

Coal Mine Methane and World Carbon Markets

**Promoting Coal Mine Methane (CMM) for Energy, Safety, and
the Environment: Legislation and Project Development in
Kazakhstan**

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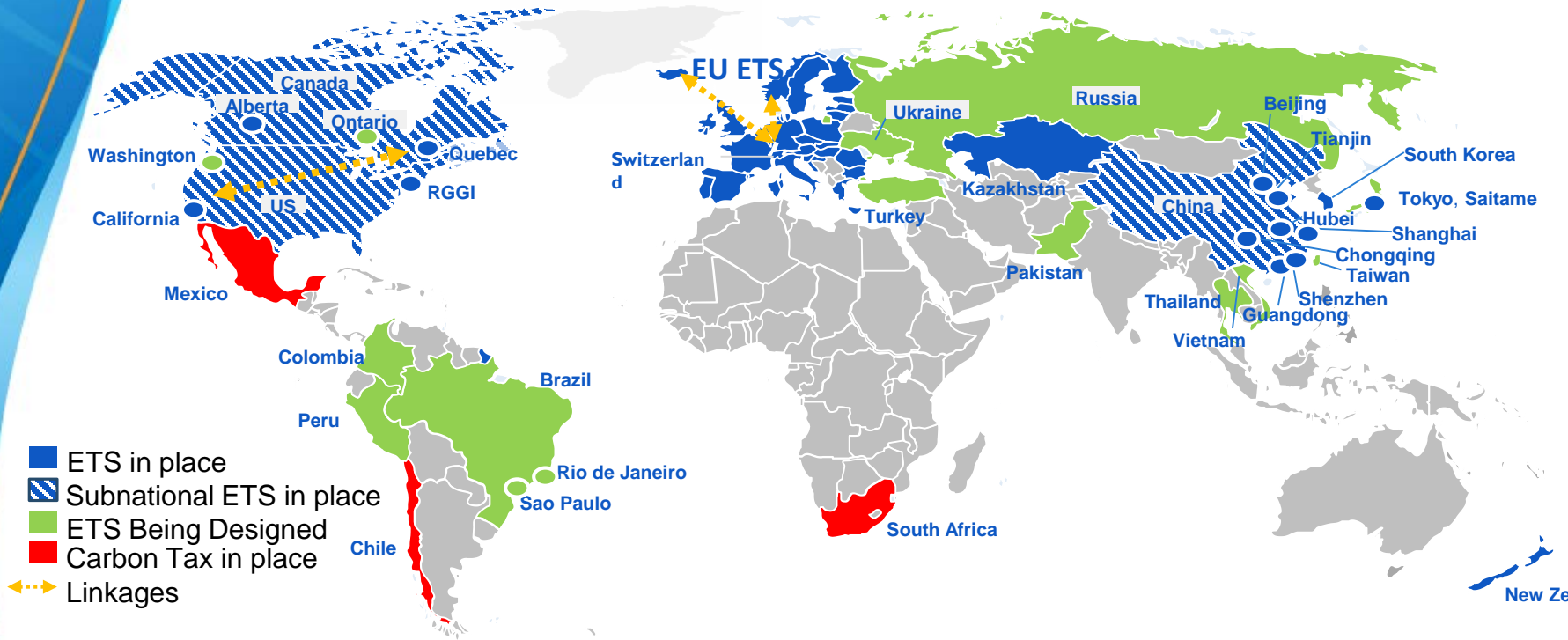
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World Carbon Markets

- Overview of Multi-National, National, and Regional Programs
- Diversity of Approaches, Common Themes and Linking
- Carbon Offsets
 - Are CMM Projects Included?
 - What's the Value Added?
- Where does Kazakhstan CMM fit?

Overview of Carbon Markets



The Post-2012 Carbon Market Era Evolves

Multi-National Programs

- **EU-ETS Market**
 - EU-ETS was the first multi-national cap-and-trade program established in 2003
 - Largest emissions trading system in the world includes 31 countries
 - Phase III Cap (2013-2020) expanded to include 17 industrial activities
 - Amount of international offsets allowed are specified by country ranging from 0-20%

- **Kyoto Market**
 - Kazakhstan considered an Annex I country
 - Recent COP meetings focus on national and sub-national programs
 - No post-2012 accord to date

National Programs

- China
 - Seven pilot programs started in 2013 & 2014
 - National-scale system to begin in 2016
 - 5-10% of allocations can be met with CCERs
- South Africa
 - Main experience with CDM projects
 - Carbon tax to begin in 2016
 - Offsets from 0-10% allowed as tax payment
- Republic of Korea
 - Cap-and-trade system began in 2015
 - Offsets can meet up to 10% of obligation
 - Phase I and II - domestic offsets only

