Progress and Challenges to Implement Emission Trading Mechanisms in Kazakhstan and China

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Policy Workshop

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INTRODUCTION

Carbon Pricing Mechanisms

• **Carbon Tax**: Direct tax on carbon emissions, incentivizing reduction at source.
• **Cap-and-Trade (ETS)**: Sets a cap on total emissions, allows trading of emission allowances.

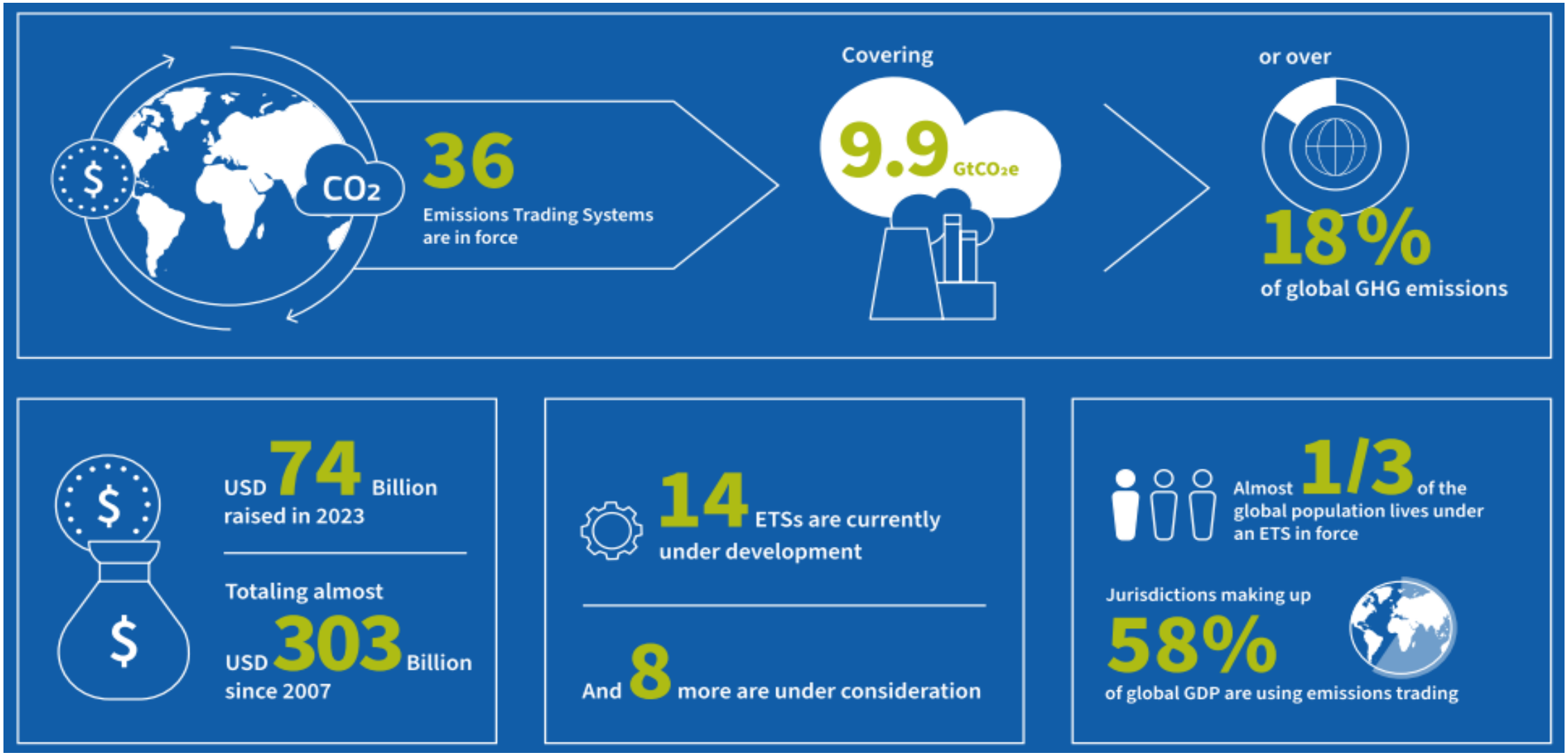
Emission Trading Mechanism (ETM)

• ETM, or cap-and-trade systems, are market-based strategies to limit GHG emissions (Lin & Jia, 2017).
• These mechanisms set a cap on total emissions distribute emission allowances means giving right to emit a certain amount of emissions and allow entities to trade emission allowances to meet compliance (X. Zhang et al., 2020).

