On approval of the list of benchmarks in regulated sectors of the economy. https://adilet.zan.kz/rus/docs/V2100023621

2009, No. 155–IV) and the Order of the Acting Minister of National Economy of the Republic of Kazakhstan dated March 30, 2015, No. 280 **"On approval of the Rules of Exchange Trading".** The Rules of Exchange Trading define the procedures and specifics of carbon units trading on a commodity exchange.

*Legal status of allowances*

There were a series of changes in the format of carbon units trading and their legal status (presented in Table 1.1.3).

The main changes to the legal act "On approval of the Rules for trading allowances for greenhouse gas emissions and carbon units"[42] over the years are presented below:

- In 2012 the legal act envisaged the trading of **derivative financial instruments,** the underlying asset of which is allowance units and domestic emission reduction units, **on a commodity exchange.**
- In 2016 there was an amendment that allowed the secondary turnover of allowance units and internal emission reduction units to be carried out on organised **commodity exchanges (exchanges) that have the appropriate license** in accordance with the legislation of the Republic of Kazakhstan on commodity exchanges. In other words, the trading could be organised **on several exchanges.**

The new legal act "On approval of the rules for the sale of carbon units" (released in 2021) stated that the sale and purchase of carbon units can be carried out only **through a single selected commodity exchange.** The commodity exchange on which carbon units are traded should be determined by the authorised body in the field of environmental protection **on a competitive basis** among applicants capable of ensuring exchange trade on carbon units. At the same time, there was no regulation on the order of selection of exchanges for carbon units trading.

Since 2023, carbon units can be traded **on specialised commodity exchanges** – an exchange that sells only one category of goods. This regulatory change in the Law on Commodity Exchanges placed a significant barrier on the trading of carbon units. As a result, there was no exchange trading of carbon units in 2023. Earlier, in the previous stages, transactions took place mainly at JSC "Commodity Exchange "Caspy". The last trading of carbon units on this exchange dated September 7, 2022[43].

[42] no longer in force

[43] The web-site JSC "Commodity exchange "Caspy" https://ccx.kz/kvoty-na-vybrosy-parnikovyh-gazov

Thus, the legislative framework of the Republic of Kazakhstan outlines the contours of the ETS application, but it has not provided sufficient guidance for the implementation of carbon pricing and trading mechanisms.

In this regard, considering that ETS is a key element in the decarbonisation path envisaged by Kazakhstan's Strategy for achieving carbon neutrality by 2060, it is necessary to address the current constraints and shortcomings of the system.

In the following sections, we will provide relevant proposals for ETS improvement.

Table 1.1.3. Changes in legislation related to trading platform

| **Year** (of publishing or edition) | **2012** | **2014** | **2016** | **2021** | **2021 (in force from 2023)** |
|---|---|---|---|---|---|
| **Legal act** | On approval of the Rules for trading allowances for greenhouse gas emissions and carbon units. Order of the Minister of Environmental Protection of the Republic of Kazakhstan dated May 11, 2012, No. 151-ө. | | | On approval of the rules for the sale of carbon units. Order of the acting Minister of Ecology, Geology and Natural Resources of the Republic of Kazakhstan dated June 29, 2021, No. 221. | On Commodity Exchanges. The Law of the Republic of Kazakhstan dated May 4, 2009, No. 155-IV. |
| **Trading platform** | **Commodity exchange** | | **Commodity exchanges** with a license | **Commodity exchange,** determined on a competitive basis from among the applicants who can provide **exchange trading** of carbon units | **Specialised commodity exchanges** |
| **Status of trading instrument** | **Commodity**<br><br>**Derivative financial instruments** whose underlying assets are allowance units and domestic emission reduction units **are** | **Commodity** | | | |

| | | | | | |
|---|---|---|---|---|---|
| | **traded on the commodity exchange** | | | | |
| **Article** | Article 14 (original edition) | Article 14 as amended by the order of acting Minister of Environment and Water Resources of the Republic of Kazakhstan dated February 28, 2014, No. 69-ө | Articles 13 and 14 as amended by the order of the Minister of Energy of the Republic of Kazakhstan dated July 12, 2016, No. 316 (to come into force from January 1, 2018). | Article 10 | Supplemented by Article 13-3 in accordance with the Law of the Republic of Kazakhstan dated December 30, 2021, No. 96-VII (shall be enforced from January 1, 2023). |
| **Link to the document** | https://adilet.zan.kz/rus/archive/docs/V1200007711/11.05.2012 | https://adilet.zan.kz/rus/archive/docs/V1200007711/12.07.2016 | https://adilet.zan.kz/rus/docs/V1600014116#z7 | https://adilet.zan.kz/rus/docs/V2100023719 | https://adilet.zan.kz/rus/docs/Z090000155_#z175 |

## 1.2. Challenges and perspectives

### 1.2.1. Current situation in Kazakhstan

As of 2024, KAZ ETS covers 135 companies and 212 installations[44] and amounts to 162.1 million emission allowances[45]. 100% of allowances are allocated on a free basis based on benchmarking principle.

According to the strategic documents and international obligations of the Republic of Kazakhstan, the country is aiming to achieve carbon neutrality by 2060. The medium-term unconditional goal is to reduce greenhouse gas emissions by 15% of the 1990 level.

However, according to the World Bank data, today Kazakhstan is the 20th emitter country in terms of emissions per capita[46]. Thus, although the ETS has been in operation since 2013, it appears that the ETS has not provided sufficient incentives and price signals for polluters to green their industries and for legal entities to implement low-carbon projects.

The assessment of the effectiveness of an ETS is approached by considering the following factors:

1. Emissions performance (over time) of the covered sectors in reducing emissions
2. ETS price to incentivise industrial abatement
3. Market activity and liquidity levels

#### Emissions performance

Firstly, the effectiveness of the ETS can be evaluated through the dynamics of the GHG emissions level. Considering the historical data on the total GHG emissions level it can be observed that no drastic reduction in GHG happened after 2013 (after ETS introduction). From that we can preliminarily conclude that the

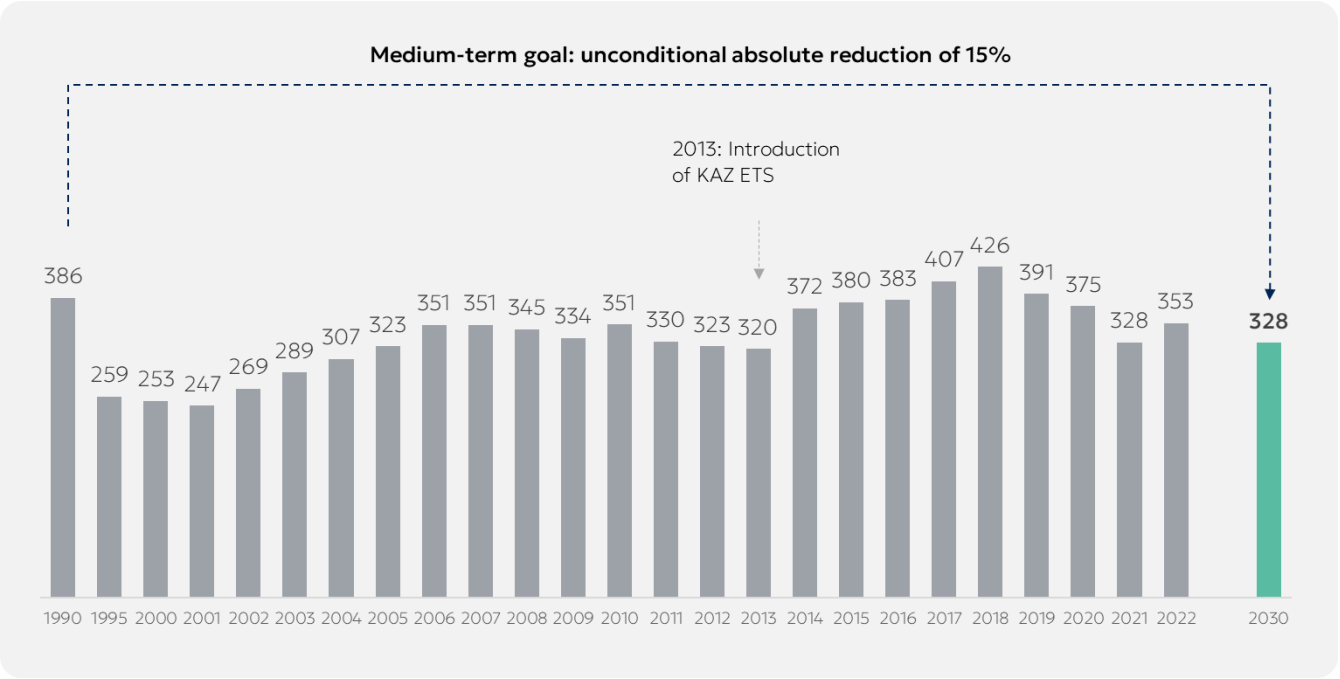
[44] JSC Zhasyl Damu presentation «Emissions Trading System of the Republic of Kazakhstan», 2024

[45] National Plan of the Republic of Kazakhstan on allocating emission allowances for 2022-2025, https://adilet.zan.kz/rus/docs/V2200028798; https://www.gov.kz/memleket/entities/ecogeo/documents/details/415320?lang=ru&ysclid=lw91rccky9532855174

[46] World Bank, Country Climate and Development Report, November 2022 https://openknowledge.worldbank.org/entities/publication/dabff214-772e-50b4-89d9-a172e99accc3

system is not efficient enough in terms of a working market mechanism along with incentives to reduce GHG emissions.

Figure 1.2.1. Cumulative GHG emissions in Kazakhstan, mln tCO2-eq[47]



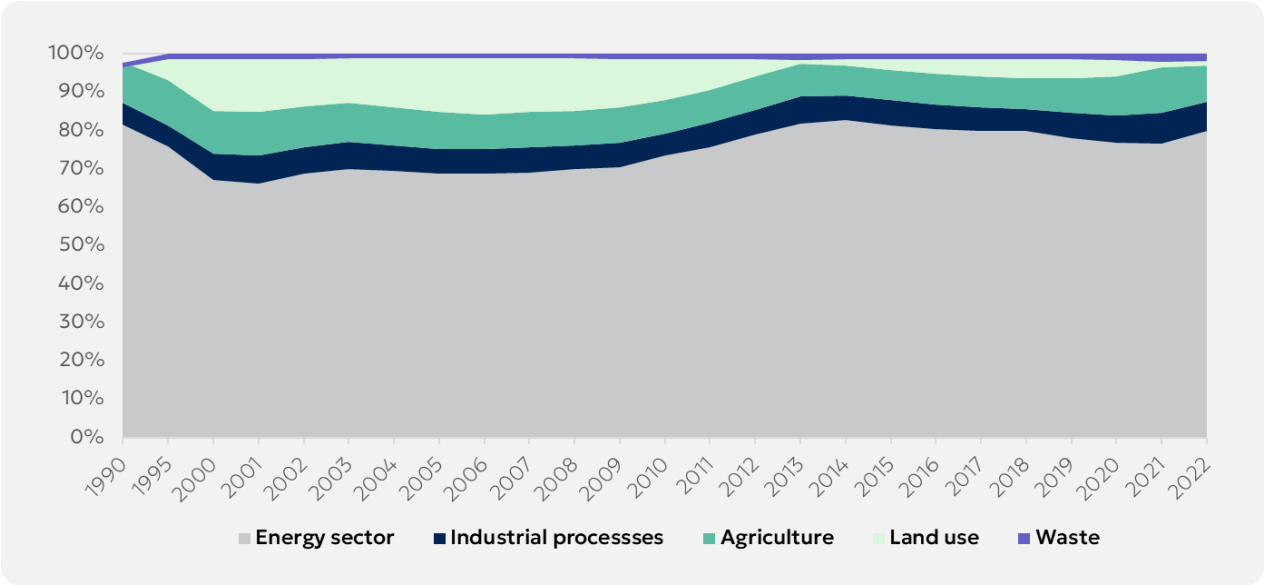

Considering the industry coverage of the KAZ ETS: the system covers 47% of total CO2 emissions in the country. This includes the following economic subsectors:

- power sector and centralised heating;
- extractive industries and manufacturing: oil and gas, mining, metallurgy, chemicals industry;
- processing industry (production of building materials: cement, lime, gypsum, and brick)[48].

The energy production sector is the largest GHG emissions producer. Historically the energy production sector contributed to around 70% of GHG emissions.

[47] Bureau of National Statistics. GHG emissions
[48] ICAP. Kazakhstan Emissions Trading System. Fact Sheet https://icapcarbonaction.com/system/files/ets_pdfs/icap-etsmap-factsheet-46.pdf

Figure 1.2.2. The share of GHG emissions produced by sectors of total GHG emissions production[49]




In 2022, the energy sector contributed to 79.9% of GHG emissions, mainly due to fossil fuel combustion. Other major GHG emissions producers are agriculture and industrial processes with 9,3% and 7,7% shares of total GHG emissions produced in the country in 2022 respectively (see Table below).

Table 1.2.1. GHG emissions produced by sectors in 2022[50]

| GHG emissions in 2022, mln tCO2-eq | | % from total GHG emissions in 2022 |
|---|---|---|
| Total | 353 | |
| Energy sector | 282 | 79,9% |
| Industrial processes | 27 | 7,7% |
| Agriculture | 33 | 9,3% |
| LULUCF* | 4 | 1,2% |
| Waste | 7 | 2,0% |

**LULUCF - land use, land-use change and forestry*

[49] Bureau of National Statistics. GHG emissions
[50] Bureau of National Statistics. GHG emissions

Among subsectors of the energy sector, the major GHG emissions contributor, which **is not covered** by the KAZ ETS, is **the transport sector,** which produced 10% of GHG emissions of the energy sector in 2022[51].

Considering the strategic goals of decarbonisation, the coverage of the transport sector and other CO2-intensive industries by KAZ ETS needs to be considered. The World Bank suggests expanding the ETS to transport, methane (as a greenhouse gas), and the remaining industrial process emissions[52].

The experience of the EU in a gradual increase in industry coverage can be taken into consideration. The EU is planning to launch EU ETS 2, which will cover emissions from fuels used for combustion in buildings, road transport, and additional sectors (mainly small industries not covered by the existing EU ETS). EU ETS 2 will cover upstream emissions: the obligations will be placed on fuel suppliers rather than on end-consumers. The EU ETS 2 sets a target to reduce emissions by 42% by 2030 compared to 2005 levels. The EU ETS 2 is expected to be fully operational in 2027. The monitoring and reporting of emissions are expected to start in 2025.

Following the results of the round table meeting in the Parliament of the Republic of Kazakhstan (in March 2024)[53], the Ministry of Ecology and Natural Resources (MENR RK) is considering a proposal to include other sectors of the economy and other types of GHGs in the ETS.

Expanding ETS in this manner could contribute to a more liquid market, in terms of increased number of transactions and active pricing.

### ETS price

The price of one carbon unit in the Republic of Kazakhstan is about 1 USD[54], which is low compared to the other countries. In comparison, the EU ETS carbon price in 2023 reached 90 USD/tCO2-eq.

