EU ETS Framework for Establishing a Domestic Emissions Trading System in Kazakhstan

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Abstract

This paper focuses on implications from the European Union's Emissions Trading Scheme (EU ETS) experience for establishing a similar system in Kazakhstan. It is expected that the domestic scheme will become integrated with state measures to reach the present voluntary and future commitments within the framework of the Kyoto Protocol, which was ratified in Kazakhstan on March 25, 2009. The paper explains the background of the EU ETS, focusing on its advantages as they affect other governmental measures taken to reduce greenhouse gases emissions, and introduces Kazakhstan's framework for an emissions trading scheme in general as well as the current environmental initiatives within the Kyoto Protocol. It also examines the current structure of the EU ETS as a cap-and-trade system, focusing on the working mechanism of the scheme. Points to consider in adapting this system are highlighted and then the lessons that can be learned from the first (2005–2007) and the second (2008–2012) phases of the EU ETS are discussed. The paper concludes that the European Union's Emissions Trading Scheme indeed has valuable implications and may serve as a good experiment to follow. Questions not considered in the current draft of the domestic emissions trading scheme that may need to be taken into account are also addressed. Given all the benefits brought by the emissions trading scheme, it can be accepted as a good additional instrument in Kazakhstan that leads to cost-effective carbon saving technologies that reduce emissions.

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In the late 1980s and early 1990s, acid rains caused by the nitrogen oxides and sulfur dioxide emissions created a real concern for the United States. It pushed the states to seek effective ways to reduce greenhouse gas (GHG) emissions. The program of choice was the cap-and-trade system appended to the Clean Air Act of 1990, for the reduction of two pollutants causing the creation of acid rain (Quinn 2008). McLean (1997) also agrees that the market-based emissions trading approach was born in the United States within the sulfur dioxide allowance trading. Domestic carbon trading launched in the United States and followed by real emissions-reducing results could not leave the European Union indifferent to that system. Moreover, the Emissions Trading Scheme (ETS) led to incentives for the global community to adopt similar systems worldwide that would target GHG emissions reductions.

On March 25, 2009, the Kazakhstan government ratified the Kyoto Protocol, 10 years after signing the Kyoto Protocol in 1999 (*National Inventory Report* 2010). The Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC) was adopted in 1997 in Kyoto, Japan, as a global agreement to reduce GHG emissions into the atmosphere. Countries that ratified the Protocol committed themselves to reduce their GHG emissions by 5.2% compared to the level in the base year 1990. The reductions for individual countries could vary from the average of 5.2%, based on their specific circumstances in producing fossil-fuel combustion. Countries that have quantitative commitments are allocated certain allowances for emitting GHGs in accordance with their emissions limit. Thus far, Kazakhstan has no reduction obligations under the Kyoto Protocol Annex-B list. However, it has declared voluntary commitments, which are reducing GHG emissions by up to 15% by 2020 and by up to 25% by 2050, relative to the level in 1992. With its recent ratification of the Kyoto Protocol, Kazakhstan now has a real option of trading GHG emissions reduction credits among the countries listed in Annex I of the Kyoto Protocol.

Kazakhstan is on its way to establishing a domestic carbon trading scheme by learning from the experience of foreign countries in this field. In 2009, the Ministry of Environmental Protection was appointed as the authority to coordinate implementation of the Kyoto Protocol (Resolution N1205 August 6, 2009). In the same year, the government appointed the Kazakh Research Institute for Ecology and Climate as the working body that provides implementation of the country's Kyoto Protocol obligations such as submission of national GHG inventories, preparation of national communications and so on (Order N258-п December 4, 2009). Part of the Kazakh Research Institute for Ecology and Climate mandate is to examine the future feasibility and implications of a domestic

emissions trading system in meeting Kazakhstan's potential future commitments under the protocol. A legally binding domestic emissions trading scheme (DETS) will be based on the cap-and-trade system recognized worldwide. In this way, the government intends to raise the interest of operators to move gradually to energy efficiency and low-carbon policy by their own initiatives.

Currently, a working group comprising representatives from government, industry, scientific fields, and NGOs is intensively discussing DETS. In order to avoid shortcomings faced by the EU and to be aware of lessons the EU learned during its first (2005–2007) and second phases (2008–2012) of the Emissions Trading Scheme, a series of negotiations are ongoing with some EU countries on capacity building, sharing experiences and attitudes, and installing appropriate software needed for market operation.

