

# Coal Mine Methane and World Carbon Markets

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

Michael Coté, President  
Ruby Canyon Engineering

---

**September 25, 2015  
Astana, Kazakhstan**

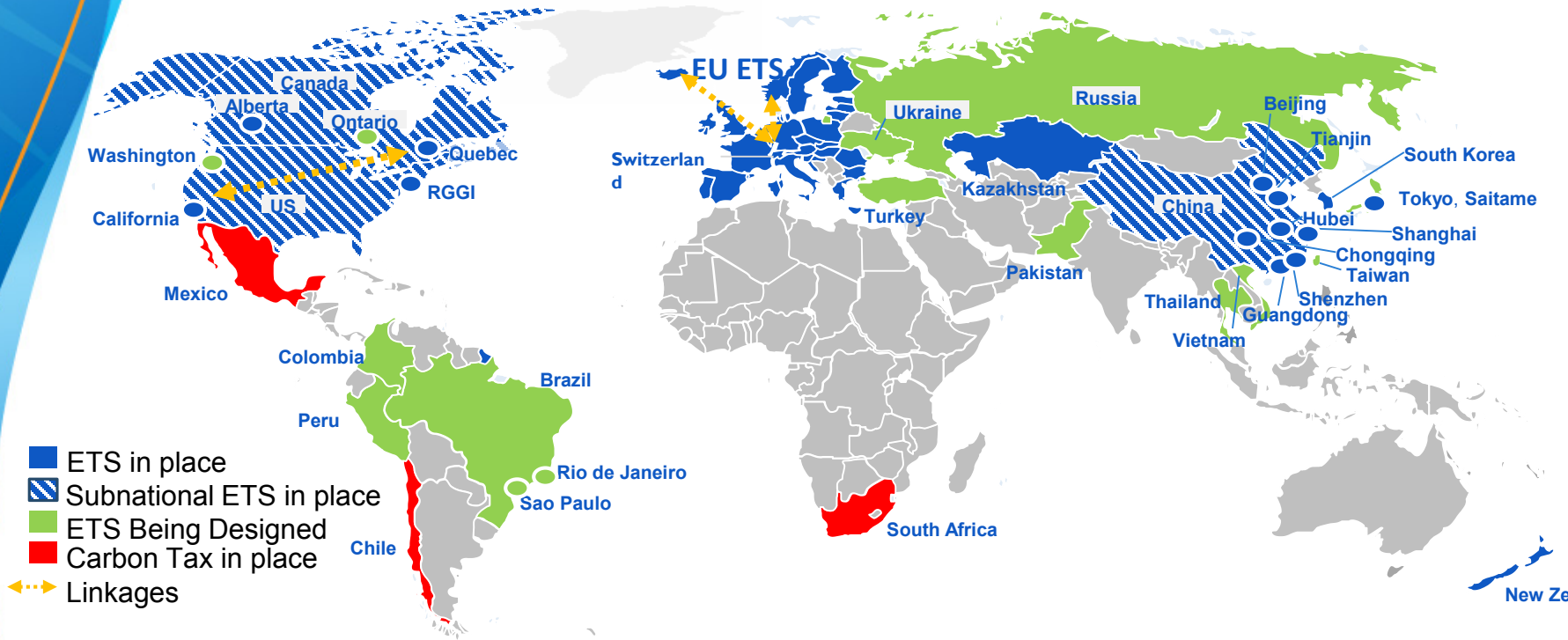


# World Carbon Markets

---

- 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  - Repealed in 2013
  - Carbon price mechanism repealed in 2014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/CO<sub>2</sub>e)
- GHGs covered – Six Kyoto GHGs or CO<sub>2</sub> only
- Free allowances and auctions
- Can use market (allowances, offsets) or non-market instruments (performance standards, tax)
- Carbon pricing varies from USD \$3-30/tCO<sub>2</sub>e