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[51] The first biannual transparency report of the Republic of Kazakhstan. https://unfccc.int/documents/645419

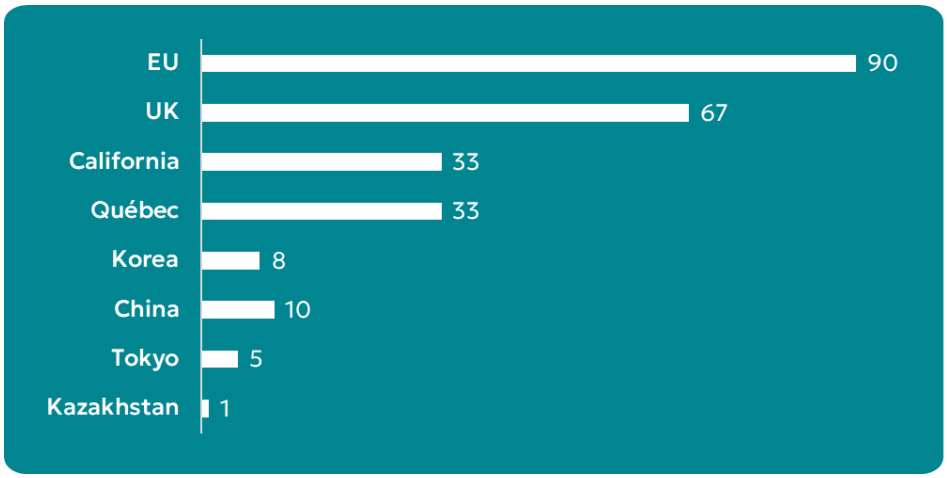
[52] World Bank. Kazakhstan: Country Climate and Development Report, November 2022 https://openknowledge.worldbank.org/server/api/core/bitstreams/e91f4c4e-a61b-507d-bb91-a39c5ad2f499/content

[53] Round table 28.03.2024 https://www.youtube.com/live/XNe8YG12sEY

[54] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

The main reason for the low carbon price is **100% free allocation of allowances** and the possibility of obtaining additional allowances on a free basis. The oversupply of free allowances hinders the development of KAZ ETS: over the years the carbon price stays at the level of 1 USD (presented below) and there is little market activity/transactions.

Figure 1.2.3. Carbon price in 2023, USD/tCO2-eq[55]




Low carbon price not only creates a risk of not achieving decarbonization goals but also affects Kazakhstan's exports. For example, the main trading partner of the Republic of Kazakhstan, the European Union, will introduce a Carbon Border Adjustment Mechanism (CBAM) in 2026, the main goal of which is to stimulate decarbonisation through a mechanism for importers to purchase carbon certificates, which will be based on the average cost of a carbon unit in the EU. Thus, importers will need to pay the EU the difference between the prices per tonne of CO2 in the EU and the country producing the product (according to 2023 data, the difference in price per tonne of CO2 between Kazakhstan and the EU is about 89 USD).

According to a UNITAR & UNDP report on the assessment of the impacts of CBAM, CBAM implementation could result in payments from 7.3 million USD in 2026 to almost 40 million in 2035 for the aluminum sector, while other CBAM goods produced in Kazakhstan, namely, ammonia, cement / clinker and hot metal would be impacted to a much smaller extent[56]. While it is not yet clear from the EU whether Scope 2 (indirect) emissions would be included in CBAM, and how energy

[55] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

[56] UNIRAR. https://www.un-page.org/static/20c29fe8b85da904a2dce17fa1116653/the-upcoming-eu-cbam-v20.pdf

consumption would be benchmarked, this could potentially drive CBAM payments to some 100 million USD annually at full CBAM implementation.

According to another study by the World Bank, CBAM could lead to a reduction in Kazakhstan's export by 250 million USD, and in the event of a subsequent expansion of the mechanism – by 1.5 billion USD[57]. It should be noted that the EU CBAM could be the start of such mechanisms; other countries are also considering the possibility of introducing similar instruments.

### Market activity and liquidity levels

One of the indicators of the effectiveness of the ETS is the volume of transactions. The volume of transactions in carbon allowances trading in KAZ ETS remains low, and this is relative to the total volume of allocated allowances. The number of buy-sell transactions of carbon units: in the period from 2014 to 2022 – 169 transactions, in 2021 – 39 transactions (including direct ones), in 2022 – 46 transactions (including direct ones), in 2023 – 49 transactions (direct ones).

In 2023 the trading on the exchanges was suspended due to the amendments in the legislation, mentioned in Section 1.1.2. At the same time, the OTC trading is still available.

[57] World Bank. Kazakhstan: Country Climate and Development Report, November 2022, page 12 https://openknowledge.worldbank.org/server/api/core/bitstreams/e91f4c4e-a61b-507d-bb91-a39c5ad2f499/content

Table 1.2.2. Transactions in carbon allowances trading in KAZ ETS[58]

| | 2014 | 2015 | 2019 | 2020 | 2021 | 2022 | 2023 | 2014-2023 in total** |
|---|---|---|---|---|---|---|---|---|
| Number of transactions | 35 | 40 | 3 | 6 | 39 | 46 | 49 | **218** |
| Transactions volume, mln tenge | 182 | 755 | 519 | 811 | 2 281 | 1 348 | 4 307 | **10 203** |
| Transactions volume, in tCO2-eq | 1 271 289 | 1 983 922 | 1 202 209 | 1 591 000 | 4 560 397 | 2 500 559 | 4 483 309 | **17 592 685** |
| Number of allowances[59], in CO2-eq (excluding reserved amount) | 154 883 190 | 152 790 480 | 161 969 713* | 159 540 167* | 169 187 227 | 166 159 995 | 163 663 379 | **1 128 194 151** |
| Share of transaction volume (in CO2-eq) of total number of allowances (%) | 0,82 | 1,30 | 0,74 | 1,00 | 2,70 | 1,50 | 2,74 | **1,56** |

*The sum (2018-2020: 485 909 138 allowances) was split for calculation purposes as: 2018 - 164 399 258; 2019 - 161 969 713; 2020 - 159 540 167.

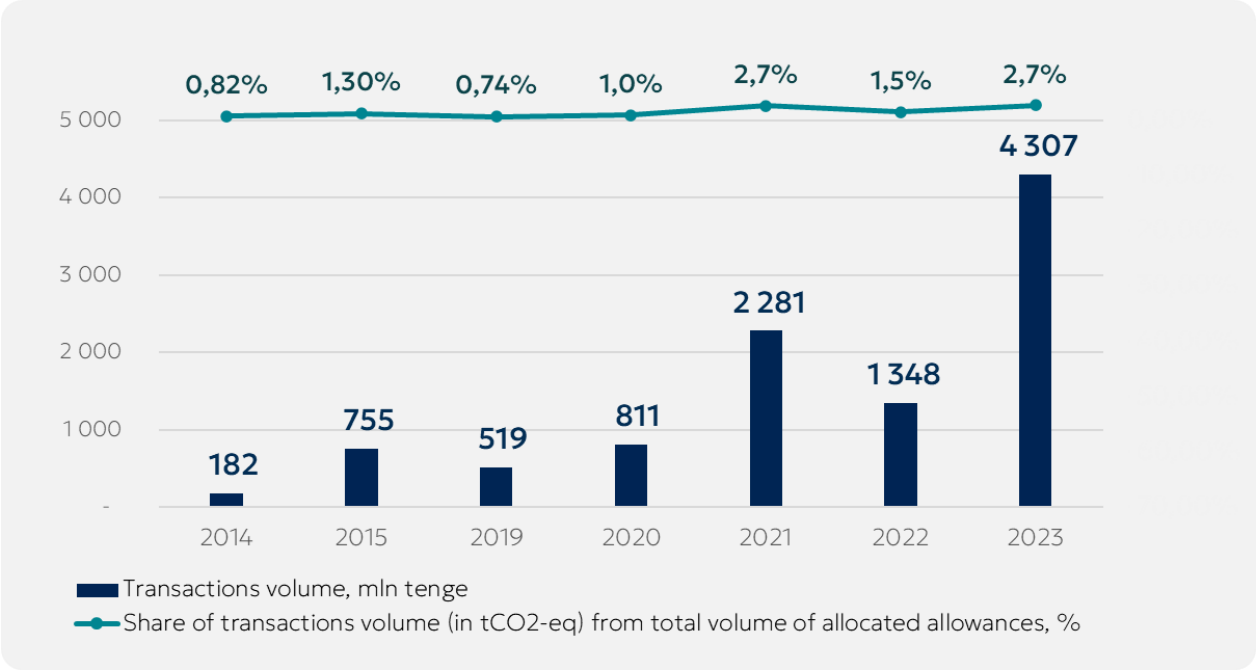
** In 2013, 2018 – no transactions happened, 2016-2017 – ETS was suspended

[58] Bureau of National Statistics. Trading allowances for GHG in the Republic of Kazakhstan

[59] Национальный план Республики Казахстан по распределению квот на выбросы ПГ
за 2013 год: https://zakon.uchet.kz/rus/history/P1200001588/13.12.2012 ;
на 2014-2015 годы: https://adilet.zan.kz/rus/docs/P1300001536 ;
на 2018-2020 годы: https://adilet.zan.kz/rus/docs/P1700000873 ;
на 2021 год: https://adilet.zan.kz/rus/docs/P2100000006 ;
на 2022-2025 годы: https://adilet.zan.kz/rus/docs/V2200028798 .

The transaction volume on carbon allowances trading in monetary equivalent also remains low. The maximum transaction volumes achieved in 2021 and 2023 correspond to 2,7% of the total allowances allocated in the corresponding years in tCO2-eq. From 2014 to 2023, the share of transaction volume in tCO2-eq relative to the total volume of allocated allowances lies in the range 0,74-2,70% (see Figure 1.2.4).

Figure 1.2.4. Transaction volume and share in CO2-eq from allocated allowances in **KAZ ETS**[60]

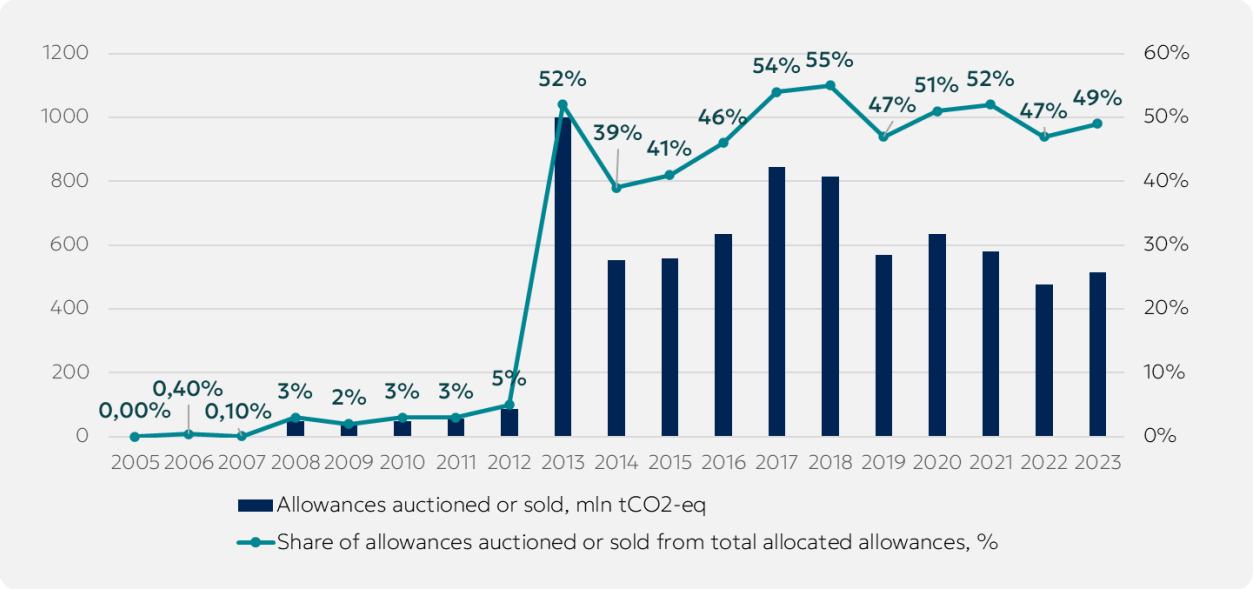



Comparing the transaction volume of the KAZ ETS with the EU ETS, the level of transactions in KAZ ETS appears to correspond to phase 1 and phase 2 (before 2013) of the EU ETS, where the share of transaction volume from the total volume of allocated allowances did not exceed 5% (see Figure 1.2.5). In the EU ETS after its phase 2 and when phase 3 commenced starting from 2013, the share of auctioned and sold allowances in the EU reached the level 39-55% due to the

[60] Bureau of National Statistics. Trading allowances for GHG in the Republic of Kazakhstan
National Plan of the Republic of Kazakhstan on allocating emission allowances
for 2022-2025: https://adilet.zan.kz/rus/docs/V2200028798;
for 2013: https://zakon.uchet.kz/rus/history/P1200001588/13.12.2012
for 2014-2015: https://adilet.zan.kz/rus/docs/P1300001536;
for 2016-2020: https://adilet.zan.kz/rus/docs/P1500001138;
for 2018-2020: https://adilet.zan.kz/rus/docs/P1700000873;
for 2021: https://adilet.zan.kz/rus/docs/P2100000006

regulatory changes, which limited the share of free allocated allowances from 90% (in phase 2) to 43% (in phase 3). This made auctioning the main method for distributing allowances with a share of 57%.

Figure 1.2.5. Transaction volume and share in CO2-eq from allocated allowances in **EU ETS**[61]




The figures on the transaction volume in KAZ ETS indicate a lack of motivation among market participants to advance green transition and reduce emissions, and in the context of the development of offset projects – the inability for the market to make offset projects financially viable due to the low price per carbon unit on the market.

### Summary

As it was presented above, KAZ ETS has yet to fully unlock the potential of the carbon market in the context of stimulating deep emissions cuts, market trading, and price discovery. As a result of low CO2 price and insufficient industry coverage, there is a lack of incentives to implement green/emission reduction projects. This results in sustained high levels of GHG emissions as presented above.

Among a number of constraints to the existing ETS, the main ones are:

- 100% free allocation of allowances, which does not incentivise entities to cut their emissions,
- the possibility of obtaining additional allowances for free[62],

[61] European Environment Agency
https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1

[62] Article 295. Environmental Code of the Republic of Kazakhstan.
https://adilet.zan.kz/eng/docs/K2100000400

- legal possibility for entities to trade allowances through direct transactions (over-the-counter, OTC), which leads to opaque and depressed prices per tonne of CO2 and consequently does not spur market interest in developing and implementing offset projects,

- high requirements for trading on commodity exchanges (as presented in Section 1.1.2)

It should be noted that the OTC does not allow tracking the market price per tonne of CO2 and hinders fair pricing.

Table 1.2.3 below summarises the issues of the existing KAZ ETS and the consequences, discussed in this section. The following section will be focused on the international experience in addressing similar issues. The market structure and market mechanisms of the leading ETS systems will be considered.

Table 1.2.3. Challenges / issues of the existing KAZ ETS

| Challenges / issues | Consequences | Potential solutions based on international experience |
|---|---|---|
| - 100% free allocation of allowances, including from the reserve<br>- the possibility of obtaining additional allowances on a free basis | Low CO2 price<br>→ no incentives to implement emission reduction projects<br>→ high level of CO2 emissions | 1. Introduce **paid allocation of carbon allowances** |
| Direct transactions lead to untransparent and low prices | Untransparent pricing and lack of a clear carbon price signal for the market | **Development of stock exchange trade**<br>2. Expand the possibilities of trading carbon units on **different trading platforms**.<br>3. Expand the coverage of ETS **market participation** (allow participation of financial institutions and financial brokers) |
| High requirements for commodity exchanges | No transactions from 2023 | |
| The market is not developed, lack of liquidity | Lack of prospects for market development | 4. Create a **carbon fund** |

### 1.2.2. International responsive measures to the identified problems

#### 1.2.2.1. Launch of paid allocation i.e. auctions

The launch of initial paid allocation through auctions puts the 'polluter pays' principle into practice. This creates conditions for the market formation of carbon pricing. From Table 1.2.4 it can be observed that a proportion of auctioned allowances is in fact correlated with carbon price levels.