So, a major aim of the study is to investigate the EU's approach in adapting ETS. EU ETS may represent a "grand policy experiment" by being the first group to establish an international emissions trading system in the world (Kruger and Pizer 2004, 1). As the world's largest emissions trading market, the EU ETS may serve as a practical and valuable case study for the rest of the world. The interest in the EU ETS is obvious and may, to a great extent, be applicable for Kazakhstan. In addition, this paper may also contribute to the actual environmental paper database on Kazakhstan and be used as a starting point for future research.

What are the advantages of the EU ETS? What is the current greenhouse gas emissions' situation in Kazakhstan? What does the draft law on domestic emissions trading scheme include? How can Kazakhstan learn from the EU ETS before adapting it in the country? What are possible threats to Kazakhstan of establishing a domestic carbon-trading scheme? These are the main questions addressed in this article, which provides a broad overview of the EU ETS and its shortcomings, as well as Kazakhstan's legal framework for domestic emissions trading development and implementation.

The article is organized as follows. The first section sets the context for the discussion by providing an overview of Kazakhstan's current environmental initiatives within the Kyoto Protocol framework. The second section outlines advantages of the EU ETS, and the third explains design and operations of the EU ETS. The fourth section presents governmental plans for the domestic emissions trading system of Kazakhstan. The fifth section contains an overview of issues to be considered for the further development of the domestic emissions trading system, and is followed by lessons learned from the EU ETS in the sixth section, and then the conclusion in the final section.

Kazakhstan's Environmental Initiatives within the Kyoto Protocol Framework

Since ratifying the Kyoto Protocol, Kazakhstan has undertaken multiple attempts to submit quantitative commitments to enter the Annex B list of the protocol, where the commitment of each state is indicated. One year is left until the end of the first commitment period of the protocol, but it has not happened for Kazakhstan so far, due to the absence of quantitative commitments. In the recent 16th Conference of the Parties (COP16) held in Cancun, Mexico, Kazakhstan's initiative to become an internationally committed state was postponed once again (see "Summary of the Cancun Climate Change Conference" 2010). So for now it amplifies the importance of the voluntary long-term commitments Kazakhstan had already declared in the seventh session of the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol held in Bonn in 2009. During that session Kazakhstan voluntarily committed itself to reduce its GHG emissions by up to 15% by 2020 and by up to 25% by 2050 relative to the 1992 level (for more information on the seventh session of the Ad Hoc working group see UNFCCC 2009).

It is important to mention Kazakhstan's unique status under the Kyoto Protocol as an Annex I country (the list of developed and industrialized countries) in accordance with the decision finally made at the Seventh Conference of the Parties in Marrakech (UNFCCC 2001). The status was legally acquired after ratification of the protocol on 26 March 2009.

One of the major steps made in accordance with the Kyoto Protocol obligations was submission of the first national greenhouse gases inventory in 2010 to the UNFCCC, according to Article 7 of the protocol. Over the past years, important amendments to Kazakhstan legislation were accepted as a set of measures for climate change mitigation:

1. The first Environmental Code of the country, N212-III, was issued as of January 9, 2007; it contains a special set of nine articles on regulation of GHG emissions.

2. The program "Zhasyl Damu" ("Green Development") for 2010–2014 N924, as of September 10, 2010, specified implementation of GHG reduction policies.

3. The Department of the Kyoto Protocol, under the jurisdiction of the Ministry of Environmental Protection, was established in accordance with the government's resolution N1205 dated August 6, 2009.

In addition to these, there are a range of measures aimed at increasing GHG awareness, programs to increase the public interest in low carbon and renewable energy sources, and training programs on adaptation to climate changes.

For the year of 2009, Kazakhstan spent 16.5 billion tenge (about USD 111.5 million) on environmental purposes (Ministry 2010). Refer to Figure 1 for the total emissions of GHGs in Kazakhstan for a period from 1990 to 2008, which is the most recent available data source.

Figure 1. Total Emissions of GHGs in Kazakhstan (million tons of CO_2-eqv.)

	GHG Emissions					
	1990	1992	2008	Change 1990-2008	Reduction target (-15% by 2020 compared to 1992)	Reduction target (-25% by 2050 compared to 1992)
Kazakhstan	338. 24	321. 68	245.86	-92.38	273.43	241.26

Source: Author's compilation and calculation of data taken from the National Inventory Report of Kazakhstan (2010).

