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Case Study: Emissions Trading in Kazakhstan

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Kazakhstan is an emerging economy and the largest greenhouse gas (GHG) emitter in Central Asia, with one of the highest energy intensities (i.e., the amount of CO_2 emissions per unit of GDP) in the world.[2] The country's national growth strategies call for a substantial reduction in energy intensity (50 percent reduction below 2008 levels by 2020) together with a substantial increase in the share of alternative energy sources (to 50 percent by 2050), supported by feed-in tariffs for solar, hydropower, wind, and biogas energy. Kazakhstan has also committed to reducing its GHG emissions by 15 percent relative to 1990 levels by 2030.

In 2013, Kazakhstan became the first country in Asia to implement a nationwide cap-and-trade system, or emissions trading scheme (KazETS). The ETS was implemented in phases, intended to accommodate expanding sectoral coverage while constricting the allowances to encourage emission reductions. In the first year of the program, considered to be a pilot phase, allowances were allocated freely based on baseline emissions relative to 2010. The second phase covered 2014 and 2015; this phase used 2011-2012 as the baseline and the cap was estimated to reflect a 1.5 percent reduction in allowances. As described further below, the KazETS program was suspended in 2016 to allow for adjustment to the administration and allocation procedures before Phase 3 resumed in 2018.

Jurisdictional Context/Background

- Per-capita GDP (USD): $9,731 (2019)
- Population: 18.5 million (2019)
- Major GHG emission sources: Energy (87 percent)
- Human development index: 0.825 out of 1.0 (2019)
- Government capacity (out of 100, 2014)[1]:
    - Voice & accountability: 14.29
    - Political stability and absence of violence/ terrorism: 47.62
    - Government effectiveness: 53.37
    - Regulatory quality: 45.19
    - Rule of law: 32.21
    - Control of corruption: 22.60

System Administration and Oversight: At the program's outset, Kazakhstan's Department of Climate Change (DCC) and a Joint Stock Company Zhasyl Damu (under the Ministry of Energy) were the major authorized state body institutions that supervised the ETS. The DCC dealt with the logistical matters such as permits management, organization of emissions registry and accreditation of independent verifiers while Zhasyl Damu maintained the allowance registry. In 2019 the responsibility for ETS management was shifted from the DCC to the Climate Policy and Green Technologies department within the newly formed Ministry of Ecology, Geology and Natural Resources.[3]

Sectoral Coverage and Thresholds: KazETS covers CO_2 emissions from the following sectors: a) energy, which encompasses power plants and centralized heating; b) industry, which encompasses production of steel, cement, aluminum, ammonia, lime and dolomite, and non-ferrous metals; and c) oil and gas production and pipeline transportation.[4] See Figure 1. All operators whose annual self-reported emissions exceeded 20,000 tons CO_2e are required to participate in the system. The first two phases covered 166 to 178 companies, while the third covered 225 installations (with industrial coverage expanding to production of building materials).

Allowance Allocation: For the first three years of its operation, KazETS freely allocated allowances to covered facilities based on self-reported historical emissions. In the first two years, there was no penalty for operators whose emissions exceeded their allowances; in the third year, a penalty equivalent to approximately

[1] World Bank (2021)

[2] See the Sankey diagram in the appendix.

[3] IETA (2020)

[4] Based on the share of covered emissions that are under the oil and gas sector and the downstream application (at the installation level), it appears that only emissions from operations are covered under the ETS, rather than the carbon content of mined/extracted fossil fuels that are subsequently exported.

USD $30/t CO_2 was introduced. The system enabled additional allowances to be allocated (freely) to new entrants into priority sectors of the economy, and to existing facilities that introduced a new source or expanded capacity resulting in increased emissions.[5] These additional allocations, which amounted to almost 33 Mt CO_2 over the first three years (Figure 2), effectively increased the emissions cap. Facilities are allowed to bank and trade within each phase (e.g., trading off emissions between years within the 3-year Phase 3).

Program Suspension and Adjustment: KazETS was temporarily suspended in 2016 to accommodate adjustments to the program including amendments to the national legislation, development of benchmarks for GHG emissions and quota, and development of an electronic reporting system for entities to submit annual reports on GHG emissions. During the program suspension, ongoing reporting was required.