Table 1.2.4. Summary of auctions and carbon prices in the world's ETSs[63]

| | Proportion of auctioned allowances, 2023 | Carbon price, 2023 (USD/tCO2-eq) |
|---|---|---|
| EU | 57%* | 90 |
| UK | 54% | 67 |
| California | 50% | 33 |
| Québec | 61% | 33 |
| Korea | 3%* | 8 |
| China** | 0% | 10 |
| Tokyo | 0% | 5 |
| Kazakhstan | 0% | 1 |

**2022; **In China auctioning is to be introduced and gradually expanded*

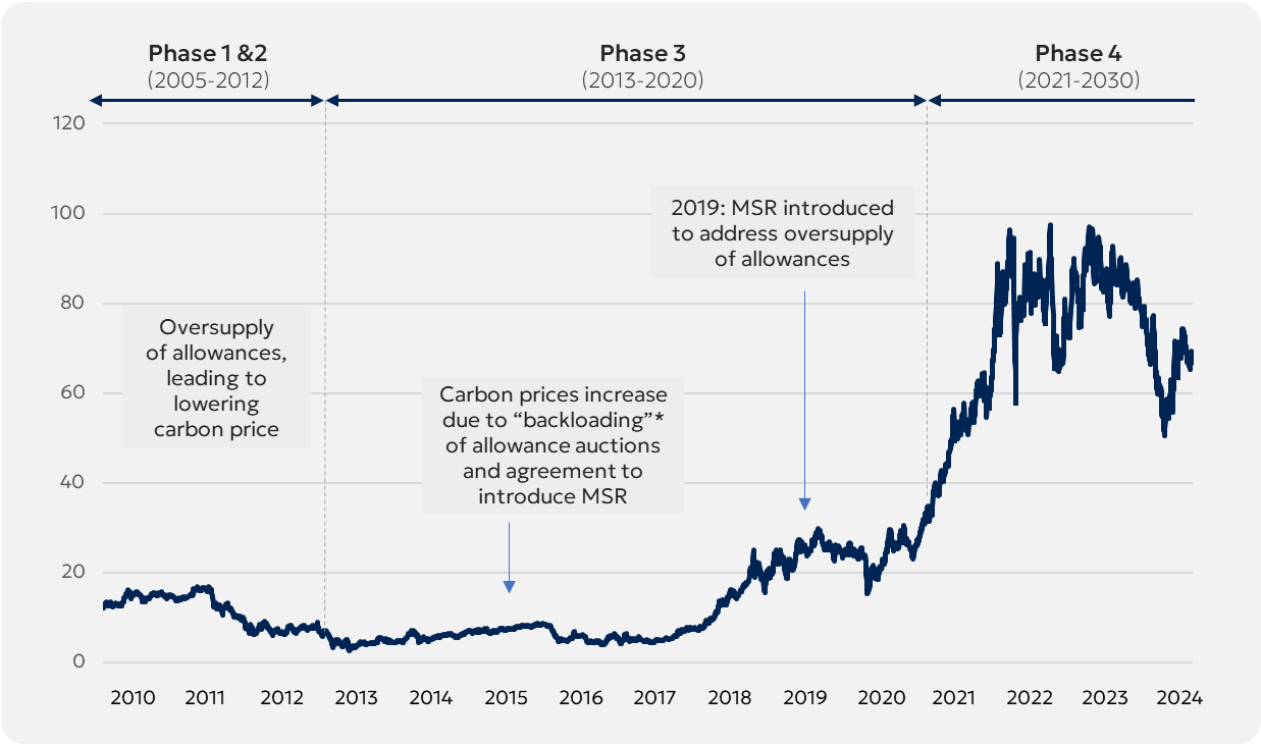
In Europe, the increase in auction share contributed to the formation of the market value of carbon price. In EU ETS the carbon price was declining in phase 1 and phase 2 due to the oversupply of carbon allowances. 100% and 90% of carbon allowances were allocated for free in phase 1 and phase 2 respectively (see details on EU ETS phases in Section 1.1.1). As presented in Figure 1.2.6, starting from 2013 there is a gradual increase in carbon price due to the increase in auction share to 57%.

[63] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

Moreover, the creation of the Market Stability Reserve (MSR) provided a mechanism for stabilising the carbon price by addressing a growing surplus of allowances. This also contributed to an increase in carbon price from around 10 to 30 USD by 2019.

The continued auctioning practice along with macroeconomic conditions contributed to a further increase in the carbon price. In 2023 the carbon price in the EU reached the level of 90 USD.

Figure 1.2.6. EU ETS historical carbon price, USD/tCO2-eq[64]




**'backloading' – the auctioning of allowances has been delayed*

In the California Cap-and-Trade program starting from the launch of the auctions in 2012, the carbon price similarly experienced a rise from 10 USD in 2013 to 29 USD in 2022 and to 33 USD in 2023.

[64] MSCI (Morgan Stanley Capital International). https://www.msci.com/www/blog-posts/introducing-the-carbon-market/03227158119

Figure 1.2.7. California Cap-and-Trade historical (quarterly) carbon price, USD/tCO2-eq[65]


The launch of auctions for the allocation of carbon units is an important step, which drives the development of the compliance carbon market. Auctioning creates a source of revenue, which can be invested in decarbonisation projects and initiatives.

### 1.2.2.2. Trading platforms for carbon units

The overview of market regulation in the world's leading ETSs shows that carbon trading is normally diversified in terms of trading venues (see Table 1.2.5).

For example, EU ETS allowances are traded on EEX (European Energy Exchange), ICE (Intercontinental Exchange) Futures Europe, and Nasdaq exchanges. The types of exchanges are different: EEX is a commodity exchange, ICE – a futures exchange, Nasdaq offers a marketplace for EUA (EU allowances) Futures, ENDEX – Energy Derivatives Exchange. In EU ETS carbon trading is executed in the form of spot allowances and derivative contracts trading.

In North America carbon trading is performed on multiple derivatives exchanges, including futures exchange (see Table 1.2.5). The trading platforms are

[65] EIA. 2022. https://www.eia.gov/todayinenergy/detail.php?id=51918

ICE, CME group, and Nodal Exchange. Exchange trading involves only the trading of derivatives. Spot allowances trading is executed entirely over-the-counter.

There is a key difference between European and North American carbon markets:

- In Europe both spot allowances and derivative contracts for carbon units are traded on multiple exchanges
- In North America carbon trading on exchanges is only for derivatives. There is no regulated exchange venue for spot allowances trading.

The overview of the market structure of the world's leading ETSs is presented in Table 1.2.5.

Table 1.2.5. Overview of the market structure in the world's leading ETSs[66,67]

| | Legal status of allowances | Trading platforms | Type of exchange | Trading type on exchanges |
|---|---|---|---|---|
| EU | √ financial instruments<br>√ derivatives can be traded on secondary markets | - Spot, futures, options, and forward contracts traded both on the EEX exchange and over-the-counter<br>- Besides the EEX, futures are traded on ICE, ENDEX and Nasdaq. | - EEX exchange – commodity exchange<br>- ICE – futures exchange<br>- Nasdaq offers marketplace for EUA Futures<br>- ENDEX – Energy Derivatives Exchange | spot allowances and derivative contracts trading |
| UK | √ financial instruments | - Trading on ICE Futures Europe exchange<br>- Contracts for daily futures, futures, and options on futures contracts | - ICE – futures exchange | |
| California | - limited tradable authorisations to emit up to one tCO2-eq<br>- do not constitute property rights | - Allowances, offset credits, and financial derivatives are traded on ICE, CME group, and Nodal Exchange platforms<br>- Companies can also trade directly over-the-counter | - ICE – futures exchange<br>- CME group – derivatives marketplace<br>- Nodal exchange – derivatives exchange | - on exchange – only derivatives<br>- spot - entirely over-the-counter (OTC) |
| Québec | - do not constitute financial instruments | - Trading of allowances on ICE, CME group or Nodal Exchange platforms<br>- Allowances are traded through futures and options contracts<br>- Companies can also trade directly over-the-counter | | |

[66] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

[67] ADB: Business Plan Preparation for the Agricultural Commodity Exchange. Emissions Trading Report. 2022

| | | | | |
|---|---|---|---|---|
| Korea | - not explicitly referenced<br>- not regulated under financial market law | - High share of over-the-counter transactions<br>- The Korea Exchange (KRX) manages the platform, where the spot secondary market transactions take place | - KRX operates the centralised securities and derivatives markets, where stocks, bonds, and derivatives are traded on a common platform[68] | on exchange – only spot allowances |
| China | - do not constitute financial instruments[69] | - Emission allowances traded on a dedicated trading platform managed by the Shanghai Environment and Energy Exchange (SEEE)<br>- Trade is only on spot delivery terms<br>- Other products (i. e., derivatives) are currently not allowed | - SEEE - environment and energy exchange | |
| Tokyo | - not explicitly referenced | - Over-the-counter<br>- Through a private intermediary to find a buyer and negotiate the price<br>- The Tokyo Stock Exchange recently launched trading in carbon units | - Tokyo Stock Exchange operates in both spot market and derivatives market | derivatives |
| Kazakhstan | - **commodity** | - Pure spot market, no forward contracts or other derivatives<br>- Trades via the Caspy Commodity Exchange JSC<br>- Over-the-counter trading | Caspy Commodity Exchange JSC – commodity exchange | spot market on exchange and OTC |

[68] S&P Dow Jones Indices. https://www.spglobal.com/spdji/en/exchange-relationships/exchange/korea-exchange-inc-krx/#overview
[69] only purchased allowances are categorised as assets in financial statements

In the Republic of Korea and China there is only the option of spot allowances trading on exchanges. Trading of other products (derivatives) is not yet envisaged. In Japan trading of carbon units is launched on the Tokyo Stock Exchange (within voluntary nationwide ETS "GX-ETS")[70]. Tokyo Stock Exchange operates in both the spot market and the derivatives market.

Following the global experience, one can observe the trading of emission allowances on different types of exchanges and platforms. To summarise, in the EU, UK and North America carbon units trading is performed on multiple exchanges of different type. In Korea, China[71] and Japan single nationwide platforms for trading carbon units are launched.

*Legal status of allowances*

In the EU and the UK, the legal status of allowances is defined as a financial instrument. In the EU, trading in carbon units is subject to financial regulation to prevent market volatility and speculation (Markets in Financial Instruments Directive, MiFID, applies to the spot market and covers derivatives based on carbon credits)[72].

In other ETSs (in USA, Korea, China, Japan) the legal status of allowances is defined either as 'limited tradable authorisations to emit up to one tCO2-eq', as non-financial instruments ('do not constitute financial instruments') or 'not explicitly referenced'. Such an approach avoids limiting the trading venue option to a single exchange type and allows the trading of carbon allowances on multiple exchange types.

### 1.2.2.3. Market participants

Participation of intermediaries (i.e. non-compliance entities) plays a significant role in the formation and development of the ETS market. It can be observed from Table 1.2.6 that all the world's leading ETSs involve financial institutions and financial intermediaries as market participants. In the EU and the UK, the participation of investment firms and credit institutions is allowed. In North America, in California and Quebec, opt-in covered entities73 can participate in the market. In the Republic of Korea, domestic financial intermediaries can participate

[70] Japan's Tokyo Stock Exchange https://www.enerdata.net/publications/daily-energy-news/japans-tokyo-stock-exchange-starts-carbon-credits-trading.html#:~:text=Japan's%20Tokyo%20Stock%20Exchange%20

[71] There are other regional exchanges in the provinces of China

[72] European Parliament, The role of financial institutions in the ETS market, 2022 https://www.europarl.europa.eu/RegData/etudes/STUD/2022/740052/IPOL_STU(2022)740052_EN.pdf

[73] "An opt-in covered entity is an entity that voluntarily elects to surrender allowances for each ton of GHGs it emits". California Air Resources Board. https://ww2.arb.ca.gov/sites/default/files/cap-and-trade/guidance/chapter4.pdf

in the market since 2021. In China, the participation of domestic and international institutional investors is allowed. In Tokyo ETS trading account holders can be participants of the ETS market. In some ETSs, including KAZ ETS, the participation of individuals and legal entities, involved in the implementation of offset projects, is allowed.

In KAZ ETS **brokers, banks or other financial institutions are not allowed to trade.** This regulatory limitation leads to the stagnation of the carbon market and low carbon price level, which has been observed since the launch of the KAZ ETS in 2013. Otherwise, financial institutions could join auctions to offer intermediation services to compliance entities and other market participants. Their involvement, along with compliance entities, could help ensure sufficient liquidity levels and successful completion of auctions.

Table 1.2.6. Market participants of the world's leading ETSs[74,75]

| | Market participants | | |
|---|---|---|---|
| | Compliance entities | Financial institutions/ financial intermediaries | Individuals |
| EU | | ✓ | |
| UK | ✓ | ✓ | ✓ |
| California | ✓ | ✓ | ✓ |
| Québec | ✓ | | ✓ |
| Korea | ✓ | ✓ | |
| China | ✓ | ✓ | ✓ |
| Tokyo | ✓ | ✓ | |
| Kazakhstan | ✓ | ✗ | ✓ |

[74] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

[75] ISDA, 2021. https://www.isda.org/a/soigE/Role-of-Derivatives-in-Carbon-Markets.pdf

### 1.2.2.4. Carbon/stability funds

In countries where paid allocation of allowances is in effect, funds have been created to accumulate resources, including revenues from auctions. The resources are directed mainly to support climate and low-carbon projects, as well as social support for individual, households and businesses.

Figure 1.2.8. Overview of global funds accumulating revenues, including from allowances auctioning[76]

| | EU | | UK | California | Canada | | Korea | China | Tokyo | Kazakhstan |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | federal level | Québec | | | | |
| Paid allocation of quotas | yes | | yes | yes | yes | yes | yes | no | no | no |
| Funds (accumulating revenues from allowance auctioning) | • Innovation Fund<br>• Modernisation Fund | Social Climate Fund | Revenues are directed to general budget | Greenhouse Gas Reduction Fund | Output-Based Pricing System Proceeds Fund | Electrification and Climate Change Fund | Climate Response Fund | - | - | - |
| **Funding directions** | | | | | | | | | | |
| Climate mitigation | | | | | | | | | | |
| Low-carbon innovation | | | | | | | | | | |
| Assistance for individuals, households, and businesses | | | | | | | | | | |
| Pursuit of other development objectives, such as education and health | | | | | | | | | | |
| General budget, including debt reduction | | | | | | | | | | |
| Comments | Revenues are directed primarily to Member States' budgets. A portion goes to Funds | | Revenues from UK ETS auctions accrue to the general budget and are not earmarked | At least 35% revenues must benefit disadvantaged and low-income communities | | | | | | |

Potential funding directions for Kazakhstan

[76] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report ; Fund websites

## European Union

In this section, the experience of European Union in revenue management, its operation of funds, and the market stability reserve is considered.

In the EU ETS, the revenues from auctioning are directed primarily to Member States' budgets, as well as to the Innovation Fund and the Modernisation Fund. EU Member states report annually on the use of auction revenues. Approximately 76% of EU ETS revenues have been allocated to climate- and energy-related purposes, both domestically and internationally.

Member States can utilise their EU ETS revenues to provide financial support to electricity-intensive industries, compensating for the additional electricity costs associated with implementing the EU ETS mechanism.

A portion of revenues from the auctioned allowances is directed to the Innovation and Modernisation Funds, established during phase 4 to support decarbonisation projects and initiatives.

*Innovation Fund*[77]

The fund supports the commercialisation of innovative low-carbon technologies and industrial solutions. The aim is to decarbonise Europe's energy-intensive industries and promote renewable energy, energy storage, and carbon capture use and storage.