Kazakhstan accounted for some 338.24 million tons of GHG emissions in 1990; by 2008, emissions decreased sharply by almost 92.38 million tons. The decrease was most likely due to the closing of several factories in the country.

However, Kazakhstan is now actively investigating other options for reducing emissions to comply with its present voluntary commitments and future commitments under the Kyoto Protocol. Establishment of a domestic emissions trading scheme deserves serious attention from the government. Bearing in mind that Kazakhstan possesses 3.4% of the world's oil reserves, it can be expected to establish an effective market-based mechanism.

Advantages of an Emissions Trading System

Why ETS after all? Grayling, Lawrence, and Gibbs (2005) agree that EU ETS is the single and most valuable tool among climate change mitigation mechanisms. As a key tool among Kyoto mechanisms, it reduces volumes of emissions, thus adding real importance to the efforts of the international community in mitigating the effects of climate change (Hood 2010).

When compared to the first alternative mechanism of a carbon tax, the main advantage of an emissions trading system is in certain effects for the reduction of GHGs, which the

taxation system cannot provide. The advantage of taxes lies with more certainty over the cost of pollution by fixing a price per unit of pollution; however, the risk of adjustments to the tax rate remains (Weishaar 2007).

Environment Business Ltd. conducted a study outlining the ETS advantage over carbon tax among 3,000 UK firms with over 500 employees. It came up with the result that reducing emissions by ETS is several times less costly than imposing or increasing a carbon- or emissions-related tax. The model covers a four-year-period from 2002 to 2006, and offers firms a choice to apply one of three ways to meet the government GHG reduction targets. As a result, reaching targets with trading turned out to be less costly than increasing the climate change levy. For instance, firms that reduced emissions by trading faced 133 millions of pounds while the climate change levy made firms pay 11,000 millions of pounds according to the model (see Environment Business 2001 for more information on the research model). In accordance with Pocklington (2002), EU energy taxation is mainly fiscally oriented and is not purely intended to reduce GHG emissions. The idea behind carbon taxation may be to increase state budgets.

In addition, ETS enables equalization of the opportunity costs of pollution control in a country. Even though different firms have different levels of pollution, they all face the same price for the cost of pollution per ton if they choose to purchase emission permits. So ETS encourages innovations to decrease pollution, whereas a rigid standard only encourages a firm to meet the standard, not to go any further. If a firm has the technological ability to efficiently reduce its pollution levels below standard, it can trade by means of EU ETS and make a profit. By being so cost-effective, energy efficiency measures also save money for end users. In terms of reducing the cost of emissions per ton of CO_2, an energy efficiency strategy may even create negative abatement costs, which can be very attractive and profitable to implement (Enkvist, Nauclér, and Rosander 2007). Among a variety of alternatives, energy efficiency shows the highest potential for reducing GHG emissions (Onysko and Mariani 2009). Consequently, several studies are united in the viewpoint that ETS does serve as a GHG reducing method. As Lovins (2005, 74) said "saving fossil fuel is a lot cheaper than buying it."

There may be other viable opportunities adopted by the ETS, such as certifying verifiers—those who verify whether the monitoring plan submitted to accredited authority for participation in the ETS is subject to any mistakes. Kelly (2006) indicates that with huge investments flowing into research in the field of energy efficiency, additional scientific opportunities accompany the launching of the EU ETS. Gagelmann and Hansjürgens (2002) mention that the trading system creates incentives for technological innovation, and, in addition, it addresses competition between the sectors. It is a way to make the country more "green" and to become more attractive for investments in-flow.

Rose and Stevens (1993) examined the efficiency and equity implications of marketable permits for carbon dioxide. Empirical research was based on the non-linear programming model that evaluates costs and benefits before and after permit (allowance) trading. The analysis covered the permit allocations of eight regions (the United States, Western Europe, the Commonwealth of Independent States, Canada, Brazil, Central Africa, Indonesia, and China). The study concluded that the net benefits of marketable permits are positive and the trading order of US$20 billion for eight countries can end up involving transfers of tens of billions of dollars toward developing and transitional economies. Therefore, trading leads to a much more efficient outcome. An obvious conclusion drawn from that research: the issuance of marketable CO_2 allowances is indeed beneficial both financially and in terms of assistance to developing communities.