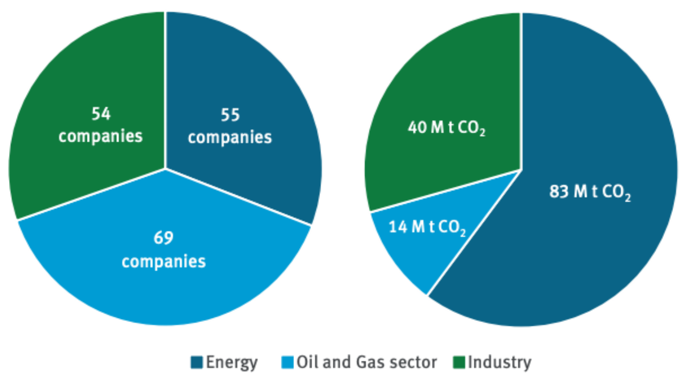

Figure 1: Number of Covered Companies (left) and Share of Emissions (right) in 2013[5]

Phase 3 was relaunched in 2018 and ran through 2020. During this time, the Ministry of Energy utilised a hybrid system of allocations, allowing installations to choose between either benchmarking or grandfathering as the basis for receiving their free allowances.[6] Phase 4, beginning in 2021, is expected to shift to a full benchmarking approach.

Trading Outcomes: During 2014, there were a total of 32 transactions completed with an average price of USD $1.67 per tonne CO_2. In 2015, this increased to 40 transactions with an average price of USD $2.06 per tonne CO_2. After the relaunch of the ETS program in 2018, the first carbon market activity started in June 2019 with buyers seeking a total volume of 200,000 tonnes for an average offered price $0.12 tonne and then in August 2019 for another 200,000 to 2 million tonnes at an average price of $0.12 to $0.24. However, no sales were concluded due to a lack of sellers. The first exchange of allowances happened in December 2019 with a total volume of all transactions of about 1.2 million tonnes at an average rated price of $1 per tonne.[7]

Emissions Impact: As shown in Figure 2, actual CO_2 emissions were lower than the allowances allocated including the "additional" allowances granted for expansion of existing facilities for the first three years of the program. This indicates that allowances were overallocated and that no emission reductions were achieved.[8]

Challenges: Challenges faced by the ETS program were related to inconsistencies in the program and the methods utilized. A significant issue was a legislative gap that enabled the allocation of "additional" allowances that were freely given to new and expanding operations beyond the allowance "reserve" intended for that purpose. Additionally, the procedures for trading allowances between companies were unclear, so many companies simply shifted allowances between units within their corporations rather than participating in allowance markets.

There was substantial pushback from businesses who were critical of the allocation approach and wanted a sector-specific approach that considered factors such as the technical and economic emissions reduction potential and competitiveness of each sector. This led to the Kazakh government making attempts to introduce allocation benchmarks to replace the initial grandfathering approach.

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[5] Baigunakova et al. (2016)

[6] ICAP (2021) and UNFCCC (2019); grandfathering refers to allocation based on historical emissions, whereas benchmarking establishes allowances based on industry performance per unit of production.

[7] De Clara et al. (2020)

[8] Baigunakova et al. (2016) and ICAP (2021)

Finally, the administration of the KazETS was not effective in achieving emissions reductions or fostering cost-effective mitigation through allowance trading in the initial phases due to a variety of factors (including those identified above). Significantly, the "cap" (amount of allowances scheduled to be allocated) was based on self-reported emissions from the regulated companies, which led to errors and uncertainty in coverage and allocations. Additionally, the baseline for allocating emissions pursuant to historical emissions was "floating" which meant that the cap was based on a different reference case in each phase, reducing the ability to track progress consistently.