The revenues from the auctioning of 530 million ETS allowances are directed to the Innovation Fund (from 2020 to 2030). The total expected funding – about 40 billion EUR from 2020 to 2030 (calculated with a carbon price of 75 EUR/tCO2).

The European Investment Bank (EIB) is in charge of managing the revenues.

[77] Европейская комиссия. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/what-innovation-fund_en

Table 1.2.7. Fund management[78]

| | Functions |
|---|---|
| European Commission | overall management |
| European Climate, Infrastructure and Environment Agency (CINEA) | managing calls for proposals |
| | support for applicants |
| | disbursing the grants |
| | technical support and services to project promoters |
| **European Investment Bank (EIB)** | **management of revenues** |
| | financial and technical advisory |

*Modernisation Fund*[79]

The fund is designed to support 13 lower-income Member States, by facilitating investments in the modernisation of energy systems, enhancing energy efficiency, and ensuring a socially just transition to climate neutrality. The fund serves as one of the EU solidarity mechanisms and addresses the varying starting points of Member States in the decarbonisation challenge.

The percentage of revenues from auctioning to be directed to the Fund:

- 2% between 2021 and 2030
- 2.5% between 2024 and 2030

of the total quantity of the EU ETS allowances auctioned.

Also, Member states can decide to transfer the portion of revenues from auctioning to the Modernisation Fund.

Total expected funding – about 57 billion EUR from 2021 to 2030 (assuming a carbon price of 75 EUR/tCO2).

The European Investment Bank (EIB) is in charge of managing the revenues.

[78] Европейская комиссия. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/innovation-fund/what-innovation-fund_en#governance

[79] Европейская комиссия. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/modernisation-fund_en

Table 1.2.8. Fund management[80]

| | Functions |
|---|---|
| European Commission | overall management |
| Beneficiary Member States | selection of the investment directions |
| | projects implementation |
| **European Investment Bank (EIB)** | **management of revenues** |
| | financial and technical assessment of non-priority investments |
| Investment Committee | assessment of the non-priority proposals and making recommendations on financing |

*Social Climate Fund*[81]

The Social Climate Fund is being created alongside the EU ETS 2 (EU ETS 2 is expected to be fully operational from 2027). The fund aims to finance investments in energy efficiency and renovation of buildings, clean heating and cooling, and the integration of renewable energy sources.

The Fund will receive revenues from the auctioning of allowances under the EU ETS 2, as well as from the auctioning of 50 million allowances under the EU ETS.

The total expected funding – at least €86.7 billion over the period 2026-2032.

Market Stability Reserve (MSR):

As mentioned in section 1.2.2.1, the Market Stability Reserve (MSR) in the EU ETS was created in 2015 to address the issue of a growing surplus of allowances. The auctioning of 900 million allowances was shifted from 2014-2016 to 2019-2020. The allowances were placed in the Market Stability Reserve until they were auctioned in 2019-2020.

The MSR regulates the volume of auctioned allowances depending on the pre-defined thresholds of the total number of allowances in circulation. This contributes to the balance of the EU ETS market and provides resilience against market shocks and strong price fluctuations. Starting from 2023, if the number of allowances in the MSR exceeds a certain threshold they can be cancelled annually.

[80] Европейская комиссия. https://climate.ec.europa.eu/eu-action/eu-funding-climate-action/modernisation-fund_en#governance-of-the-modernisation-fund

[81] Европейская комиссия. https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/social-climate-fund_en

## 1.3. Possible solutions for relaunching ETS in Kazakhstan

Considering the current state of the KAZ ETS and international experiences, the application of **market approaches and mechanisms** is required to revamp and relaunch the existing ETS system in Kazakhstan to create an additional impetus for decarbonisation. This section proposes a comprehensive solution for improving and relaunching KAZ ETS, which includes four components. The proposed KAZ ETS scheme is presented at the end of the section in Figure 1.3.1.

### 1.3.1. Component 1: introduction of paid allocation of carbon allowances, including from the reserve

To enable the creation of a fair market price for a carbon unit, and considering the international experience (see Sections 1.1.1 and 1.2.2.1), it is necessary to revise the mechanism for distributing allowances in favor of **introducing a paid distribution of part of the allowances in the primary market on an auction basis.**

It is proposed to consider a gradual increase in the proportion of paid distributed allowances with consideration of EU ETS experience (presented in Section 1.2.2.1). Based on the analytics of the World Bank, it is suggested to start from 3% and raise the share of the paid distribution of allowances to 10% in 2026-2030[82]. It is important to note that to prevent a sharp increase in consumer prices for electricity and heat energy, an exclusion of the electricity sector from the paid distribution in the initial stages can be considered. It is suggested to implement paid distribution from 2030 and introduce a subsidy mechanism for the sector so that the increase in costs is not passed on to end consumers.

In addition, it is also proposed to **exclude the free allocation of** allowances **from the reserve** when capacity is increased. This approach is inconsistent with the logic of the ETS and does not create incentives for companies to reduce their GHG emissions. We can see historically, in 2021, an additional 7.5 million allowances[83] were issued free of charge, which potentially could lead to a budget replenishment of 7.5 million USD (at a price of 1 USD per carbon unit). Higher carbon prices will incentivise emissions abatement and will contribute to the accumulation of revenues, which can be directed to decarbonisation projects (see Section 1.3.4). As it can be seen from international experience (see Section 1.2.2.1) the introduction of allowances auctioning contributes to better price discovery.

[82] World Bank. Kazakhstan: Country Climate and Development Report, November 2022 https://openknowledge.worldbank.org/server/api/core/bitstreams/e91f4c4e-a61b-507d-bb91-a39c5ad2f499/content

[83] JSC Zhasyl Damu, 2021 https://recycle.kz/ru/parnikovye-gazy

### 1.3.2. Component 2: providing an opportunity to trade carbon units on different platforms

The development and diversification of carbon exchange trading in Kazakhstan require changes in the current legal status of allowances in the national legislation. Based on the experience of the reviewed world's ETSs (see Section 1.2.2.2), **it is suggested to provide an opportunity to trade carbon units on various exchange types, thus ensuring the facilitation of secondary market development.**

Currently, the legislation of the Republic of Kazakhstan defines the nature/format of a carbon unit as a commodity, which is subject to trading operations only on commodity exchanges. Moreover, the change in the Law on Commodity Exchange in 2023 requires carbon units to be traded only on a specialised commodity exchange - an exchange that sells only one category of goods. This regulatory change created a significant barrier to carbon units trading and resulted in the termination of exchange trading of carbon units in 2023 (see details in Sections 1.1.2 and 1.2.1).

From international experience (Section 1.2.2.2) it can be observed that other countries on the contrary create opportunities for secondary market development by defining the legal status of carbon units in a form, that **allows the exchange trading on different platforms/venues.**

**AIFC offers**

- Ready-made regulatory environment
- High-tech infrastructure
- Transparent transactions
- Transparent pricing
- Application of best international practices and standards
- Connection to international registries
- Support from start to finish of the process
- Protection of the rights of market participants
- KYC* procedure for all market participants
- Possibility of attracting financial intermediaries for market development
- Long-term simplification of business processes

**KYC – "Know your client" procedure - mandatory procedure for verifying client's data.*

### 1.3.3. Component 3: expanding the coverage of ETS participants, in particular, allowing the participation of financial institutions and financial brokers

As presented in table 1.2.6 (Section 1.2.2.3) in all world's leading ETSs the participation of intermediaries, including financial intermediaries, investment firms and credit institutions, institutional investors, traders, opt-in covered entities is allowed. Approximately 65% of participants in the EU ETS secondary market are financial entities[84]. Most of these financial entities act as intermediaries and typically include banks, credit institutions, investment companies, and brokers. Financial intermediaries provide access to trading venues (platforms/exchanges/marketplaces) for all participants, including immature market players. Another benefit of the intermediaries's participation in the market is the **strengthening of liquidity**.

**For KAZ ETS it is suggested expanding the ETS participants,** in particular, **allowing financial institutions and financial brokers** representing the interests of individuals and legal entities, and other intermediaries **to participate in the market.** This initiative will create a liquid market, attract more players to the market, and increase the number of transactions, contributing to the formation of fair pricing.

### 1.3.4.Component 4: creation of a carbon fund

According to the reviewed global experience (section 1.2.2.4), funds accumulating revenues from auctioning carbon allowances are part of ETS systems where paid allocation of allowances is in effect (see Figure 1.2.8 in section 1.2.2.4). The funds accumulate proceeds from the sale of carbon allowances to finance priority areas of decarbonisation.

The creation of the Carbon Fund is already envisaged by the Strategy for achieving carbon neutrality of Kazakhstan by 2060[85].

When creating a fund, it is necessary to establish a mandate, that will define priority areas of financing. The accumulated revenues can be used to finance the following streams, taking into account the global practices presented in Figure 1.2.8 (see Section 1.2.2.4):

[84] European Parliament, The role of financial institutions in the ETS market, 2022 https://www.europarl.europa.eu/RegData/etudes/STUD/2022/740052/IPOL_STU(2022)740052_EN.pdf

[85] On approval of the Strategy for achieving carbon neutrality of the Republic of Kazakhstan until 2060 https://adilet.zan.kz/rus/docs/U2300000121

1) **Low-carbon innovation**
   Assisting in the implementation of emission reduction technologies in the covered sectors to ensure the revolving of revenues back to the industry. The projects may include equipment and infrastructure modernisation, GHG capture, waste recycling and other priority areas.
2) **Climate change mitigation**
   Domestic climate change mitigation efforts, including nature-based solutions such as tree planting projects, sustainable agriculture and others.
3) **Targeted social support**
   Financial compensation support to the population, for example, subsidising electricity tariffs, in connection with additional costs associated with the introduction of paid allocation of allowances for the energy sector within the framework of the KAZ ETS.
4) **Other priority areas** (according to the mandate).

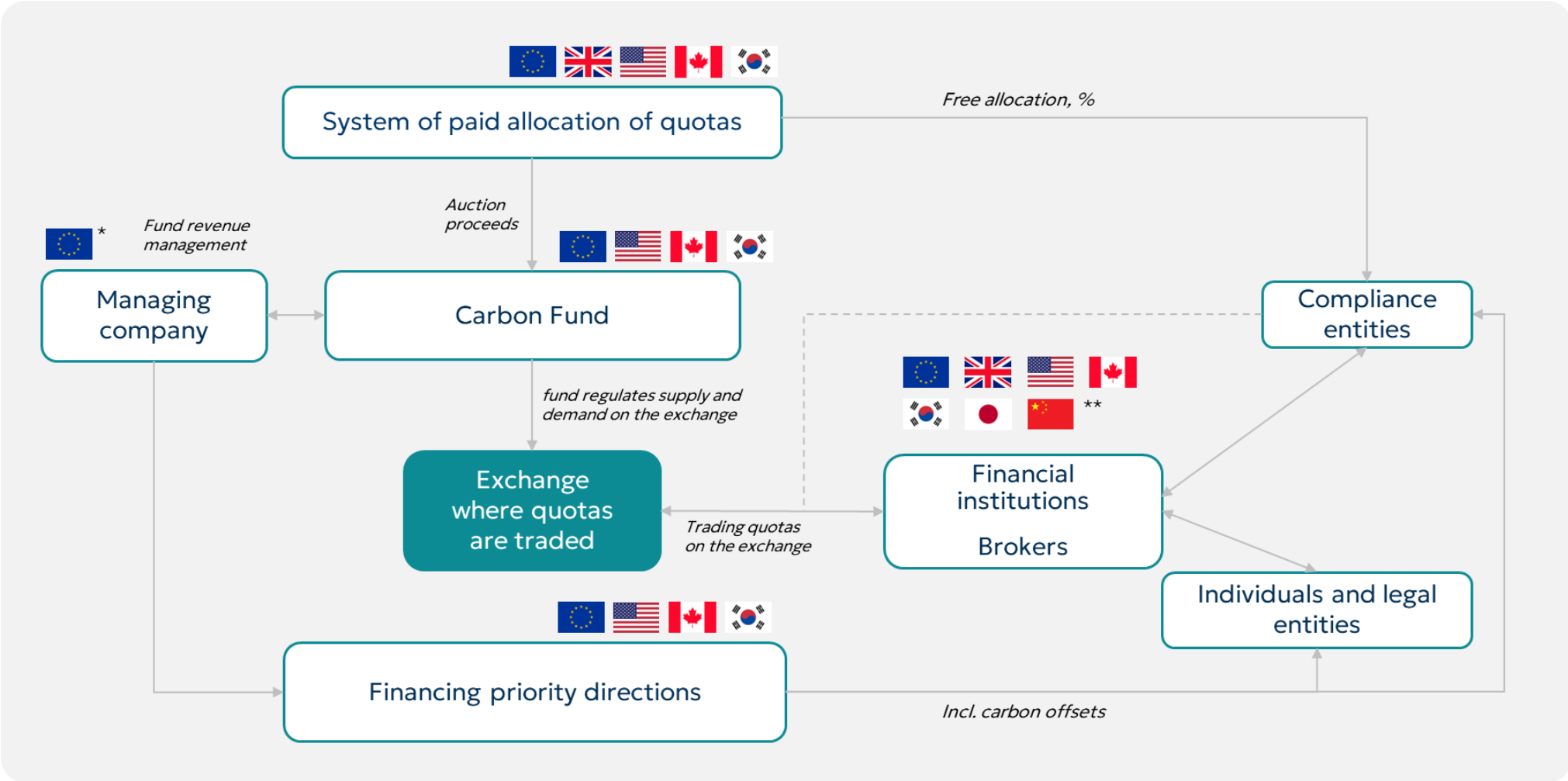
Financing of priority areas can be achieved through the 'green transition financing' schemes (subsidies, guarantees for green projects, green capital, consessional lending).

To prevent market shocks and sharp fluctuations in carbon allowance prices, the fund can also regulate supply and demand by withdrawing or buying back excess allowances. The practice of withdrawing and 'freezing' allowances in the Market Stability Reserve (MSR) is practiced in the EU (see details in Sections 1.2.2.4 and 1.2.2.1). 'Frozen' allowances can be sold later, when demand recovers. The practice of buying back allowances is used in China in the Beijing Regional ETS[86]. Both withdrawals and buy-backs can be carried out based on the Carbon Fund to stabilise prices and regulate supply and demand.

Based on the experience of the European Union, it is proposed to appoint a professional financial market player for revenue management, taking into account the opportunities to apply the best global practices and principles of transparency.