The trading system also introduces many new activities that include occupations ranging from traders and brokers who specialize in intermediary market activity to consultants who offer services regarding the trading principles. Additional opportunities include providing new legal services for market participants and creating software for market operations. Taken as a whole, these services may provide employment for thousands of people.

Establishing a domestic ETS may also improve the international environmental image of the country by showing a commitment to global challenges and the provision of the global public good, by increasing the future credibility of the country, and by improving international relations.

The Kyoto Protocol proposes a total of three flexible mechanisms that are designed to assist countries in meeting their Kyoto targets: Emissions Trading (ET), the Clean Development Mechanism (CDM), and Joint Implementation (JI). Since April 2004, the EU Parliament made a remarkable step toward linking the EU ETS with these flexible mechanisms of the Kyoto Protocol (Butzengeiger and Michaelowa 2004), when the Directive 2004/101/EC also known as “the Linking Directive” was accepted (Kelly 2006). This positive “moment” is an opportunity for operators of the EU ETS to comply by buying carbon credits generated from CDM or JI projects. These mechanisms are considered supplementary to domestic measures such as switching to low carbon production, energy efficient technologies, and so on (Quinn 2008). Generally, the CDM allows developed and developing countries to enter into agreements for emission reduction (or carbon sequestration) projects in developing countries. The Marrakech Accords developed after the Seventh Conferences of the Parties in Morocco specify details for carbon credits originating from flexible mechanisms. For instance, projects implemented under the CDM can generate transferable carbon credits known as Certified Emission Reductions (CERs). JI, in turn, allows Annex I (developed and industrialized) countries to claim carbon credits, known as Emissions Reduction Units (ERUs), for

investing in emissions reduction projects implemented in other industrialized countries (see UNFCCC n.d. for more information on the flexible mechanisms of the Kyoto Protocol). However, the use of credits through the Kyoto mechanisms is limited and the limit differs across the EU member states. The difference between a domestic emissions trading scheme and the Kyoto mechanism is that, domestically, allowances are distributed to installations, whereas the Kyoto Protocol provides allowances to individual countries or a group of countries such as the EU.

Among other positive traits of an ETS is the possibility of linking a domestic trading system to an international ETS, such as the EU ETS. Roberts and Staples (2007) define the key requirements set by the Kyoto Protocol for eligibility to participate in international emissions trading. A country must be a party to the Kyoto Protocol; it must have established its emissions cap, its national registry, and a national system for the estimation of GHG emissions by sources; and it must have submitted its most recent GHG inventory. Linking is crucial for the interests of both Kazakhstan and the international community, since larger schemes tend to be less volatile than smaller schemes; on the other hand, mobilization of the private sector and market forces can improve the efficiency and cost effectiveness of efforts to reduce GHG emissions in Kazakhstan (Hood 2010). Emissions trading systems also have a higher chance of fostering international climate agreements than do carbon taxes, at least initially (Grubb and Newbery 2008). Linking to international emissions trading is an opportunity for Kazakhstan to turn EU countries' attention toward investing in emissions reducing projects in Kazakhstan with a view to getting carbon credits in turn.

To sum up, the ETS, if run correctly and implemented step-by-step, brings a set of advantages with its use. Emissions trading in the EU has been considered a favorable tool for reducing CO_2 emissions in a cost-efficient way. Environmentally oriented, it is effective in mitigating the harmful effects of global warming (Hill 2006).

The First International and World's Largest Emissions Trading System

The European Commission, after a series of discussions, finally published a draft directive on EU ETS on October 23, 2001 (Gagelmann and Hansjürgens 2002). The EU directive on emissions trading was officially adopted in July 2003. The main content of the directive was shaped through the complicated EU decision-making process (Skjærseth and Wettestad 2009). The trading system was created under Directive 2003/87/EC. In addition, Directive 2003/87/EC was amended to Directive 2009/29/EC as of April 6, 2009, specifying the post-2012 framework of the EU ETS structure, which focuses on climate action and renewable energy (Zeben 2009). The EU ETS applies to all 27-member states of the European Union.

Generally, a cap-and-trade mechanism involves any sites, stations, refineries, or other industrial units that contain installations emitting GHGs, have a specified limit on their emissions, the so-called "cap," and that are allowed to emit GHGs within this cap; otherwise they will have to buy allowances to cover shortages of emission rights through the market of the ETS. In case an installation operating in the ETS can decrease its emissions below the specified cap by upgrading its energy efficiency or switching to low-carbon technologies, then it can sell the extra allowances left to other participants of the market, making a profit on the sale. The system's outcome should be the reduced amount of GHG emissions (Weishaar 2007).