Economic Impact, and Environmental Benefits

• Generates revenue, reinvested in green transition projects, supporting economic transformation (W. Cai & Ye, 2022).
• Creates socio-economic impacts towards building green economies.
• ETM drives innovation in high-emitting sectors like power generation, manufacturing, and transportation.
• Encourages the development and adoption of low-carbon technologies.

Emission Trading Overall Progress (in 2023)



Policy Problems

- Most CAREC countries have no carbon pricing framework in operation.
- Kazakhstan's ETS exists but suffers from minimal pricing signals and zero revenue generation.
- The EU's Carbon Border Adjustment Mechanism (CBAM) puts tariffs on carbon-intensive imports
- So Without ETS reform, CAREC faces:

❖ Export disruption
❖ Carbon leakage
❖ Loss of climate finance opportunities

Why ETMs Matter for CAREC

- Provide market-based incentives to reduce emissions at lowest marginal cost
- Promote innovation in energy, cement, and manufacturing sectors
- Generate domestic revenue through auctioning of allowances
- Enable access to international green financing
- Protect trade by aligning with global carbon standards (e.g., CBAM)

Status of Emission Trading in the CAREC

Source: International Carbon Action Partnership (ICAP)

- Only China and Kazakhstan have operational ETS
- Pakistan and Uzbekistan: ETS under consideration
- Rest of CAREC: No formal market mechanism in place
- Highlights the need for regional alignment and policy convergence

Analysis of Emission Trading Mechanisms (ETMs)

Main Points	Sub-Points
Success Factors	Total Emissions Covered
	Allowances allocation efficiency
	Compliance Rate
	Total Revenue Generated
Financial Architecture Optimization	Pricing Mechanisms
	Funding and Subsidies
	Access to Green Finance
	Investment in Renewable and Low-Carbon Technologies
Stakeholder Engagement	Awareness and Capacity Building
	Participation Rates
	Feedback Mechanisms
Regulatory Support	Legal Framework
	Alignment with National Policies
	International Cooperation
Technological Infrastructure	MRV Systems
	Trading Platforms
	Innovation Support

ETS Design and Coverage

Category	Kazakhstan	China
ETS Launch Year	2013	2021 (national); pilots since 2011
ETS Coverage	Energy and industrial sectors (partial)	National power sector (others in pilot stage)
Legal Basis	Weak ETS law; no carbon-specific statute	National climate law and regulatory backing
Allocation Method	100% free allocation	Free allocation; auctioning not yet applied
Market Type	Limited liquidity; underdeveloped exchange	Single national registry and trading platform
Total Emissions Covered (% of total CO2e)	5000 (40%)	161.2 (47%)
Allocation Efficiency	Moderate Efficiency (Free Allocation Auctioning to be introduced)	Limited-Efficiency (Free Allocation)

Carbon Price & Compliance

Category	Kazakhstan	China
Carbon Price	$1.04/ton (2022)	$9.65/ton (2022)
Compliance Rate	95%	99.5%
Penalty Mechanism	Weak; lacks enforcement structure	Strong compliance via legal and administrative channels
Offset Use	No structured offset framework	Developing rules for CCER (Chinese Certified Emission Reductions)

Revenue Model & Financial Architecture

Category	Kazakhstan	China
Revenue Generation	None (no auctioning mechanism)	None nationally; pilots explored auctioning
Carbon Price Floor	Not implemented	Not yet in place
Green Investment	<$0.4B in annual climate finance	$546 B in 2022 climate investment
Financial Instruments	No green bonds, funds, or blended finance tools	Active in green bonds, concessional lending, pilot carbon funds