[86] ICAP. Emissions Trading Worldwide: 2024 ICAP Status Report https://icapcarbonaction.com/en/publications/emissions-trading-worldwide-2024-icap-status-report

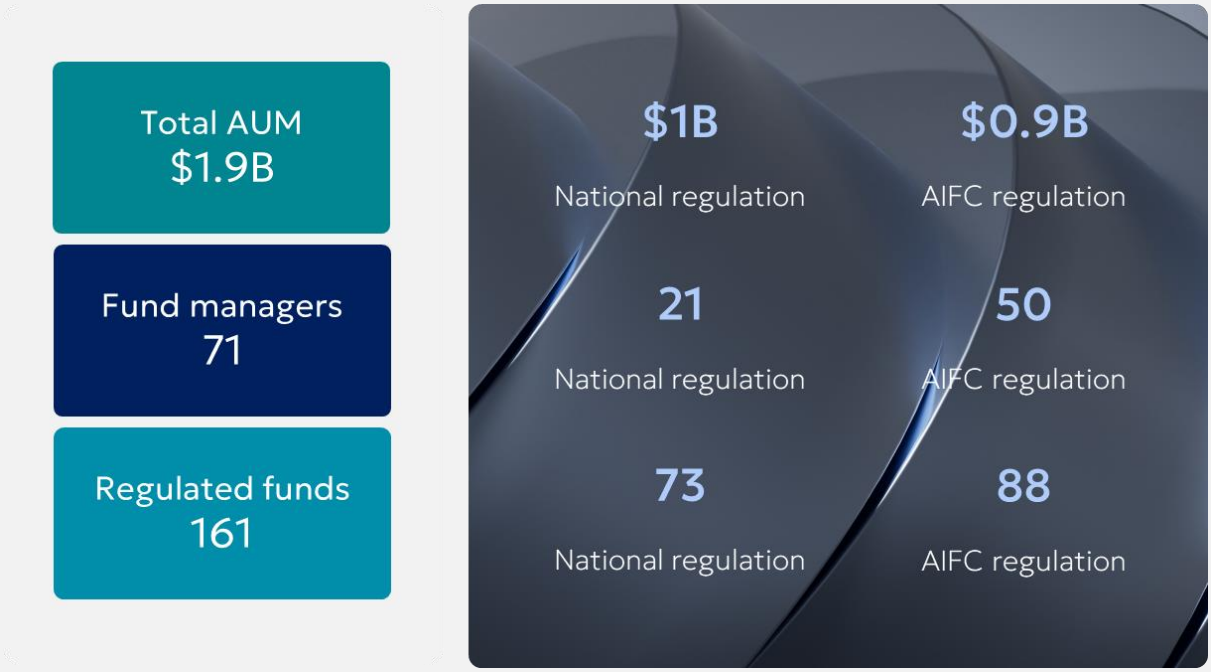
Figure 1.3.1. Proposed ETS scheme




*In the EU, the revenues of the Innovation and Modernization Funds are managed by the European Investment Bank (EIB)
** All the ETS systems considered allow the participation of intermediaries, including financial institutions and brokers

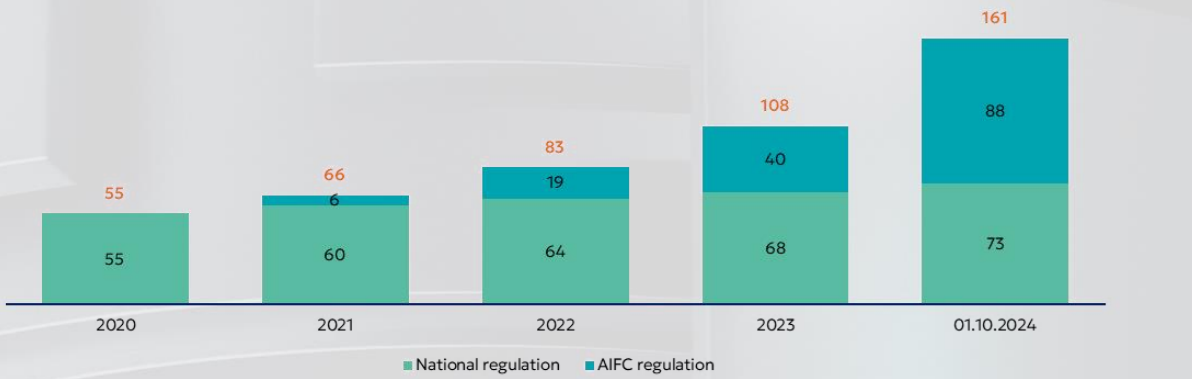
## AIFC experience in fund management

**47% (USD 0.9 billion)** of the total assets under management of regulated funds in Kazakhstan (USD 1.9 billion) **are managed by funds regulated by the AIFC.**




There has been a steady increase in the number of regulated funds in the AIFC jurisdiction since 2021. As of October 2024, out of 161 regulated funds in Kazakhstan, 88 are registered under the AIFC jurisdiction. The total number of regulated funds in Kazakhstan has almost tripled since 2020, due to the registration of new funds under the AIFC jurisdiction.

**Figure 1.3.2. Number of regulated funds in Kazakhstan**




*Source: ARDFM, AFSA*

The AIFC jurisdiction has facilitated the diversification of fund types in the Kazakhstan market, offering a broad range of funds, including PE (Private Equity) funds, hedge funds, venture capital funds, REITs, and other **specialist funds**.

In the AIFC jurisdiction funds can be established as specialist funds, **tailored to specific business activities and investment objectives**. The AIFC permits the following types of specialist funds: private equity fund, venture capital fund, REIT, Islamic investment fund, ESG fund, umbrella fund, fund of funds, master feeder structure, credit fund, digital asset fund, exchange traded fund, money market fund, investment token fund or qualified investment token fund.

**The Carbon Fund of the Republic of Kazakhstan can be established as a specialised fund** aimed at financing projects focused on decarbonisation, climate change mitigation, and other priority areas.

# Chapter Two: Voluntary Carbon Market

# 2. Chapter Two: Voluntary Carbon Market

## 2.1. International experience

### 2.1.1. Voluntary carbon market

The voluntary carbon market (VCM) refers to the development of carbon credit projects, and the issuance and transaction of carbon credits from these projects on a voluntary basis. One carbon credit represents the removal or reduction of one metric tonne of carbon dioxide equivalent (1 tCO2-eq)[87] through the implementation of a carbon mitigation project. A carbon credit is a verified and certified reduction of 1 tCO2-eq by a carbon standard or crediting mechanism.

The VCM originated as early as in the 1990s, driven by non-state actors seeking a reliable method for certifying greenhouse gas (GHG) emission reductions and removals. The first VCM standards were introduced in 1996[88]. In 2023, the VCM market size reached 723 million USD by the value of traded carbon credits, down from its peak of 2.1 billion USD in 2021[89]. The largest volume of issuances in the VCM history occurred in 2021 with an issuance volume of 362 million tCO2-eq.

Voluntary demand (for carbon credits) has long dominated the compliance demand. According to a 2024 World Bank report, around 90% of carbon credit retirements worldwide in 2023 are attributed to voluntary purposes as opposed to around 10% of the carbon credit retirements for compliance with ETSs and carbon taxes[90].

It can be observed from Figure 2.1.1 that the active development of the market started in 2009. The period from 2009 to 2016 can be considered the 'Consolidation phase', where independent carbon crediting and offset programmes/standards such as the Verified Carbon Standard (VCS) and Gold Standard (GS) gained the prevailing market shares. VCS since its entrance to the market is the leading carbon standard based on the market share in terms of VCM credits. The period from 2017 can be considered the 'Mainstream' phase, in which significant market growth occurred. In recent years Verified Carbon Standard and

[87] A carbon dioxide equivalent or CO2 equivalent, abbreviated as CO2e is a metric measure used to compare the emissions from various greenhouse gases on the basis of their global warming potential (GWP), by converting amounts of other gases to the equivalent amount of a unit of carbon dioxide with the same global warming potential.
[88] OICU-IOSCO. Voluntary Carbon Markets. Consultation paper. 2023
[89] Forest Trends. https://www.forest-trends.org/publications/state-of-the-voluntary-carbon-market-2024/
[90] World Bank. https://openknowledge.worldbank.org/entities/publication/b0d66765-299c-4fb8-921f-61f6bb979087

Gold Standard have kept their leading position as the largest VCM carbon standards.

Unlike the compliance carbon market, which includes ETSs as described in Chapter One, the voluntary demand stems from corporations as well as individuals seeking to voluntarily fund climate action and offset their GHG emissions footprint. In fact, the voluntary carbon market is one avenue amongst others for channeling private sector finance into climate mitigation.

Companies and investors have been purchasing carbon credits to offset their carbon emissions or support mitigation efforts beyond their value chains. Lately, there has been a push for corporate responsibility and pressure from investors and consumers to produce sustainable products/services[91].

Unlike ETSs, there is no geographical boundary for the VCM: carbon credit transactions can take place across national borders where buyers and sellers of the carbon credits are not necessarily confined within a country. This is a key feature of the voluntary carbon market, where the development of the carbon credit project, and the issuance, transaction, and retirement of the carbon credit have been largely independent of compliance regulation or direct government oversight. At the same time, international independent carbon crediting and offsetting standards bodies have long stipulated that local regulations are required to be complied with, and this includes carbon credit project developers needing to obtain the necessary approvals for the development and implementation of the voluntary carbon credit project.

Nonetheless, this is stated in the context of various global developments: increasing regulation from governments worldwide on the conduct of carbon markets, including the VCM within the country, as well as global initiatives governing the standards for high-quality carbon credits (e.g. Integrity Council for the Voluntary Carbon Market (ICVCM)[92]) and rules for the credible use of high-quality carbon credits and the associated climate claims (e.g. Voluntary Carbon Markets Integrity Initiative (VCMI)[93]). It is also important to note: (1) VCM market players are obligated to comply with the necessary domestic laws and regulations, as this is an essential requirement set by the international carbon crediting and offsetting programme; and (2) amid the broader deregulated environment in which the VCM has been operating, several industry initiatives, such as the

[91] Voluntary Carbon Market, Six white paper, https://www.six-group.com/dam/download/company/report/whitepapers/six-whitepaper-voluntary-carbon-markets-en.pdf
[92] https://icvcm.org/about-us/
[93] https://vcmintegrity.org/about/

International Carbon Reduction and Offset Alliance (ICROA)[94], seek to promote self-regulation and best practices for the industry.

The rules, requirements, and procedures set by the international carbon crediting and offsetting programmes cover the entire carbon credit project development and carbon credit issuance process. In short, carbon credit developers create and implement mitigation projects, which are validated and verified by third parties, i.e. validation and verification bodies (VVBs) accredited by carbon standards bodies. In terms of the transaction of carbon credits in the VCM, the carbon credit would be first issued by the international carbon crediting and offsetting programme under its registry to the carbon credit developers. The carbon credit could then be traded on global exchanges that have a linkage with the standards' registry issuing the carbon credit. Once a carbon credit is retired on the registry, it can no longer be traded on global exchanges.

Since its inception, the voluntary carbon market has experienced consistent growth and till today represents a key demand segment for carbon credits. Initially, the VCM market satisfied the demand for voluntary offsets from businesses. During the second commitment period of the Kyoto Protocol (2013-2020), the volume of annual issuances of VCM projects increased four times. This indicates that the VCM market grew in parallel with the active development of the Clean Development Mechanism (CDM).

Figure 2.1.1 below presents the phases of development of the VCM market with respect to the market shares of the four prominent international carbon crediting and offsetting programmes, also known as carbon standards:

- Verified Carbon Standard (VCS) by Verra
- Gold Standard for the Global Goals (GS4GG) by Gold Standard (GS)
- American Carbon Registry (ACR)
- Climate Action Reserve (CAR)

[94] https://icroa.org/about/

Figure 2.1.1. Evolution of the Voluntary Carbon Market[95]

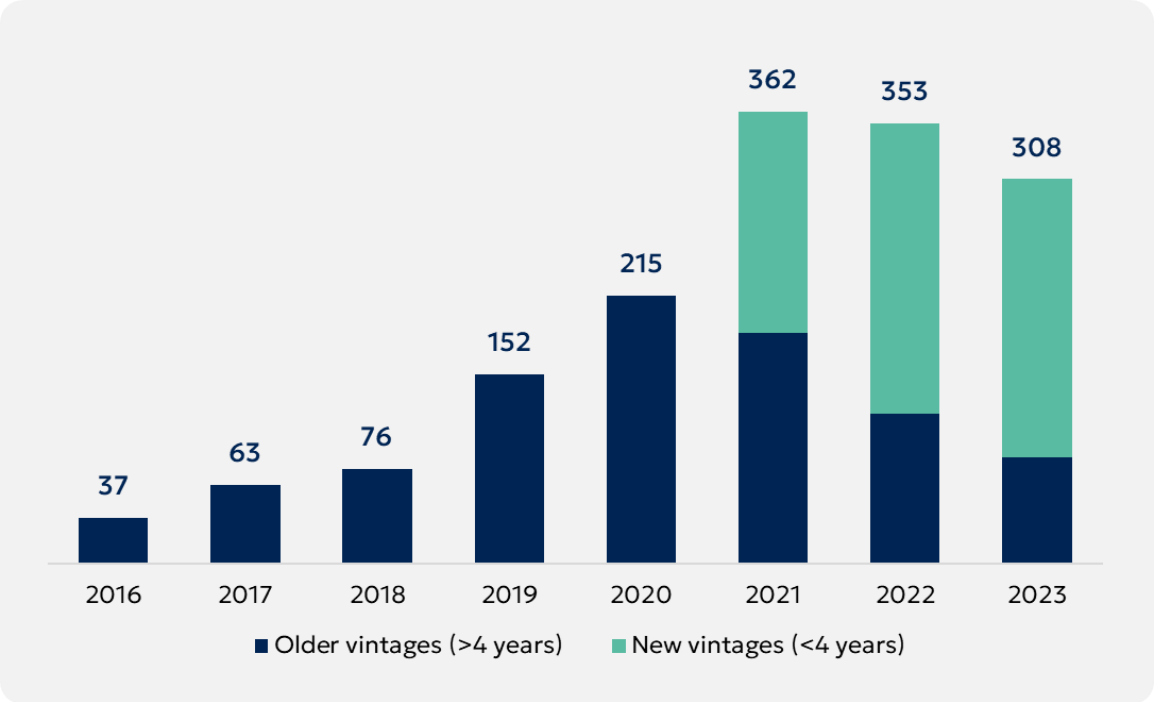
| | 2002-2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Market size mln tCO2-eq | 29 | 29 | 33 | 36 | 49 | 47 | 40 | 46 | 37 | 63 | 76 | 152 | 215 | 362 | 353 | 308 |
| Phase | Early phase | Consolidation phase | | | | | | | | Mainstream phase | | | | | | |
| ACR | 97% | 21% | 1% | 1% | 8% | 2% | 3% | 5% | 4% | 3% | 3% | 1% | 4% | 3% | 8% | 8% |
| CAR | | 4% | 19% | 19% | 10% | 15% | 17% | 24% | 11% | 6% | 6% | 2% | 2% | 1% | 3% | 2% |
| GS | 3% | 5% | 9% | 11% | 14% | 22% | 35% | 26% | 36% | 22% | 26% | 13% | 18% | 12% | 16% | 19% |
| Verra | | 70% | 72% | 68% | 67% | 62% | 45% | 47% | 50% | 70% | 66% | 84% | 75% | 84% | 72% | 68% |

[95]UNDP, 2024. Voluntary Carbon Market. https://www.undp.org/sites/g/files/zskgke326/files/2024-05/UNDP%20-%20Voluntary%20Carbon%20Market%20%28VCM%29%20Report%20-%2005.07.2024.pdf
Climate Focus. The Voluntary Carbon Market Dashboard. https://climatefocus.com/initiatives/voluntary-carbon-market-dashboard/

As stated above, the level of carbon credit issuances in VCM peaked in 2021. In 2023 the level of carbon credits issuances experienced a 15% decline compared to 2021. At the same time, the retirement level reached a stable level (to be discussed below).

The positive trend of the latest years's issuances is an increasing share of newer vintages (not older than 4 years). In the peaking 2021 year, over half of VCM carbon credits were generated by projects, which are older than 4 years. As noted by Climate Focus' 2023 VCM report, in the peaking 2021 year, over half of VCM carbon credits were generated by projects, which are older than 4 years. In 2023 the share of older vintages fell to less than one-third. This trend indicates the increasing importance of quality and 'freshness' of carbon credits for buyers.