Grubb, Vrolijk, and Brack (1999) outline the possibilities of linking domestic ETS with other systems internationally, including the EU ETS, thus allowing a country to sell its available surplus allowances in other emissions trading systems. As a result, countries would be linked with each other directly or indirectly (by third-party governments) and could buy or sell allowances through a worldwide emissions trading system, thus contributing to the global target of reduction.

In the European Union, the ETS covers almost half (46 percent) of total EU-wide CO_2 emissions (Oberndorfer and Rennings 2007). Directive 67/EU/2003 establishes the framework for and sets out the sectors to which the EU ETS applies. Caps have been distributed to only four sectors so far: the first sector is energy production (combustion installations with a thermal input more than 20MW—except for hazardous or municipal waste installations—mineral oil refineries, and coke ovens); the second sector is the production and processing of ferrous metals; the third is the mineral industry (including production of cement and glass); and the fourth is paper industries (Roberts and Staples 2007).

The pilot phase of the EU ETS took place in the course of two years, from 2005 to 2007, during which information was gathered and the working of the system in practice (as opposed to theory) was analyzed. This first international and largest emissions trading market covered around 11,500 installations across Europe. Experience obtained during the first phase was enough to prepare for the second stage of trading under the Kyoto mechanism, which commenced in 2008. The first trading period served, more than anything else, as a test for the "real" market of the second phase during 2008–2012 (Convery, Ellerman, and De Perthuis 2008). This second and more important phase of the EU ETS also known as the "Kyoto phase" corresponds with the EU's obligations period under the Kyoto Protocol. Additional lessons learned about the emissions trading directive are to be applied in the third and much longer period of the EU ETS, covering the seven years from 2013 to 2020. During the third phase of the ETS, the cap requirements will be more stringent and will raise expected CO_2 equivalent emissions reductions by up to

1.74% per year, with the overall reduction of emissions by 21% relative to the base year 2005 (Frunza 2010).

How does EU ETS work? Roberts and Staples (2007) give a clear overview to that process. An operator of an installation that falls within the trading sectors mentioned above must obtain a GHG emissions allowance from the relevant authority. The allowances, called "EU Allowances" or "EUAs," set maximum CO_2 emissions from the installation for the following calendar year. The installation's emissions have to be verified by an accredited independent company (the verifier) to carry out the verification, which ensures the accuracy of the calculations on the appropriate installations. Data on emissions must be submitted to the regulating authority not later than 31 March, whereas compliance for that installation is evaluated by 30 April. From that point on, operators start trading EUAs to make sure that they can comply. By the end of the preceding year, operators of installations must surrender their allowances, and failure to do that could result in fines. Currently the fine for noncompliance is 100 Euros per ton of CO_2. Noncompliant installations will also have to buy the quantity of allowances they are short of their cap, and surrender these allowances as well (Roberts and Staples 2007).

Allocations in the first phase were distributed for free in accordance with each installation's historic emissions indicator. The second phase, though, applied a so-called auctioning system, which implies that out of the overall allowances required by operators, a major part of the allowances was allocated for free, whereas the rest had to be acquired through auction. However, there is also a reserve volume of allowances for new entrants to the market and for those who enhance installation capacity, thus emitting more. In cases of closure of the installation, all the remaining allowances are auctioned (Hood 2010).

The ETS market is now well established, and allowances are traded over-the-counter and on exchanges such as ECX Europe, Powernext, Nordpool, and others (Roberts and Staples 2007). It is now crucial to study the development of Kazakhstan's emissions trading system, keeping EU ETS as an example to follow and for avoiding any shortcomings. The following section presents an overview of Kazakhstan's ETS.

Legal Framework for Kazakhstan's Domestic Emissions Trading Scheme

The draft law outlines several characteristics of the scheme. The Ministry of Environmental Protection is the assigned regulating authority. The system covers the sectors of industry, oil and gas, energy, chemicals, agriculture, transport, and mining metallurgy.