	2013	2014	2015
Number of companies as listed in NAP	178.0	166.0	166.0
Cap (million t CO_2) as listed in NAP	147.2	155.3	153.2
Number of companies with actual allocation	149.0	164.0	164.0
Allocated allowances by fact (million t CO_2)	137.9	154.1	144.3
Additional allocation (million t CO_2)	18.7	7.5	6.5
Reported verified data (million t CO_2)	141.5	146.5	n/a

Figure 2: KazETS Balance During First Two Phases[9]

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[9] Baigunakova et al. (2016); NAP = National Allocation Plan

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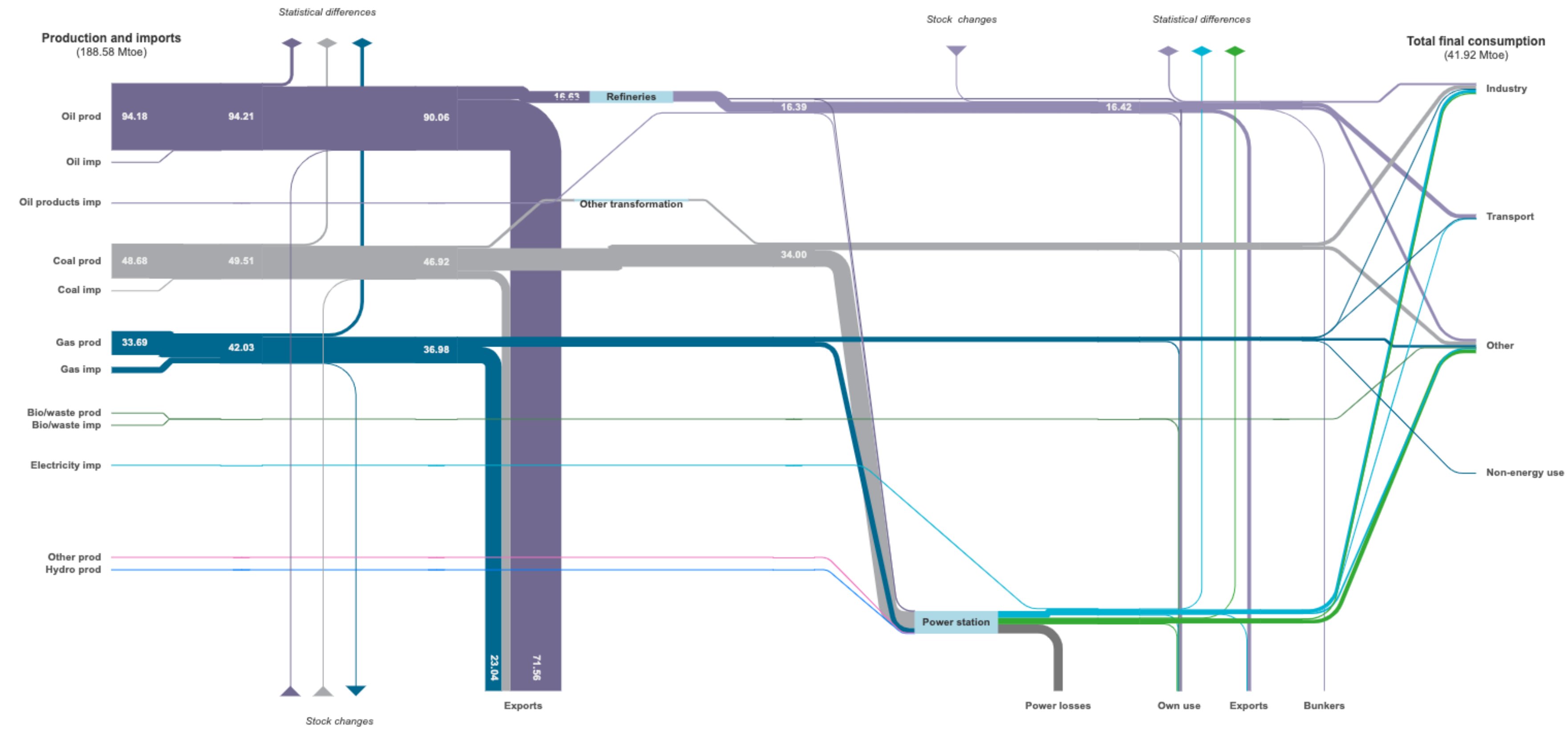

Figure 3: Kazakhstan Energy Flow Diagram, Balance (2018)[10]

[10] IEA (2021)