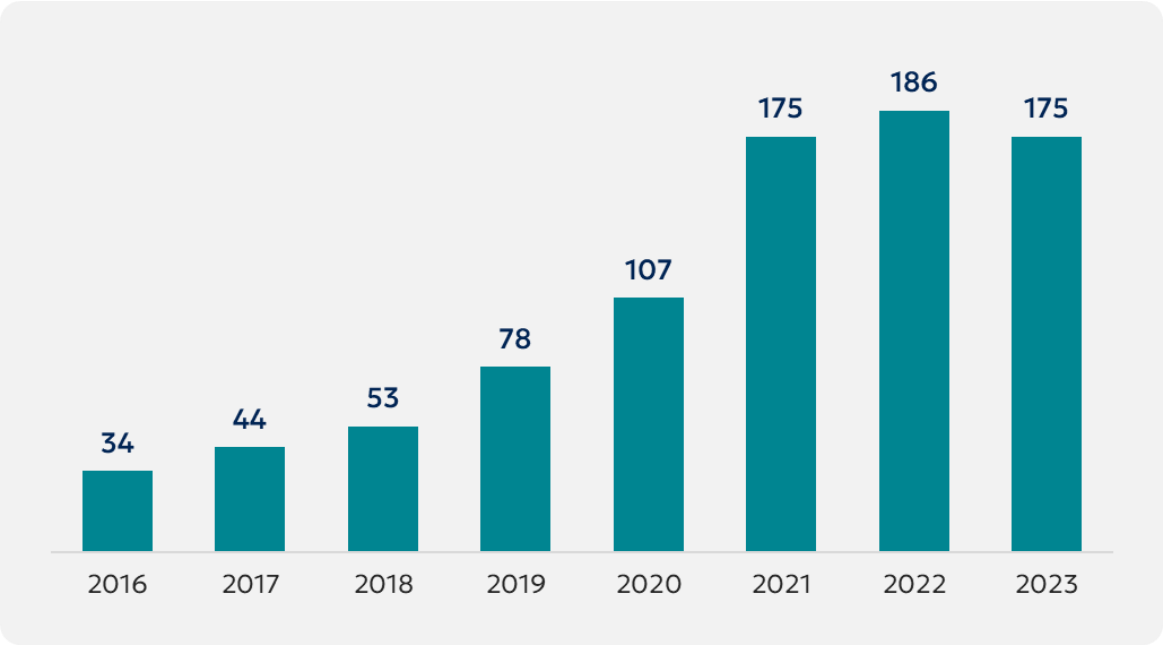
Figure 2.1.2. Issuance of carbon credits, mln tCO2-eq[96]




It can also be observed (see Figure 2.1.3 below) that the level of retirement of carbon credits reached a stable level in 2021-2023. In 2023 the volume of carbon credits retired reached 174 million tCO2-eq, which is closely matched with levels of 2021-2022.

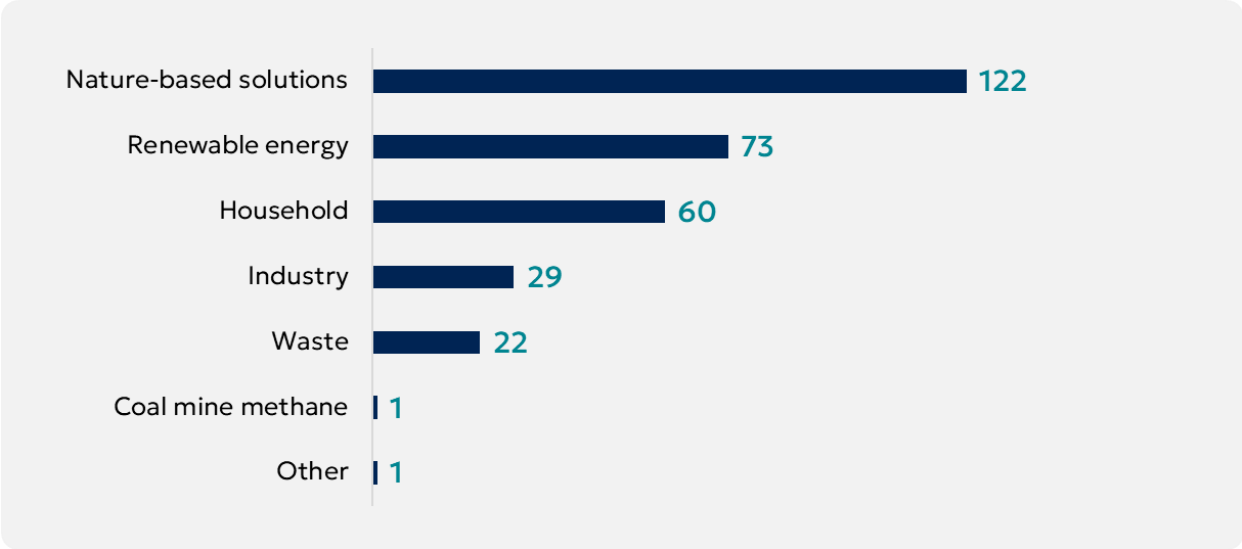
[96] Climate Focus. Voluntary Carbon Market. 2023 Review. https://climatefocus.com/wp-content/uploads/2024/01/VCM-2023-Review-Report.pdf

Figure 2.1.3. Retirements of carbon credits, mln tCO2-eq[97]




If we consider the types of projects, in 2023 both retirements and issuances are dominated by nature-based solutions. The second largest share corresponds to renewables.

Figure 2.1.4. Issuances of carbon credits in 2023, mln tCO2-eq[98]




[97] Climate Focus. The Voluntary Carbon Market Dashboard. https://climatefocus.com/initiatives/voluntary-carbon-market-dashboard/
[98] Climate Focus. Voluntary Carbon Market. 2023 Review. https://climatefocus.com/wp-content/uploads/2024/01/VCM-2023-Review-Report.pdf

Based on the cumulative data on registered projects and credits issued by activity type in 2008-2024, a few trends can be observed (Tables 2.1.1 and 2.1.2). Standards have diverse project portfolios in different country types. There are also differences in trends for Least Developed Countries (LDCs) and non-Least Developed Countries (non-LDCs) related to the projects participating in the voluntary carbon market. The main observations are:

- The majority of **nature-based solutions** projects are implemented and certified based on the *Verified Carbon Standard (Verra)*. The development of nature-based solutions projects is more prominent in more developed countries (non-LDCs).
- **Household projects** are predominantly implemented and certified based on the *Gold Standard.* The carbon credits from household projects come both from LDCs and non-LDCs.
- The carbon credits from **renewable energy projects** originate mainly from more developed countries (non-LDCs). Both Verified Carbon Standard (Verra) and Gold Standard are active in certifying RE projects. Market adoption of Verra's VCS is larger than that of the Gold Standard, both in terms of the number of projects (by 2 times) and the volume of issued credits (by three times) from renewable energy.

Table 2.1.1. Prevailing project types issued by Verra and GS during the period 2008-2024[99]

| Standard | Countries | Prevailing project types |
|---|---|---|
| Verra | LDCs | NBS and household |
| | Non-LDCs | RE, NBS |
| Gold Standard | LDCs | Household |
| | Non-LDCs | RE, Household |

[99] Climate Focus. The Voluntary Carbon Market Dashboard. https://climatefocus.com/initiatives/voluntary-carbon-market-dashboard/

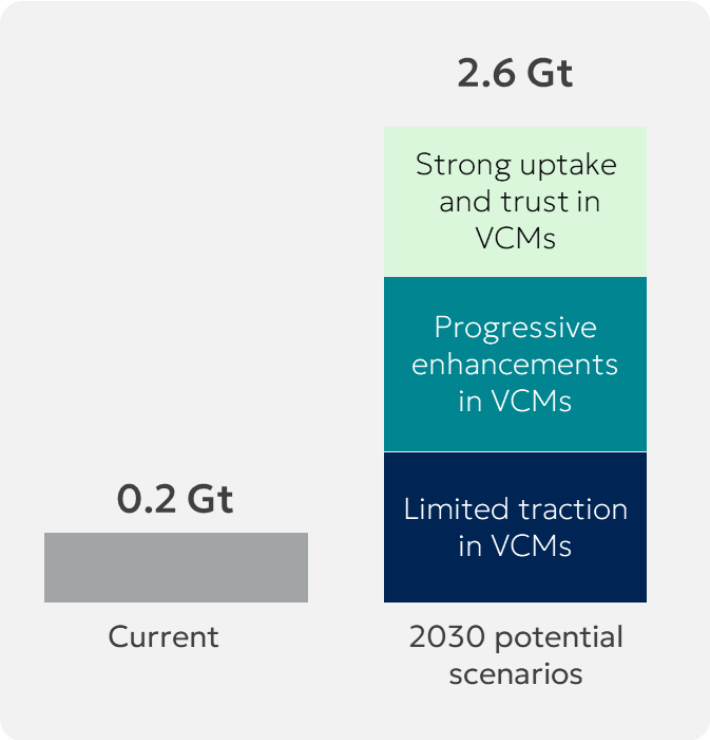
Table 2.1.2. Projects and credits issued during the period 2008-2024[100]

| Standard | Project type | LDCs | | non-LDCs | |
|---|---|---|---|---|---|
| | | Number of projects | Credits issues in mln CO2-eq | Number of projects | Credits issues in mln CO2-eq |
| Verra | **Total** | **166** | **171** | **2076** | **1079** |
| | Household | 76 | 26 | 156 | 29 |
| | NBS | 50 | 118 | 242 | 418 |
| | RE | 32 | 4 | 1132 | 494 |
| | Industry | 6 | 23 | 124 | 46 |
| | Waste | | | 307 | 46 |
| | Others | 2 | 0,08 | 115 | 46 |
| Gold Standard | **Total** | **1025** | **66** | **1566** | **284** |
| | Household | 983 | 62 | 770 | 93 |
| | NBS | 7 | 1,5 | 50 | 6 |
| | RE | 25 | 1,7 | 594 | 139 |
| | Industry | 5 | 0,1 | 35 | 4 |
| | Waste | 5 | 0,03 | 113 | 42 |
| | Others | 0 | 0,0 | 4 | 0 |

The voluntary carbon market is expected to continue its growth and development. Based on the estimations, the VCM has the potential to achieve a market volume of 2600 millions tCO2-eq (2,6 Gt)[101], which is 13 times greater than the current market volume.

[100] Climate Focus. The Voluntary Carbon Market Dashboard. https://climatefocus.com/initiatives/voluntary-carbon-market-dashboard/
[101] based on the most optimistic scenario

Figure 2.1.5. Global potential of VCM[102]




### 2.1.2. Renewable Energy Certificates (RECs)

A Renewable Energy Certificate (REC) is a tradable, market-based tool that signifies the property rights to the environmental, social, and other non-power attributes of renewable electricity generation. Since the physical electricity delivered through the utility grid doesn't indicate its source or method of generation, RECs are crucial for accounting and tracking the levels of renewable electricity generation and use. Buyers of the certificate can claim that their activities are based on renewable energy usage. Each REC is issued for every megawatt-hour (MWh) of electricity produced and supplied to the grid from a renewable energy source.

I-RECs are used to address indirect greenhouse gas emissions associated with the purchase of electricity (Scope 2 emissions) by verifying that the electricity source used is a zero or low-emission renewable source. It should be noted that I-REC is not an offset. The main differences between offsets and I-RECs are summarised in Table 2.1.3 below.

[102] World Economic Forum. 2023. The Voluntary Carbon Market: Climate Finance at an Inflection Point. https://www3.weforum.org/docs/WEF_The_Voluntary_Carbon_Market_2023.pdf

Table 2.1.3. Differences between offsets and I-RECs[103]

| | Offsets | RECs |
|---|---|---|
| Unit of measure | Metric tonnes of CO2 or CO2-equivalent | Megawatt hours (MWh) |
| Source | Projects that avoid or reduce greenhouse gas emissions to the atmosphere | Renewable electricity generators |
| Purpose of the instrument | - Represent GHG emissions reductions<br>- Provide support for emissions reduction activities<br>- Lower costs of GHG emissions mitigation | - Verify renewable electricity use claims<br>- Quantify and track the environmental benefits of renewable energy generation<br>- Support renewable electricity development<br>- Expand consumers' electricity service choices |
| Corporate GHG inventories and reporting | Reduce or "offset" an organisation's scope 1, 2 or 3 emissions, as a net adjustment | Can lower an organisation's gross market-based scope 2 emissions from purchased electricity |
| Consumer environmental claims | Can claim to have reduced or avoided GHG emissions outside their organisation's operations | Can claim to use renewable electricity from a low or zero-emissions source |
| Additionality test requirements | Required. Each project is tested for additionality to ensure that it is beyond business as usual. | Not required. |

Renewable Energy Certificates (RECs) were established as a market-based mechanism to promote the generation and use of renewable energy. The concept of RECs emerged in the 1990s as part of broader efforts to combat climate change and support clean energy initiatives.

Renewable Energy Certificates emerged first in the United States. In 1998 the first retail renewable energy certificate (REC) product was sold in the United States, in Massachusetts. In 1999 the first REC trading occurred in Texas (US)[104].

In the early 2000s Europe also developed a renewable energy certification system. The certification called the Renewable Energy Guarantee of Origin

[103]EPA. Green Power Partnership. Offsets and RECs: What's the Difference? https://www.epa.gov/sites/default/files/2018-03/documents/gpp_guide_recs_offsets.pdf
[104] U.S. Environmental Protection Agency (EPA). History of Voluntary Markets. https://www.epa.gov/green-power-markets/history-voluntary-markets

(REGOs) was introduced in 2003[105]. The Renewable Energy Guarantee of Origin (REGOs) electronic certificate system allows electricity producers from renewable sources to receive certification proving their electricity is renewable (as per the EU Renewables Directive).

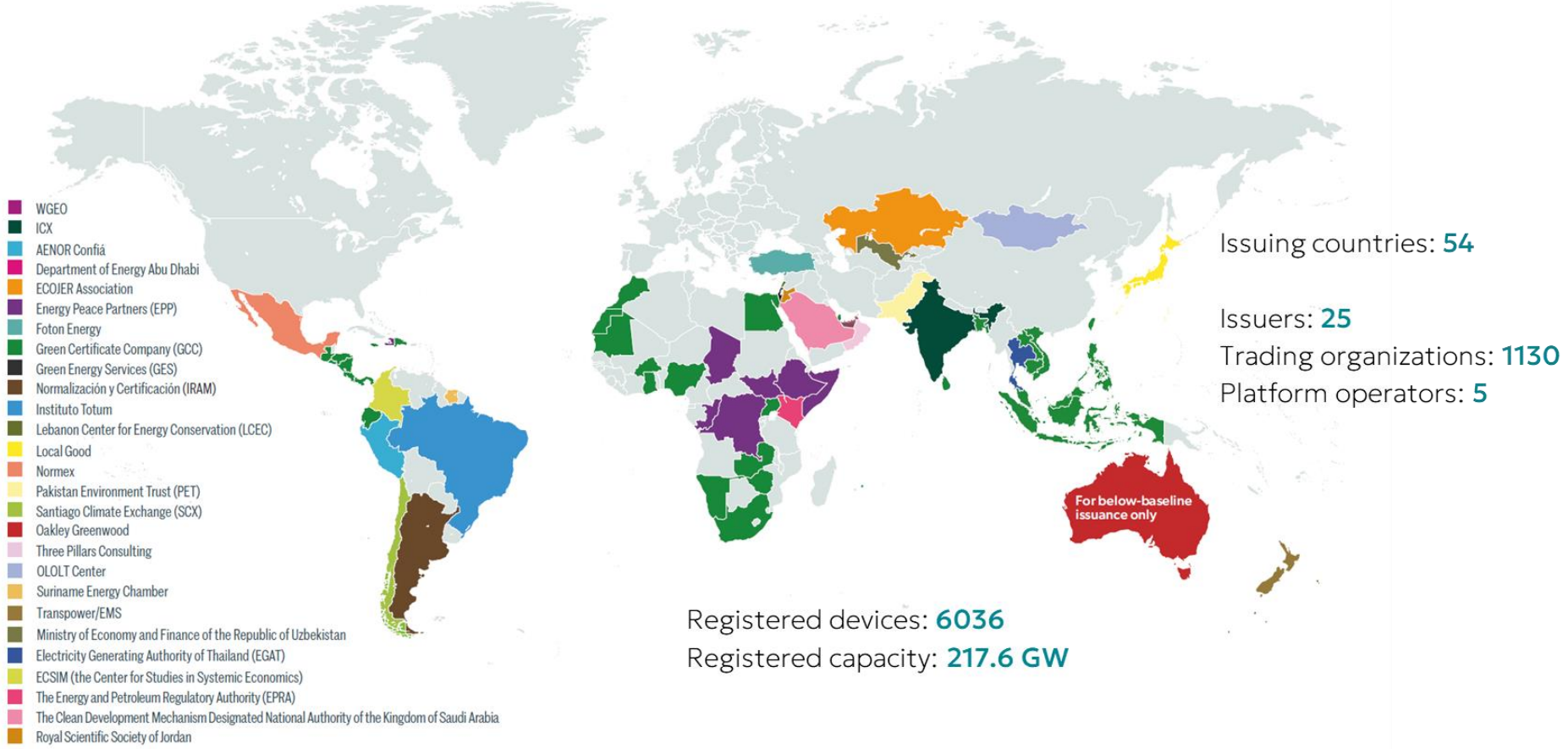
In the last decade, there have been great developments in establishing a global renewable energy certification system. The largest international organisation the I-TRACK Foundation was founded in 2015. Established as the **International REC Standard Foundation (I-REC Standard),** the organisation aims to be a globally recognised body for standardizing REC schemes[106]. Since its inception, it has experienced substantial growth in the adoption of its attribute tracking systems. I-REC represents 99% of the total voluntary market of renewable energy certificates in the world and is recognised in more than 50 countries[107].