The national allocation plan (NAP) for the reporting period specifies allocation procedures that include data on total certificates and volume and defines industries and operators to be

allocated. Emission allowances to installations are allocated annually, and the distributed allowances are called "certificates." Carbon certificates are given on the basis of a passport for each installation, which sets emissions limits for compliance. Installations must surrender their allowances until the first of April after the reporting period. In case installations are short of carbon allowances, they can buy allowances available on the market or can generate allowances through project mechanisms. If installations have extra allowances available, they can sell them to other installations operating in the market.

In order to get a certificate, each entity must provide the following set of documents: an inventory report for the reporting period, a passport of installation, and the emissions reduction program, which is a set of implementation measures projected to reduce emissions accepted by the accredited authority. Certificates are allocated to one or, if necessary, several installations of the same operator. In case of changes to the operator's legal details, the authority will issue new certificate(s) if new data is accepted. If the operator is not satisfied by the amount of distributed certificates, it can apply for additional certificates by providing all supporting documents to the authority. All participating operators in the market must submit a monitoring plan that specifies the approach on how to monitor the compliance of the operator.

A registry is dedicated to keeping information on all allocated certificates. The so-called "allowance reserve fund" is defined in the NAP and is reserved for new entrants to the market and for those operators who are increasing their emissions output. (Note that this information was taken from the draft law on establishment of domestic emissions trading scheme.)

The Upper Chamber of the Parliament accepted the draft law on the domestic emissions trading system as of October 6, 2011. Now the draft law is subject to the President's signature. For now, however, it is not clear what the long-term effects of the domestic emissions trading scheme will be. The outcome is still uncertain and unpredictable, and a set of other crucial issues are still to be defined for Kazakhstan's emerging emissions trading scheme. Among them are cap-setting decisions, trading system requirements, noncompliance sanctions, verification principles, market tracking software installation, and allowance allocation. The following are some of the questions that remain to be answered:

- What should be included in the monitoring plan?
- How should emission allowances be allocated in terms of different sectors?
- Who is going to be a verifier during the beginning stage of market operation?
- What are the consequences for noncompliance?

A working group comprising representatives from government, industry, scientific fields, and NGOs is drafting the amendments to the national legislation, thus further developing the domestic emissions trading scheme.

Points of Consideration in Adopting ETS Features in a Domestic Emissions Trading Scheme

Gagelmann and Hansjürgens (2002) address five major aspects that must be tackled in any tradable emissions system:

1. Defining the trading system coverage (that is, who holds the allowances)
2. Defining the level of allowed emissions
3. Setting the mechanisms for allocation of allowances to market participants
4. Ensuring a stable trading environment so that other regulations could not limit active trading incentives
5. Setting up effective ways of monitoring and applying sanctions and fines against noncompliance

Mullins (2005) mentions that implementation of the directive on emissions trading involved several issues, such as producing a guidance report for industries and establishing relevant institutions on monitoring and verification, as well as setting up national allowance registers. All of these are important in the production of the National Allocation Plan (NAP), which specifies cap setting and allowance allocation procedures. In short, NAP serves as the basis of the allocation process.

Skjærseth and Wettestad (2009) address three challenges the EU faced in the development of the EU ETS: (1) acceptance of the idea of emissions trading, (2) a choice of the system design, and (3) its practical application. They relate these challenges to three phases of the EU ETS: policy initiation, decision making, and implementation.

Zeben (2009) importantly concludes that the success of the EU ETS market depends on several market aspects that keep prices stable, enable the market to operate with sufficient demand and supply, and that make the market attractive enough for investments in innovation. All these market mechanisms can either reinforce or undermine each other since any tradable environment price is dependent on a variety of events, such as the sudden release of negative information, which has occurred in the EU. However, efforts must be undertaken to ensure that the long-term goal of the ETS is consistent with its initial goal—the reductions of emissions.

Time management is also relevant for Kazakhstan at preparatory stages of the system, where decision making about features of the system and possibilities of future linking must be taken into account at the same time that paying attention to capacity-building measures such as personnel training and recruitment must be priorities. In Germany, for instance, a working group for emissions trading was established five years prior to the first trading phase. However, the complexity of the system with its allocation rules made it necessary to establish a federal emissions trading office with a staff of from 80 to 110 employees—The German Emissions Trading Authority (DEHSt n.d.).

One problem for Kazakhstan is that the legal basis is still missing. Lack of legal mechanisms that stimulate ETS, allow participation in ETS, and finally, identify a by-stage approach for companies to prepare a monitoring plan, calculate historic allowances, and identify the quantity of installations on the site can seriously narrow boundaries for further discussion of the issue. Building capacity for effective economic and legal mechanisms is critical in order to improve technical expertise, institutional development, and support for monitoring systems and to address the potential for future linking on the international scale.