# 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)

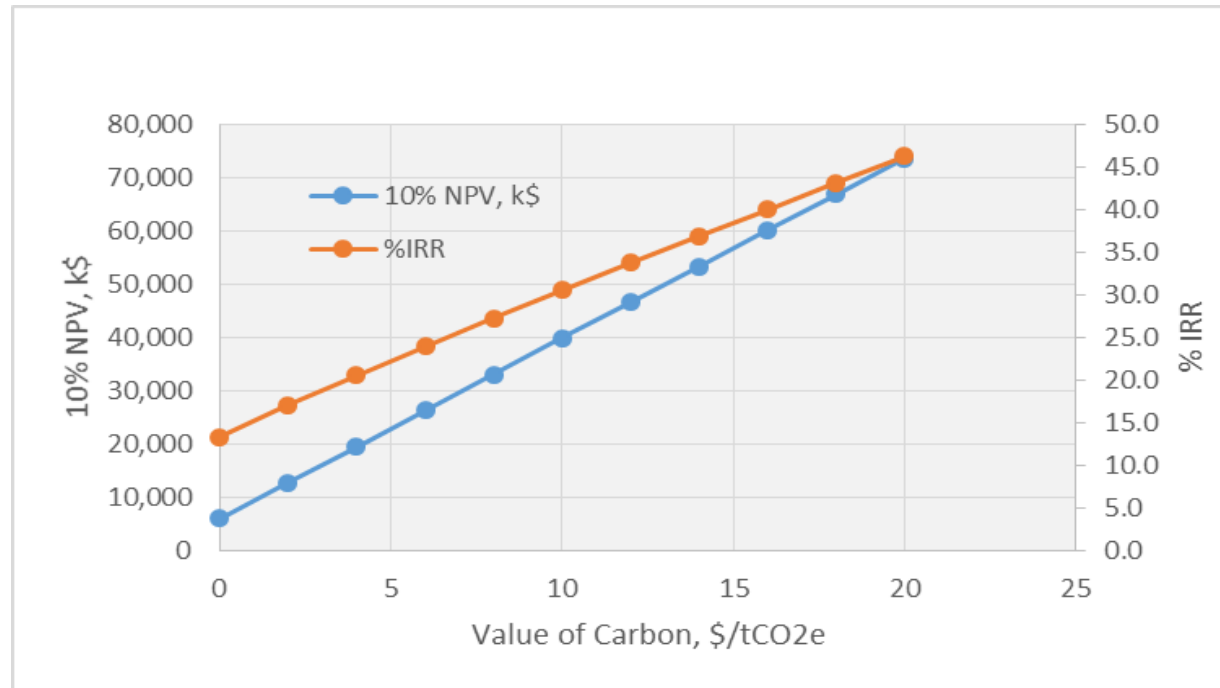
# Carbon Offsets (cont.)

- Allowance pricing summary table

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

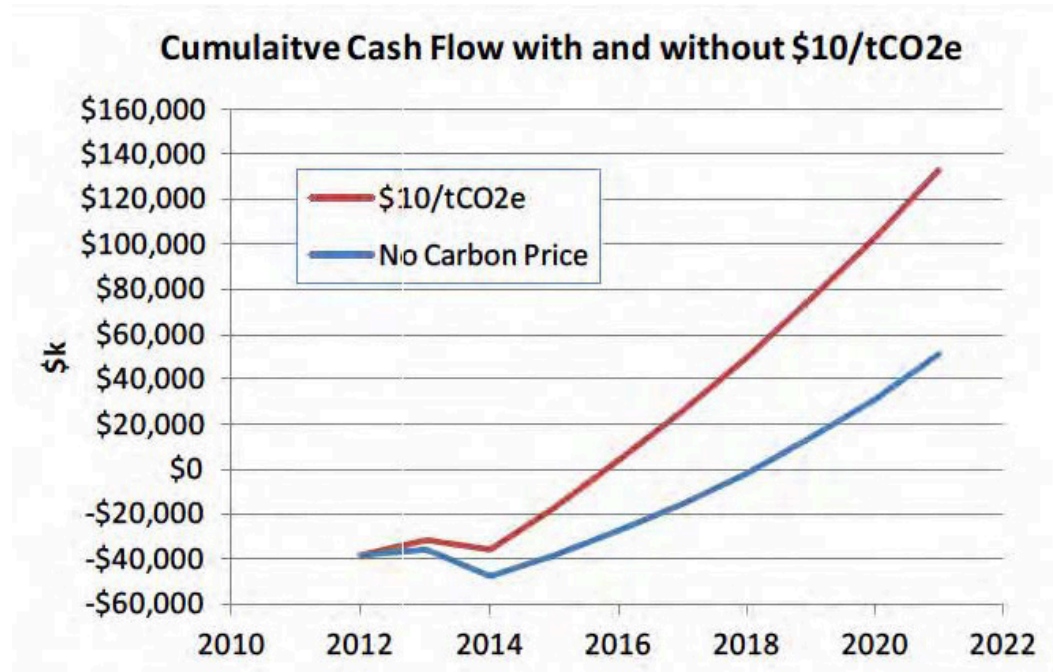
# Value-Added by Carbon Offsets

- 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!

Michael Coté, President

Tel: +1-970-241-9298 ext.11

Email: [mcote@rubycanyoneng.com](mailto:mcote@rubycanyoneng.com)

Website: [www.rubycanyoneng.com](http://www.rubycanyoneng.com)

---