I-TRACK foundations have a wide geography of operations.

- In 2023, the largest I-REC markets were China, the United Arab Emirates (UAE), Brazil, and Türkiye. The UAE, Brazil, and Türkiye experienced significant growth rates of approximately 251%, 73%, and 34%, respectively. These four markets represent 172 million I-RECs in 2023[108].
- The top 10 markets by volume also included Chile, Vietnam, Malaysia, India, Thailand, and Colombia, with issuance levels ranging from 8 to 17 millions in each market in 2023.
- High-level growth in the I-REC market in 2023 was achieved in different parts of the world: in Africa, Central and South America. Significant growth compared to 2022 was recorded in Kazakhstan, Oman, the Philippines, and Australia. The first issuance of I-RECs occurred in 2023 in Mongolia, Bangladesh, and Pakistan.

[105] IEA, 2014. Renewable Energy Guarantees of Origin (REGOs). https://www.iea.org/policies/4044-renewable-energy-guarantees-of-origin-regos
[106] The International Tracking Standard Foundation. https://www.trackingstandard.org/about-us/
[107] AIX now offers the market an opportunity to trade renewable energy certificates. 2024. AIX now offers the market an opportunity to trade renewable energy certificates | AIX
[108] The International Tracking Standard Foundation, 2024. I-REC(E) Market Statistics. https://www.trackingstandard.org/6559-2/

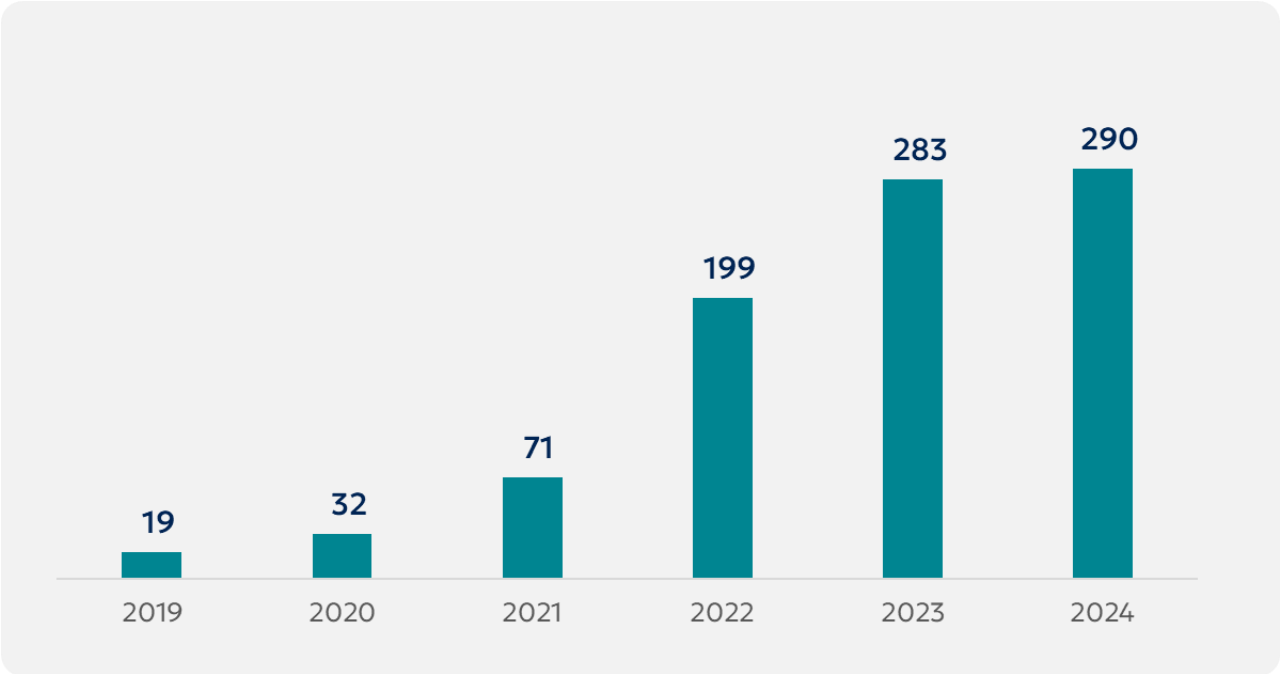
Figure 2.1.6. Geography of I-TRACK operation[109]




[109] The International Tracking Standard Foundation. https://www.trackingstandard.org/world-map/

In 2024 a total of 290 million certificates were issued in all I-REC(E) markets combined, representing 290 TWh of electricity (see Figure 2.1.7 below).

Figure 2.1.7. Annual Issuance of I-RECs, TWh[110]




[110] Foton. https://tr.foton.energy/en/market-reports
The International Attribute Tracking Standard. https://www.trackingstandard.org/resource/2025-i-rece-market-statistics-january-2025/

### 2.1.3. VCM: success cases in Central Asia and the Caucasus

In recent years VCM market has experienced great development in Central Asia and the Caucasus regions.

There are several projects in Central Asia and the Caucasus that **have successfully issued** carbon credits. A hydropower plant and afforestation project in Georgia [111], and hydropower plants in Tajikistan and Turkmenistan have successfully passed all registration and verification procedures and are issuing (or have issued) carbon credits. Projects in Tajikistan and Turkmenistan issued carbon credits in 2007-2015 and 2009-2016 years respectively.

There are also several registered projects that **expect the issuance** of carbon credits, such as a solar power plant in Armenia, hydropower and solar power plants in Azerbaijan, and wind and solar power plants in Uzbekistan. The carbon credits are expected to be issued in the nearest years till 2030-2031.

Kazakhstan has several renewable energy projects registered in Verra and Gold Standard. One 50 MW solar power plant (Shaulder Photovoltaic Power Plant) and two wind farms of 50 MW (Energo Trust) and 100 MW (Borey Energo) capacity are registered in Gold Standard. Two wind power plants of 48 MW capacity each (Badamsha Wind Farm 1 and 2 developed by ENI) are registered in Verra. The projects are registered but no issuance has been made yet.

There are several projects that were registered (one energy efficiency project in Kazakhstan and one solar heating project in Georgia), but due to some reasons, there were no issuances.

[111] Afforestation project in Georgia implies the generation of carbon credits from hazelnut plantations.

Table 2.1.4. Carbon projects from Central Asia and Caucasus registered in Gold Standard, Verra[112]

| Country | Standard | Project | Type | Status | Estimated credits per year | Proponent | Crediting period/issuance |
|---|---|---|---|---|---|---|---|
| Armenia | Gold Standard | AYG 1 SOLAR PV PLANT | Solar 200 MW | Listed/registered | 222 742 | Masdar Armenia 1 CJSC | 2025-2030 |
| Azerbaijan | Gold Standard | SOCAR HYDRO BUNDLE-3 | Hydro | Listed/registered | 20 000 | SOCAR Trading SA | 2025-2029 |
| Azerbaijan | Gold Standard | LARGE SCALE SOLAR PROJECT IN AREA 60 IN AZERBAIJAN | Solar 230 MW | Listed/registered | 274 074 | EKI Energy Services Limited | 2024-2029 |
| Georgia | Verra | CHOROKHI HYDRO POWER PLANT | Hydro 98 MW | Registered, issuance | 423 245 | Achar Energy 2007 Ltd. Co. China | Issuance 2017-2027 |
| Georgia | Gold Standard | AFFORESTATION WITH HAZELNUT PLANTATIONS IN WESTERN GEORGIA | AFFORESTATION | Registered, issuance | 20 000 | Ferrero Trading LUX S.A. | Issuance 2007-2056 |
| Georgia | Gold Standard | SOLAR WATER HEATERS FOR RURAL AREAS IN GEORGIA | Solar heating | Listed (failed) | 2 000 | atmosfair gGmbH | 2013-2020. Never issued credits |
| Tajikistan | Verra | Pamir Hydro | Hydro | Registered, issuance | 50 667 | Pamir Energy Company GBAO, Tajikistan | Issuance 2007-2015 |

[112] Verra registry. https://registry.verra.org/app/search/VCS
Gold Standard registry. https://registry.goldstandard.org/projects?q=&page=1

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Turkmenistan | Verra | Hydro 12 MW | Hydro 12 MW | Registered, issuance | 32 195 | Tektuð Elektrik Üretim A.Þ. San Jose, Costa Rica | Issuance 2009-2016 |
| Uzbekistan | Gold Standard | ZARAFSHAN WIND FARM | Wind 522 MW | Listed/registered | 1 007 053 | SHAMOL ZARAFSHAN ENERGY' FE LLC | 2024-2029. No issuances made yet |
| Uzbekistan | Gold Standard | TUTLY SOLAR PV PLANT IN UZBEKISTAN | Solar 100 MW | Listed/registered | 165 263 | First Climate (Switzerland) AG | 2022-2027. No issuances made yet |
| Uzbekistan | Verra | Reducing gas leakage | Gas leakage | Requested registration | 7 354 473 | GasGreen Asia LLC, US | Requested registration is pending. The project was supposed to come online in 2023 |
| Kazakhstan | Gold Standard | Energo Trust | Wind 50 MW | Listed/registered | 209 984 | EKI Energy Services Limited | 2023-2028. No issuance made yet |
| Kazakhstan | Gold Standard | Borey Energo | Wind 100 MW | Listed/registered | 409 968 | EKI Energy Services Limited | 2023-2028. No issuance made yet |
| Kazakhstan | Gold Standard | Shaulder Photovoltaic Power Plant | Solar 50 MW | Listed/registered | 102 217 | Aither Group SA | 2022-2027. No issuance made yet |
| Kazakhstan | Gold Standard | TPP Topar, Kazakhmys Corporation LLC | Energy Efficiency | Listed (failed) | 185 926 | VAGABO UK LTD | 2009-2016. Never issued |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Kazakhstan | Verra | Badamsha Wind Farm 1 | Wind 48 MW | Listed/registered | 232 137 | Multiple | 2020-2030. No issuance made yet |
| Kazakhstan | Verra | Badamsha Wind Farm 2 | Wind 48 MW | Listed/registered | 172 580 | Multiple | 2021-2031. No issuance made yet |

## 2.2. Current situation in Kazakhstan and perspectives

### 2.2.1. Current situation/challenges

Currently, as compared to carbon markets worldwide and regionally, the carbon credits market in Kazakhstan has yet to fully scale up and realise its potential. This is also considering that Kazakhstan in its NDC, has pledged to unconditionally reduce emissions by 15% from the 1990 baseline by 2030, with a separate conditional target to reduce emissions by 25% in the same timeframe. There is also an existing operational ETS (see Chapter 1). These two key climate change policies form the basis for driving the demand for ETS offsets and VCM carbon credits. It is important to note that carbon credit projects implemented in the country indirectly contribute towards climate mitigation in the country and towards Kazakhstan's NDC. This means that buyers and investors internationally or domestically, who purchase carbon credits through the VCM and finance domestic carbon credit projects, are indirectly contributing towards Kazakhstan's NDC. ETS entities, who could purchase carbon credits from eligible domestic carbon credit projects to offset their emissions under the ETS, are indirectly contributing towards Kazakhstan's NDC.

As it was presented in Section 2.1.3, there are several renewable energy projects registered in VCM registries, but no issuances have been made yet. This could be attributed to the historically low level of CDM and VCM activity and participation of Kazakhstan's stakeholders. Therefore, the market has yet to develop and further deepen knowledge, experience, and expertise in carbon markets to drive demand and supply of VCM credits. Nonetheless, the main reason for the relatively low level of development of the VCM market in Kazakhstan is the absence of an enabling environment for the market to operate, and the factors are broadly: sufficient demand and supply of carbon credits, clear rules and signals and supporting service and infrastructure.

Based on AIFC's communications with local companies (potential market developers), it is observed that there is a need to raise awareness about carbon markets' procedures and processes. There are no cases of registration applications made to VCM registries solely by local companies – it has only occurred with the participation of international stakeholders. (For example, ENI is a developer of Badamsha wind projects in Kazakhstan, registered under VCS). The remaining existing renewable energy offset projects in Kazakhstan – are projects registered in the Zhasyl Damu Registry, which are developed for offsetting purposes to comply with obligations within the Emissions Trading System.

According to the latest presentation [113] by the Ministry of Ecology and Natural Resources (MENR), forestry projects are to be allowed to generate offsets for the purpose of Nationally Determined Contribution (NDC) implementation. While there is a possibility that the carbon credits from forestry projects could be eligible as offsets for the domestic ETS and for the international carbon market – for both the compliance market (as in Article 6 cooperative approaches) and the VCM – the regulatory changes are currently under development. The re-establishment of Kazakhstan's ETS provides an opportunity to integrate biodiversity-friendly carbon offsets as an official component. This initiative aims to develop and promote a recognized carbon offset standard within the Agriculture, Forestry, and Other Land Use (AFOLU) sector, supported by a robust monitoring, evaluation, and verification system to ensure credibility and effectiveness. Meanwhile, the national Article 6 Framework is currently being developed by the Ministry of Ecology and Natural Resources.

Nonetheless, further clarity will be required on opportunities for forestry projects to participate in VCM. It should be noted that forestry projects, timber or non-timber forest product sales (such as fruits, nuts, etc.), if any, may not generate sufficient revenues and require continued financial resources for sustained maintenance and protection. The participation of forestry projects in the carbon market will provide crucial revenues to finance the project activities and contribute to their sustainable and long-term operation. It is important to note that there is further potential for carbon credits beyond the renewable energy and forestry sectors in the country, which could support and contribute to the implementation and achievement of Kazakhstan's NDC.

Lastly, the carbon market requires supporting services and infrastructure in order to function. This includes trading platforms, carbon registries, certification, and advisory services and expertise. Each carbon credit project is required to be validated and verified by external third-parties. However, there is notably an absence of locally-based VVBs, accredited for validating and verifying VCM projects in Kazakhstan and Central Asia. In this regard, during the validation and verification stages, it is required to invite international verifiers.

In contrast to an under-developed VCM market in Kazakhstan, the renewable energy certificates market is developing actively in Kazakhstan (see Section 2.2.2 for details).