Lessons Learned from the EU ETS Market Operations

Several problems faced by the EU ETS must be prevented in the development of the system in Kazakhstan.

Overallocation

Engels, Knoll, and Huth (2008) conducted a research survey among companies of four European countries (United Kingdom, Germany, the Netherlands, and Denmark). The questionnaire included a set of valuable questions, some of which were related to whether or not companies had traded at all, and if so whether they acted as sellers and/or buyers. Respondents that did trade were then differentiated according to their selling and/or buying activities. Results showed that the rate of sellers was quite high, which demonstrated that overallocation for the first phase indeed occurred. It is consistent with the findings of Kettner and others (2007) and Egenhofer and Fujiwara (2006) that the EU trading scheme had been overallocated by 4.6% in 2005. Most probably due to the significant overallocation, many companies were reluctant to engage in active emissions trading in the first phase (Engels, Knoll, and Huth 2008). Furthermore, Roberts and Staples (2007) in their analysis of the first phase of the EU ETS mention that operators were allocated more allowances than they required. The result was a sharp fall in price for an EUA to less than one Euro, while at the initial stage it started with high 20s. Overallocation is unfavorable and must be prevented to reduce the price volatility of

allowances, increase the stability and predictability of the system, and prevent windfall profits to businesses, which are transfers of welfare from consumers to businesses.

The qualitative research conducted by Engels, Knoll, and Huth (2008) was based on a questionnaire sent to more than 1,000 companies involved in the EU ETS and clearly shows what to avoid in order to achieve high rates of trading (Figure 2).

Figure 2. Research Outcome of Four EU Countries from Trading on the ETS in the First Phase (2005–2007)

	Germany	UK	Denmark	The Netherlands
Rate of Trading	Low	High	High	High
Use of Auctioning	None	None	5%	None
Reduction Target	21%	12.5%	21%	6%
Distance to Target	-2.1%	+2.4%	19.6%	-6.6%
Allocation	Overallocated	Underallocated	Overallocated	Heat and power sectors were under-allocated, whereas small emitters were overallocated.
Preferred Trading Channels	Directly with other emitters	Traders and brokers	Directly with other emitters and via brokers	Directly with other emitters and via brokers
External Advice Sources	Industrial associations	Consulting firms	Mostly did not use external advice means.	Consulting firms, state services, banks

Source: Author's compilation from the research survey conducted by Engels, Knoll, and Huth (2008).

For instance, the UK, in comparison to other countries, achieved overimplementation of its emissions reduction target by 2.4%. Generally, the UK was underallocated by allowances, signaling that underallocation is better to some extent than overallocation in the ETS.

Therefore the first thing for Kazakhstan to be cautious about is overallocation of allowances, which may distort active market involvement. Prevention of overallocation and "hot air trading" criticism is important for Kazakhstan to prevent negative effects on

consumers, avoid distrust in the emissions trading system, and reinforce the country's credibility as a serious and responsible player in the international community.

Fraud

Frunza, Guégan, and Lassoudiere (2010) in their study showed the quantitative data of the carbon market fraud that occurred within the EU ETS between the end of 2008 and the beginning of 2009. The fraud consisted mainly in cashing out the Value Added Tax (VAT) proceedings from sales of allowances instead of returning it to governments. The empirical evidence estimates the impact of the VAT fraud for the French government on the carbon market to be at 1.7–1.9 billion Euros.

Small Coverage

Even before the first stage of the EU ETS went into force in 2005, in accordance with Gagelmann and Hansjürgens (2002), it was believed that the implementation of an ETS could offer great cost savings opportunities and in fact, the bigger the market, the higher the efficiency gains would be. Furthermore, there was a degree of doubt as to whether small member states would establish an emissions trading system on their own, so it was important to motivate the trading. In this case, the EU arena compared to the Kazakhstani market seems to be more suitable to establishing an ETS. Being the ninth biggest country in the world, Kazakhstan still suffers after the collapse of the Soviet Union in terms of production and industrial processes, which may not provide sufficient depth to the market and a necessary minimum level of trading.