National Programs

- Australia
 - 2011 Clean Energy Act
 - Repealed in 2013
 - Carbon price mechanism repealed in 2014
 - Linking with EU-ETS delayed
 - Uncertainty without emissions caps for covered sectors

- Mexico
 - 2012 Climate Change Law allows, but does not mandate emissions trading
 - Carbon tax began in 2014
 - Rules to use offsets not yet developed

Regional Programs

- California and Quebec Markets
 - Implemented cap-and-trade programs in 2012
 - Rigorous approach to ensure environmental integrity of offsets (8% max)
 - Programs linked in 2014
- Alberta
 - First North American jurisdiction to regulate GHGs in 2007
 - Fee based on facility-level carbon intensity
 - Offsets can meet up to 100% of obligation
 - Includes a first-of-its-kind Technology Fund

Kazakhstan GHG Program

- First Asian country to implement economy-wide cap-and-trade system in 2013
- Resembles EU ETS program
- Phase II ending (2014-2015)
- Allows for domestic offsets only
 - Projects approved prior to December 31, 2015 have crediting period until end of 2020
 - Crediting period for projects approved after December 31, 2015 yet to be determined
- Legislation is needed to link to other GHG programs

Diversity of Approaches

- Programs can cover specific sectors, or industries, or be economy-wide
- Programs can be limited to large emitters (10,000-100,000 t/CO₂e)
- GHGs covered – Six Kyoto GHGs or CO₂ only
- Free allowances and auctions
- Can use market (allowances, offsets) or non-market instruments (performance standards, tax)
- Carbon pricing varies from USD \$3-30/tCO₂e

Common Themes

- Most programs are economy-wide or capture large portion stationary combustion and energy sector
- Voluntary or pilot phases, then mandatory phases
 - Initial mandatory phases usually include 100% free allocations
- Banking and borrowing typically allowed
- Some offsets allowed based on project type, location, and percent of allocation
- MRV required

Linking Mechanisms

- Administrative capacity to manage GHG programs at country level is necessary
- Consider harmonizing monitoring, reporting, and verification (MRV) systems with other programs
- Program must have institutional and legal readiness in place
- Role of UNFCCC or other international organizations to facilitate linking?
- Kazakhstan can link bilaterally or unilaterally

Carbon Offsets

- Coal mine methane projects included as offset type in:
 - China, California, Australia, EU ETS, and Kazakhstan
 - CMM may be eligible in other markets
- Current CMM project protocols can be adopted for Kazakhstan program
 - ACM0008 (CDM), VMR0001 (VCS), VMR0002 (VCS), CMM Project Protocol (CAR) MMC Protocol (CARB)

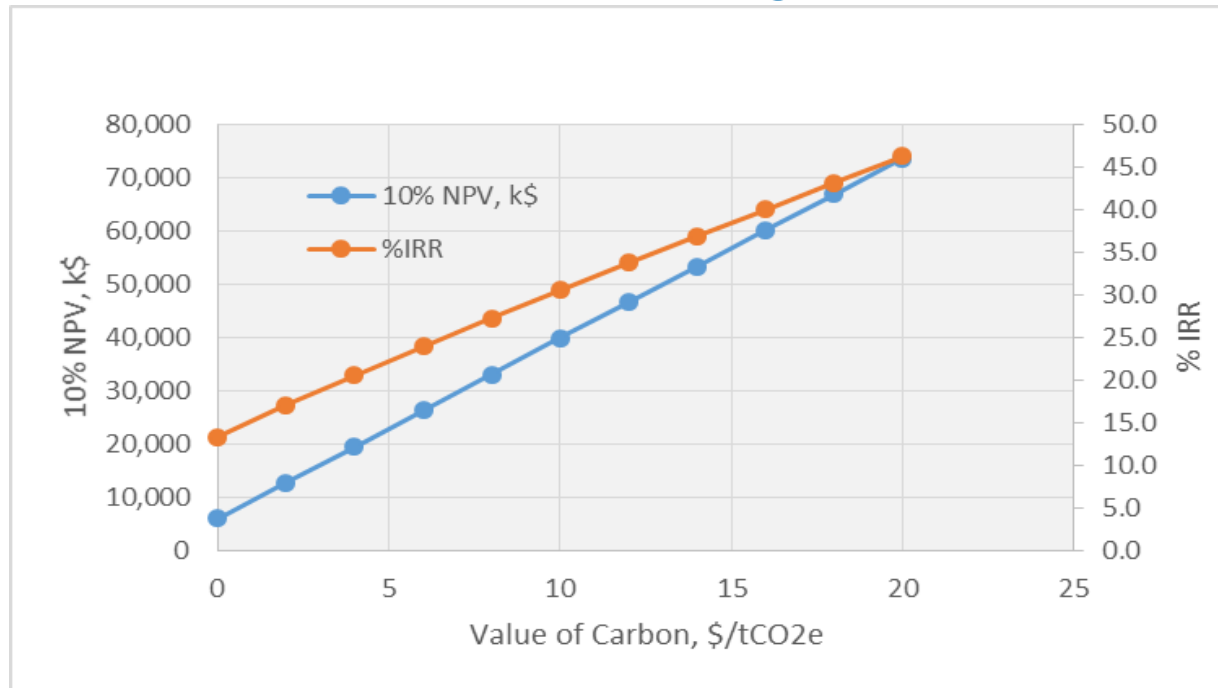
Carbon Offsets (cont.)