[113] Presented on June 27, 2024 during meeting of the working group on the development of a draft roadmap for the implementation of the Strategy for achieving carbon neutrality

### 2.2.2. Market forecasts

#### 2.2.2.1. VCM (KZ, Central Asia)

The forecast for the size of the voluntary carbon market in Central Asia was based on data regarding the projected energy generation structure in Kazakhstan and Kyrgyzstan, Uzbekistan, Tajikistan, and Turkmenistan. The forecast for carbon credit volume was calculated based on information from registered projects in international registries (VCS, Gold Standard). The forecasted installed capacity/energy generation volume from renewables was transformed into carbon credits by applying corresponding coefficients. The carbon credits only from renewable energy sources (solar, wind, bioenergy, hydropower) were considered in this analysis. It is also important to note that this is a high-level analysis based on projected renewable energy generation, while project eligibility including the additionality requirements of VCS and Gold Standard, which would apply on a case-by-case basis, had not been factored into this forecast[114].

According to AIFC calculations, the voluntary carbon market in Kazakhstan is expected to reach approximately 43 million carbon credits cumulatively by 2030. The forecast for projected renewable energy generation until 2030, developed by the Ministry of Energy of the Republic of Kazakhstan, was used as the basis for calculations. It should be noted that greater energy generation volume from renewables could be achieved by 2030, which will also increase the market size of VCM.

[114] For example, Verra and Gold Standard have stopped accepting new grid-connected renewable energy projects since 2019 with the exception of those located in least developed countries. https://www.energymonitor.ai/carbon-markets/do-renewables-need-carbon-markets/
At the same time Grid connected Renewable Energy projects are eligible for Land Locked Developing Country (LLDC)
https://globalgoals.goldstandard.org/standards/202_V1.2_AR_Renewable-Energy-Activity-Requirements.pdf

Table 2.2.1 - VCM market forecast for Kazakhstan[115]

| | Renewables | | |
|---|---|---|---|
| | Energy generation, mln MWh | Carbon credits, mln | Carbon credits cumulative, mln |
| 2023 | | | |
| 2024 | 0,78 | 1 | 1 |
| 2025 | 1,2 | 1,6 | 2,6 |
| 2026 | 6,12 | 8 | 10,6 |
| 2027 | 6,12 | 8 | 18,6 |
| 2028 | 6,12 | 8 | 26,6 |
| 2029 | 6,12 | 8 | 34,6 |
| 2030 | 6,12 | 8 | 42,6 |
| **Total millions** | | | **42,6** |

In Kyrgyzstan, the voluntary carbon market is expected to reach approximately 143 million carbon credits cumulatively by 2030. The forecast for projected renewable energy capacity, developed by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), was used as the basis for calculations.

[115] The Forecast Electricity and Capacity Balance of the Unified Electricity System of Kazakhstan for 2024-2030. Ministry of Energy of the Republic of Kazakhstan. 2024. https://qazaqgreen.com/upload/iblock/ce3/lhgilyr7fkupahbwqa30ujanb16dps4f.pdf

Table 2.2.2 - VCM market forecast for Kyrgyzstan[116]

| | Solar | | | Wind | | | Bioenergy | | | Hypropower | | | Total carbon credits cumulative, millions |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | |
| 2023 | 1 | 2 | 2 | 0,1 | 0,4 | 0,4 | 0 | | | 0,31 | 0,73 | 0,7 | |
| 2024 | 2 | 4 | 6 | 0,2 | 0,8 | 1,2 | 0 | | | 0,6 | 1,42 | 2,2 | |
| 2025 | 3 | 6 | 12 | 0,3 | 1,2 | 2,4 | 0,25 | 3,3 | 3,3 | 0,6 | 1,42 | 3,6 | |
| 2026 | 4 | 8 | 20 | 0,4 | 1,6 | 4,0 | 0,5 | 6,67 | 10,0 | 0,6 | 1,42 | 5,0 | |
| 2027 | 4 | 8 | 28 | 0,5 | 2 | 6,0 | 0,75 | 10 | 20,0 | 0,6 | 1,42 | 6,4 | |
| 2028 | 4 | 8 | 36 | 0,6 | 2,4 | 8,4 | 1,01 | 13,3 | 33,3 | 0,6 | 1,42 | 7,8 | |
| 2029 | 4 | 8 | 44 | 0,6 | 2,4 | 10,8 | 1,25 | 16,67 | 49,9 | 0,6 | 1,42 | 9,3 | |
| 2030 | 4 | 8 | 52 | 0,6 | 2,4 | 13,2 | 1,5 | 20 | 69,9 | 0,6 | 1,42 | 10,7 | |
| **Total cumulative** | | | **52** | | | **13** | | | **70** | | | **11** | **142,54** |

[116] SDG7 Roadmap for Kyrgyz Republic. UN ESCAP. 2022. https://repository.unescap.org/bitstream/handle/20.500.12870/4370/ESCAP-2022-RP-Energy-transition-pathways-2030-agenda-rus.pdf?sequence=9&isAllowed=y (page 38)

In Uzbekistan, the voluntary carbon market is expected to reach approximately 128 million carbon credits cumulatively by 2030. The energy generation structure developed by the Ministry of Energy of the Republic of Uzbekistan was used as the basis for the forecast calculations.

Table 2.2.3 - VCM market forecast for Uzbekistan[117]

| | Solar | | | Wind | | | Total carbon credits cumulative, mln |
|---|---|---|---|---|---|---|---|
| | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | Capacity, GW | Carbon credits, millions | Carbon credits cumulative, millions | |
| 2023 | 1,8 | 3,6 | 3,6 | 1,2 | 4,8 | 4,8 | |
| 2024 | 2,4 | 4,8 | 8,4 | 1,6 | 6,4 | 11,2 | |
| 2025 | 3 | 6 | 14,4 | 2 | 8 | 19,2 | |
| 2026 | 3,4 | 6,8 | 21,2 | 2,2 | 8,8 | 28,0 | |
| 2027 | 3,8 | 7,6 | 28,8 | 2,4 | 9,6 | 37,6 | |
| 2028 | 4,2 | 8,4 | 37,2 | 2,6 | 10,4 | 48,0 | |
| 2029 | 4,6 | 9,2 | 46,4 | 2,8 | 11,2 | 59,2 | |
| 2030 | 5 | 10 | 56,4 | 3 | 12 | 71,2 | |
| **Total cumulative** | | | **56,4** | | | **71,2** | **127,6** |

The development and growth of renewable energy generation in Tajikistan are not as prominent as in other Central Asian countries. The voluntary carbon market is expected to reach approximately 0,86 million carbon credits cumulatively by 2030. The electric power balance forecast was used as the basis for calculating the carbon credits forecast.

[117]Concept of Providing the Republic of Uzbekistan with Electricity for 2020-2030. Ministry of Energy of the Republic of Uzbekistan. https://minenergy.uz/uploads/1a28427c-cf47-415e-da5c-47d2c7564095_media_.pdf (page 12)

Table 2.2.4 - VCM market forecast for Tajikistan[118]

| | Solar | | | Total carbon credits cumulative, mln |
|---|---|---|---|---|
| | Capacity, MW | Carbon credits, thousands | Carbon credits cumulative, thousands | |
| 2023 | 10 | 20 | 20 | |
| 2024 | 60 | 120 | 140 | |
| 2025 | 60 | 120 | 260 | |
| 2026 | 60 | 120 | 380 | |
| 2027 | 60 | 120 | 500 | |
| 2028 | 60 | 120 | 620 | |
| 2029 | 60 | 120 | 740 | |
| 2030 | 60 | 120 | 860 | |
| **Total cumulative** | | | **860** | **0,86** |

In Turkmenistan, similarly, as in Tajikistan, the level of renewable energy deployment is not high. The announced plans for the construction of 100 MW solar and 10 MW solar-wind power plans were taken into consideration. The voluntary carbon market is expected to reach approximately 1,84 million carbon credits cumulatively by 2030.

[118] GIZ. Conducting analysis of countries' energy profiles and inventory of existing national energy systems. 2023. https://unece.org/sites/default/files/2024-02/Final%20Report_Katyshev_15092023%20RUS.pdf (page 125)

Table 2.2.5 - VCM market forecast for Turkmenistan[119]

| | Solar | | | Wind | | | Total carbon credits cumulative, mln |
|---|---|---|---|---|---|---|---|
| | Capacity, MW | Carbon credits, thousands | Carbon credits cumulative | Capacity, MW | Carbon credits, thousands | Carbon credits cumulative, thousands | |
| 2023 | 105 | 210 | 210 | 5 | 20 | 20 | |
| 2024 | 105 | 210 | 420 | 5 | 20 | 40 | |
| 2025 | 105 | 210 | 630 | 5 | 20 | 60 | |
| 2026 | 105 | 210 | 840 | 5 | 20 | 80 | |
| 2027 | 105 | 210 | 1 050 | 5 | 20 | 100 | |
| 2028 | 105 | 210 | 1 260 | 5 | 20 | 120 | |
| 2029 | 105 | 210 | 1 470 | 5 | 20 | 140 | |
| 2030 | 105 | 210 | 1 680 | 5 | 20 | 160 | |
| **Total cumulative** | | | **1 680** | | | **160** | **1,84** |

The summary of the VCM market size forecast in Central Asia is presented in Table 2.2.6 below. In Central Asia, the voluntary carbon market is expected to reach approximately 319 million carbon credits cumulatively by 2030. It should be noted that the VCM forecasts are based on official forecasts of renewable energy generation. In fact, the renewable energy segment may develop more dynamically reaching greater installed capacity and energy generation levels by 2030. This will result in a greater market size of the voluntary carbon market.

Table 2.2.6 – VCM market forecast for Central Asia till 2030,
*in million carbon credits*

| | Solar | Wind | Bioenergy | Hydropower | **Total** |
|---|---|---|---|---|---|
| Kazakhstan | | | | | **42,6** |
| Kyrgyzstan | 52 | 13 | 70 | 11 | **145,81** |
| Uzbekistan | 56 | 71 | | | **127,6** |
| Tajikistan | 0,86 | | | | **0,86** |
| Turkmenistan | 1,68 | 0 | | | **1,84** |
| **Central Asia (total)** | | | | | **319** |

[119] https://www.newscentralasia.net/2023/12/14/yevropeyskiy-soyuz-turkmenistan-dni-ustoychivoy-energetiki-startovali-v-gorode-mary/
https://renen.ru/masdar-postroit-solnechnuyu-elektrostantsiyu-moshhnostyu-100-mvt-v-turkmenistane/

### 2.2.2.2. I-REC

Kazakhstan's I-REC market was established in 2022. The issuing organisation is the ECOJER Association, accredited by I-TRACK.

Companies-consumers of electricity use the certificates to comply with their renewable energy targets.

Attractiveness of I-RECs for companies in Kazakhstan:

- Easy and cheap registration in I-REC Registry;
- Simple verification process (no physical presence required);
- Certificates are issued post factum based on produced electricity;
- The market is developed: there are regular transactions (see Table 2.2.7) and demand from companies in Kazakhstan;
- Long-term potential;

The issuance of I-RECs started in 2022. It can be seen from Table 2.2.7 that the market is growing. In 2024 by December there are 54 issuances. Since 2022, a total of around 2.85 million I-RECs have been issued in Kazakhstan (by December 2024).

Table 2.2.7. Data on I-REC issues and redemptions in Kazakhstan (as of 12-12-2024)[120]

| Year | Number of new registrants | Number of issuances | Number of certificates issued | Number of redemptions | Number of certificates redeemed |
|---|---|---|---|---|---|
| 2022 | 5 | 5 | 92 251 | 20 | 11 676 |
| 2023 | 8 | 30 | 203 522 | 69 | 123 240 |
| 2024 | 9 | 54 | 2 646 821 | 160 | 2 538 226 |
| **Total** | **22** | **89** | **2 850 343** | **249** | **2 673 142** |

*Market potential*

There are a number of **renewable energy projects** (excluding large hydro) successfully generating I-REC certificates in Kazakhstan with a total registered capacity of **361,6 MW.**

[120] Internal sources

*(For information, in total, solar, wind, and hydropower projects (including large and small hydro) with a total capacity of 1 036,6 MW are generating I-RECs).*

Kazakhstan's **total installed capacity of renewable energy** sources accounts for **2 903,7 MW**[121] (as of the end of the first half of 2024). Based on this data, 12.45% of Kazakhstan's renewable energy capacity is registered within I-REC. Hence, there is a potential to expand the coverage to the remaining existing renewable energy capacity.

Based on the current development trend, steady growth of the I-REC market is expected. There is a potential to cover the existing installed capacity and new planned capacity of renewable energy sources in the future. In general, there is great interest among market participants and the potential of the I-REC market development in Kazakhstan.

[121] QazaqGreen,2024. https://qazaqgreen.com/map/

## AIFC Carbon Platform

Interview with Assel Nurakhmetova, Director of Carbon Platform Department, AIFC Authority

**Assel, what is your vision of the potential AIFC role in the development of carbon markets in Kazakhstan and how did you come to the decision to develop this pillar?**

To begin with, I would like to explain why we are working in this area.

As you know, AIFC leads the development of the market-based mechanisms and products in Kazakhstan and the wider region. Our infrastructure and capabilities, including high-tech Astana International Exchange (AIX), an independent jurisdiction and financial regulation, attractive for investors create favorable conditions for the development of new market pillars, including such a promising one as carbon markets.

We believe that the AIFC initiative to establish a Carbon Platform on AIX can create a positive impetus for the development of carbon markets in Kazakhstan and Central Asia. The launch and development of environmental instruments trading on the AIFC Carbon Platform can contribute to the formation of a market price for CO2, which is a driver for decarbonisation projects. And this, in turn, will be the AIFC's contribution to achieving carbon neutrality in our country.

**Please share the latest developments and news of AIFC in the development of carbon markets and environmental instruments trading.**

In fact, we started working in 2023, when the President mentioned in his speech the need to improve the Emissions Trading System in Kazakhstan.

In this regard, we decided to create an environment for trading not only carbon units, but also a wider range of instruments. To implement this, in 2023, the Astana Financial Services Authority (AFSA) approved regulation on environmental instruments, which defines them as investments of the following nature:

firstly, carbon units, including emission allowances or their equivalent;
secondly, carbon credits of the voluntary market;

thirdly, renewable energy or environmental attributes certificates.

Thus, the regulatory framework of the AIFC creates opportunities for trading all these environmental instruments on platforms, registered in the AIFC jurisdiction.

**Last September, news came out that renewable energy certificates are now available for trading on the AIX exchange. Could you please elaborate more on this?** [122]

Yes, you are right, within the framework of the Astana Finance Days 2024 conference we announced the launch of the first environmental instrument – I-REC. I-REC represents 99% of the total voluntary market of renewable energy certificates in the world and is recognised in more than 50 countries.

AIX Exchange has made corresponding changes to its Rules, and now I-REC certificates will be traded alongside conventional capital market instruments.

Also, within the framework of the conference, we signed a memorandum of understanding with the ECOJER Association, which is an accredited issuing organization of I-REC in Kazakhstan. We hope that our agreements will contribute to the growth of the market of renewable energy certificates on the AIFC Carbon Platform.

**Assel, what are the further prospects for the development of the AIFC Carbon Platform?**

In the subsequent phase, work is planned on developing carbon units trading within the voluntary and compliance markets. At the same time, we understand that the implementation of the latter initiative requires regulatory changes.

I believe that in the long term, the platform for trading environmental instruments has the potential to be expanded and evolved into a regional hub serving Central Asia and the Caucasus, given the interest we have seen recently from companies in these countries.

[122] AIX now offers the market an opportunity to trade renewable energy certificates | AIX

## Contact information

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