Short-Term Losses from Adaptation

Clearly companies may face short-term costs in adapting to a new system of trading, either from reducing production, switching to less carbon-intensive production, or installing energy saving and efficiency tools. However, such companies could become more competitive in the long-term through reducing production costs by increasing energy efficiency or decreasing fuel demand, especially if fossil fuel prices continue to rise (Hill 2006). In this regard such issues as carbon leakage problems must be addressed.

Environmental Effectiveness and Economic Efficiency

Lastly, Oberndorfer and Rennings (2007) mention that the current principle of the EU ETS has been criticized for its questionable environmental effectiveness and economic efficiency. For instance, national targets by the Kyoto Protocol were not considered sufficiently, thus resulting in inefficient cap settings. A number of studies questioned whether all EU countries would be able to actually achieve their Kyoto targets after the

EU ETS had been started. It is always a risk to do something for the first time. Results of Kazakhstan's ETS are unpredictable and could either be successful or fail. If enough effort by Kazakhstan's government is dedicated to learning from the experience of existing emissions trading systems and to building the country's capacity, it is possible to avoid mistakes made previously. By following these principles, Kazakhstan will be able to establish the system correctly.

Conclusion

Information on the European Union Emissions Trading Scheme and highlights of current initiatives in Kazakhstan to adapt a similar system (with some differences) are presented in this article. The domestic emissions trading scheme is set to be finally adopted in 2013. Its adoption depends on a complex decision-making process with regard to the emissions trading rules. However, some aspects of the draft law on the emissions trading scheme indicate that important steps in that process have already been taken. In this article, the author has tried to provide an overview of the current Kazakhstan draft law specifying characteristics of the domestic emissions trading scheme.

Introduced in this article are different studies that favor an emissions trading system that offers opportunities ranging from reducing emissions to linking to the international carbon market. Development of the system brings multiple benefits to Kazakhstan, including the mitigation of negative effects on the economy from climate change, improvements to the economic, social, and physical well-being of the nation, increases in the energy efficiency of companies, the creation of large incentives for international investment inflows and new work places, and continued improvement of international relations.

In addition, the author also demonstrated crucial points to take into account for the establishment of a domestic emissions trading scheme following the EU's example. One positive aspect of the EU ETS is that it is running in many different countries (and institutional settings), simultaneously facing various issues and providing a vast base for learning from experience. Lessons from the EU ETS show, however, that unexpected events may indeed occur. The first and the main issue to consider is avoidance of an overallocation of allowances, as it can influence the supply and demand of the market and lead to insufficient participation in the system as a whole. Another factor affecting market operation is fraud, which became popular on the EU ETS from the end of 2008. Fraud appeared in various forms, from VAT fraud to hacking accounts of operators and selling existing allowances. Small coverage of the market and short-term market adaptation losses are among other threats that operators of Kazakh installations could face during the first phases of trading.

Work by the Ministry of Environmental Protection of Kazakhstan on emissions trading is continuing and more detailed examination of design options is possible. It is a challenge to establish such a system. It will require the creation of a proper legal basis and capacity building from international cooperation, foreign experience, and adaption to the unique national circumstances of Kazakhstan. The system must be installed step-by-step to minimize adaptation problems of local firms. Factors such as the national welfare, industry development and competitiveness, and regional concerns are critical in designing a domestic emissions trading scheme to ensure its effectiveness and active participation. Progress in submitting quantitative commitments by the country will greatly assist in the development of a domestic emissions trading system specifically targeted at reaching commitments under the Kyoto Protocol.

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Biography

Saltanat Sabitova was born on April 12, 1985, in the small town of Taldykorgan in the south of the Republic of Kazakhstan. She obtained a BSc in Finance from International Academy of Business and BSc in Law from Academy of Economics and Law in Kazakhstan. In 2009 she graduated from the London Metropolitan University with a MSc degree in Finance. She was awarded a Volkswagen scholarship in April 2010, and is using it to conduct joint PhD research at the Justus-Liebig University of Giessen in Germany and at the Kazakh Research Institute for Ecology and Climate in Kazakhstan. Her research contains analysis on the implementation of the Kyoto Protocol and post-Kyoto commitments in Kazakhstan from both the legal and land-use perspectives. It focuses on how appropriate forestation projects in Kazakhstan may influence the implementation of existing voluntary and future commitments under the Kyoto Protocol. In particular, she considers participation in the voluntary carbon markets as well as development of the domestic emissions trading scheme as one of the major factors that can contribute to the effectiveness of state measures on the issue.