Legal & Institutional Readiness

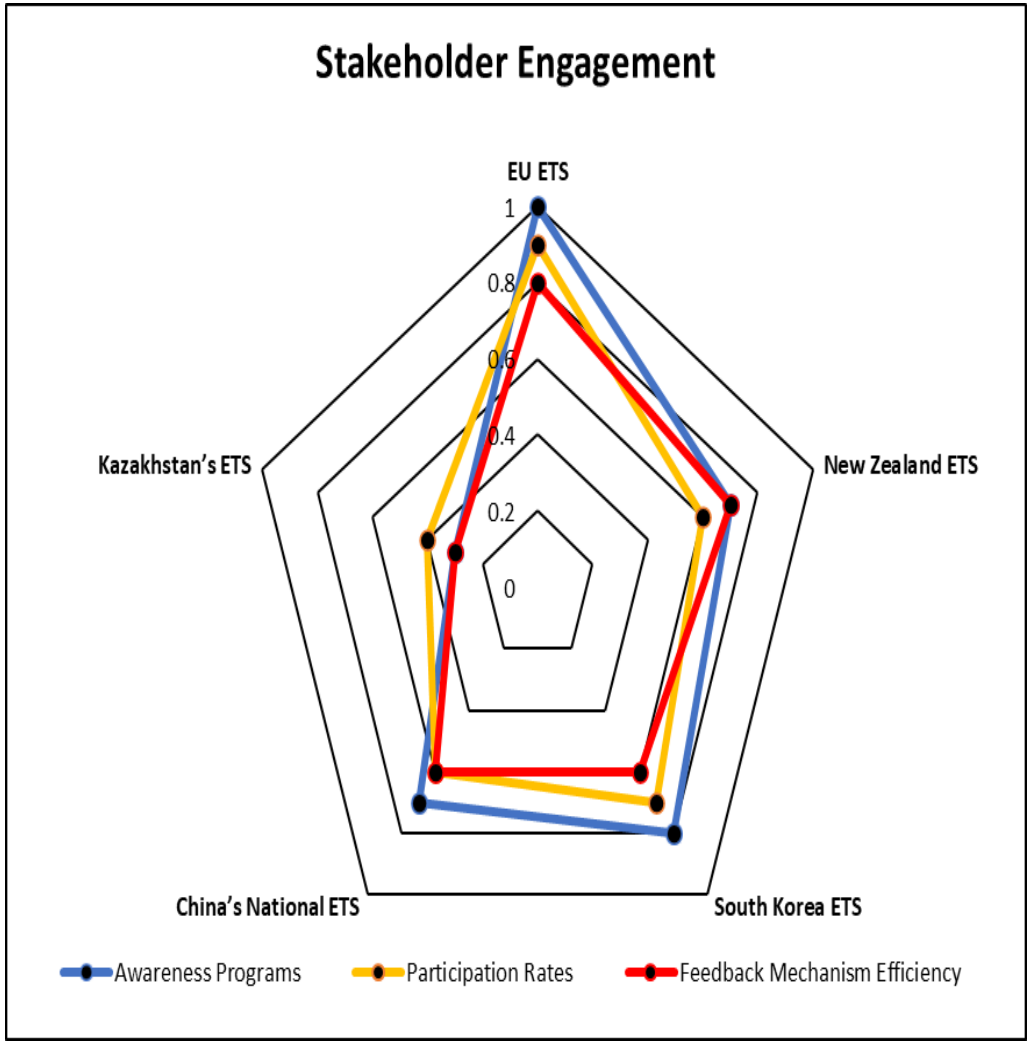
Category	Kazakhstan	China
Public Awareness	Low — limited outreach or education programs	Medium — pilot regions with awareness efforts
Industry Participation	Passive — few incentives to engage	Strong in power sector due to regulatory enforcement
Feedback Mechanisms	Absent or ad-hoc	Sectoral advisory committees in pilots
Capacity Building	Minimal — limited training or institutional support	Ongoing programs via provincial environmental agencies

Technology & MRV Infrastructure

Category	Kazakhstan	China
MRV Systems	Manual reporting; weak verification	Centralized and partially digitized MRV
Digital Registry	None	National carbon registry operational
Trading Platform	Rudimentary; not fully functional	Online trading platform (CEC) for power sector
Data Transparency	Low	Medium — MRV data partially disclosed
Automation & AI Use	Absent	Early-stage integration in some provinces