- Allowance pricing summary table

Region	Average Cost (USD)
Mexico	\$3.50/tCO ₂ e
RGGI	\$5.41/tCO ₂ e
EU	\$7.72/tCO ₂ e
China	\$7.83/tCO ₂ e
Australia	\$9.80/tCO ₂ e
South Africa	\$10.00/tCO ₂ e
Alberta	\$11.36/tCO ₂ e
California	\$12.21/tCO ₂ e
Quebec	\$15.14/tCO ₂ e
British Columbia	\$28.02/tCO ₂ e

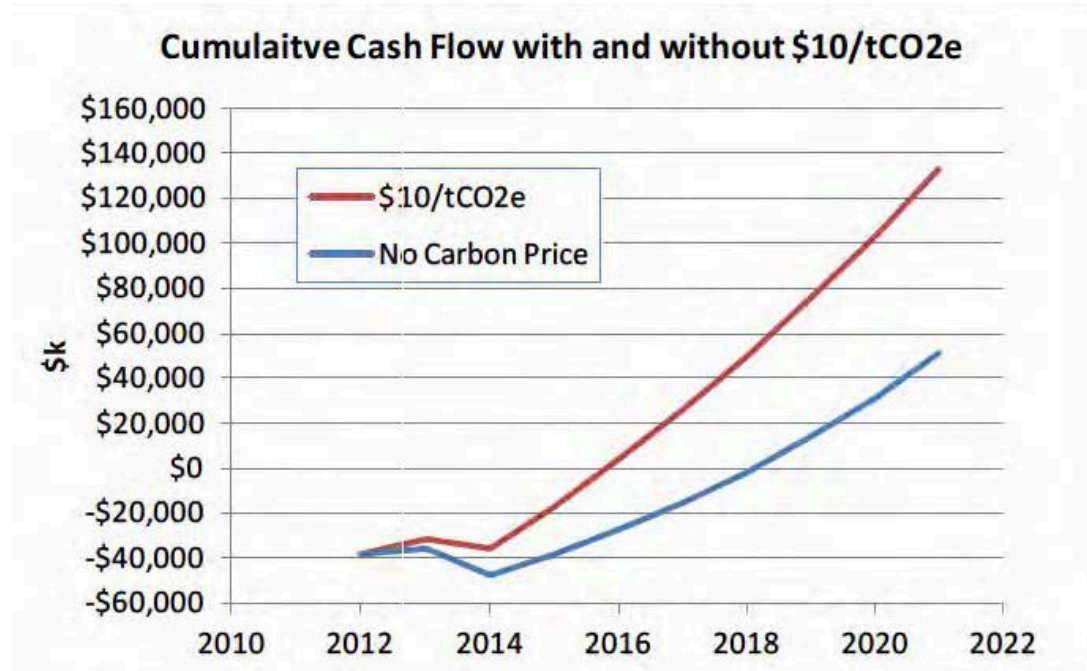
Value-Added by Carbon Offsets

- Impact of carbon revenues on IRR and NPV for CMM power generation projects



Value-Added by Carbon Offsets

- Impact of carbon revenues on cash flow for KZ CMM power generation project



- IRR increased from 13% to 31%

Future for Kazakhstan Coal Mine Methane Project Offsets?

- **Domestic GHG Market in Development**
 - Mine methane eligible offset type
 - No methodologies, tools, & guidelines developed for offset projects
 - Verification framework yet to be established
 - No clear price signal to date
- **Link with EU-ETS or CARB?**
 - Need legislative support
 - Completion of GHG program's functional framework
 - Negotiate agreements with EU or California programs

Thank you for your attention!

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