Stakeholder Engagement

Category	Kazakhstan	China
Dedicated ETS Law	Absent	Embedded in broader climate policy framework
CBAM Alignment	Very low — no legal preparation	Medium — indirect alignment through MRV and pricing systems
Institutional Score (IPRI)	~4.5	~6.5 (estimated; sub-national variation exists)
Regulatory Enforcement	Weak — fragmented authority	Moderate to strong — centralized command



Effective feedback mechanisms ensure that the emission trading mechanism remains transparent, relevant and adaptive to environmental conditions and market changes

CBAM Exposure & Trade Risk

Category	Kazakhstan	China
CBAM Exposure Sectors	Aluminum, cement, steel	Steel, aluminum, fertilizers
Carbon Intensity (Exports)	High	Medium to high
Legal Alignment with EU ETS	Absent	Partial — through MRV and sectoral data
Estimated Export Risk	High: ~14% of exports in exposed sectors to EU	Moderate: diversified trade routes
Risk Mitigation Preparedness	Very low	Ongoing — focused on EU-compliant MRV and disclosures

Scenario Analysis: $30/ton Carbon Price – Kazakhstan vs. China

Category	Kazakhstan	China
Current Carbon Price	~$1.04/ton CO_2 (2022)	~$9.65/ton CO_2 (2022)
Baseline Trajectory	High emissions intensity; minimal reduction expected	Gradual reduction in emissions intensity
Expected Emissions Reduction	10% (energy & industry sectors)	Up to 15–20% in covered sectors (based on pilot simulations)
GDP Impact (Short-Term)	Moderate negative impact without revenue recycling	Slight short-term impact; mitigated by green investment
Revenue Recycling Mechanism	Absent no auctioning or reinvestment framework	Planned reinvestment in energy transition and innovation
Readiness for $30/ton Price	Low — legal, institutional and financial systems underdeveloped	Medium — MRV and digital platforms partially in place
Policy Viability	Conditional on structural reforms and green finance readiness	More viable given institutional capacity and pilot learnings

Conclusion

Key Challenges identified

- **Cap Stringency**: Difficulties in setting and maintaining stringent emission caps due to varying economic conditions and emission profiles in the CAREC region.
- **Market Liquidity**: Insufficient market liquidity hampers effective trading and price discovery within the emission trading systems.
- **Allowances Allocation**: Challenges in fair and efficient allocation of emission allowances, leading to market distortions and inefficiencies.
- **Regulatory and Policy Gaps**: Inconsistencies and gaps in regulations and policies create uncertainty and hinder the smooth operation of ETMs.
- **Market Infrastructure**: Inadequate infrastructure, such as trading platforms and data management systems, limits the effectiveness of ETMs.
- **Stakeholder Awareness and Capacity**: Limited awareness and capacity among key stakeholders reduce engagement and compliance with ETM requirements.
- **Monitoring, Reporting, and Verification (MRV)**: The absence of robust MRV systems undermines transparency, trust, and accountability in the emission trading process.

Short-Term Policy Actions (2025–2026)

- Introduce a carbon price floor (min. $10/ton)
- Launch auctioning mechanism for selected sectors
- Digitize MRV systems using ADB/AIIB technical support
- Expand ETS coverage to cement, mining, steel
- Draft national ETS law harmonized with CBAM

Medium-Term Strategic Priorities (2026–2030)

- Create a Green Investment Fund with ETS revenues
- Issue sovereign green bonds to finance low-carbon infrastructure
- Join voluntary carbon markets (for offset opportunities)
- Harmonize sectoral carbon benchmarks with EU ETS
- Engage in CAREC-wide ETS interoperability dialogue

Regional Integration Opportunities

- Establish CAREC carbon accounting and MRV platform
- Create regional ETS task force to coordinate policy design
- Pursue joint carbon finance mechanisms (e.g., pooled bond issuance)
- Align NDC targets and sectoral carbon benchmarks
- Build capacity through regional centers of excellence

Implementation Timeline

Year	Action
2025	Legal framework reform; MRV upgrade pilot
2026	Sectoral expansion + carbon pricing floor
2027	First auctions; revenue recycling begins
2028	CBAM-aligned benchmarks enforced
2030	Linkages with regional ETS initiated

Thank You

Contact & Q&A

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