

Experience and Lessons on ETS Development and Recommendation for China Establishing National-wide ETS

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Lingshui Mo
Carbon market specialist
Asian Development Bank

September 2014 Tianjin

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The logo of the Asian Development Bank (ADB), consisting of the letters "ADB" in a white, serif font on a dark blue square background.

Outline

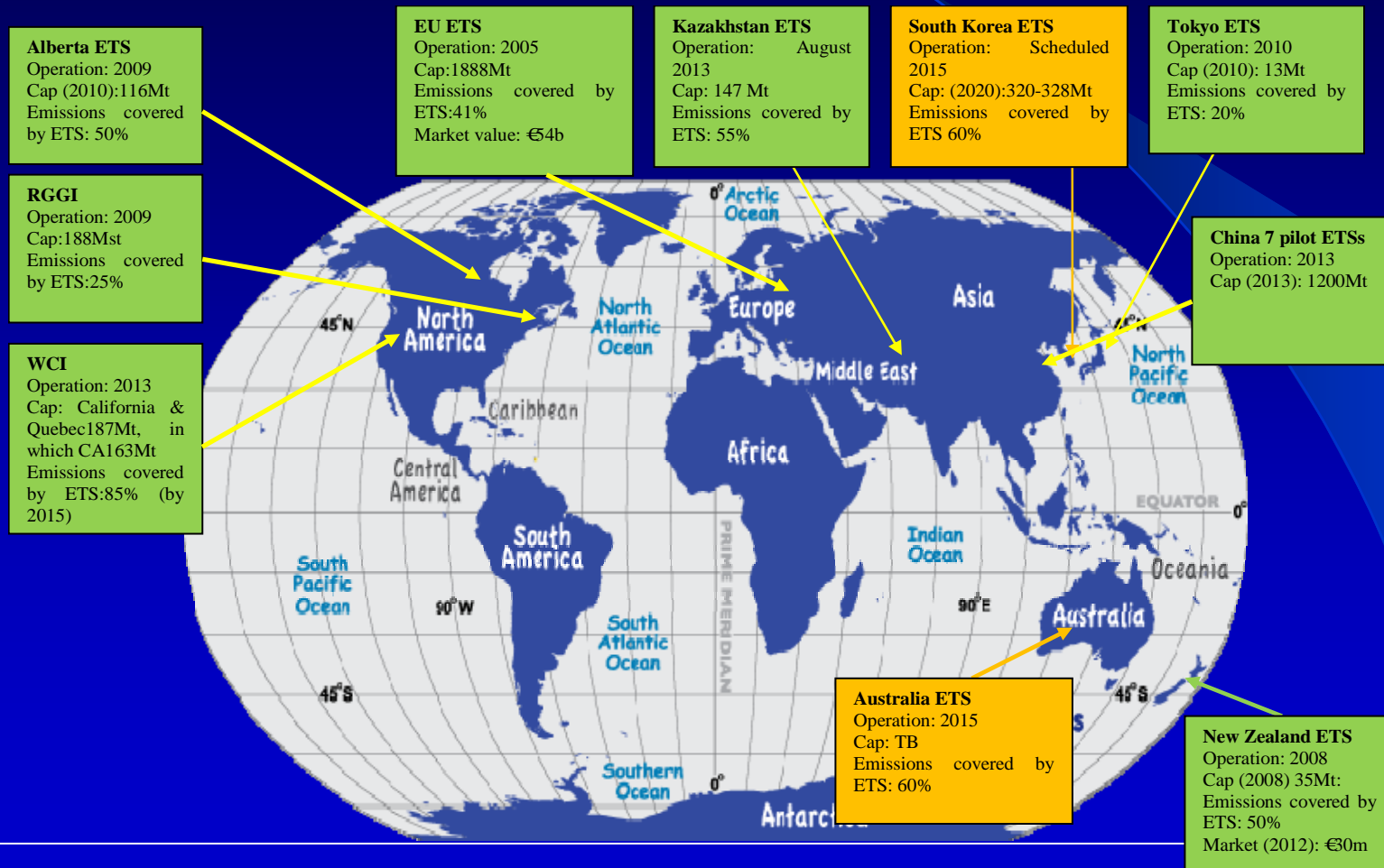
1. ETS around the world
2. Experience and lessons learned
3. Analysis of China Pilot ETSs
4. Recommendations for establishing a national-wide ETS

1、 ETSs around the world

- Overview of ETSs around the world
- Status and trend of emission trading market
- Key features of existing ETSs

Overview of ETS around the world

There are about 16 key regional, national and sub-national ETSs around the world



Status and trend of emission trading market

- ❑ Over supply
- ❑ Continuing low carbon price
- ❑ Emerging national and sub-national emission trading schemes
- ❑ Diversified system design in align with national circumstance with mechanism of adjustment and policy intervention
- ❑ National and regional trading schemes starting to link up

Key features of existing ETSs

1. EU ETS

a. Design features

		Phase 1	Phase 2	Phase 3
Compliant period		2005 - 2007	2008 - 2012	2013 - 2020
Cap		cap was set at national level through national allocation plans (NAPs). No compulsory caps required	cap was set at national level through national allocation plans (NAPs). 6.5% below 2005 level, 2083 Mt for annual aggregated national caps	At least 21% below 2005 levels by 2020. Single EU wide cap. The cap decreases each year by 1.74% of average annual cap in 2008-2012
Coverage	Gases	CO2	CO2 (but possible to opt-in other gases).	CO2 and PFC and N2O in some sectors.
	Sectors	Power, industry	Power, industry, aviation	Power, industry, aviation
Allocation		99% free allocation based on father-gathering method.	95%-90% free allocation based on father-gathering method. Allocation through approved NAPs.	Mix of auctioning and free allocation. 56% auctioned (2013 – 2020 average), free allocation based on benchmarking method
MRV rule		Monitoring and Reporting Regulation (MRR), the Accreditation and Verification Regulation (AVR).	Monitoring and Reporting Regulation (MRR), the Accreditation and Verification Regulation (AVR).	Monitoring and Reporting Regulation (MRR), the Accreditation and Verification Regulation (AVR).
Penalty		40 Euro	100 Euro	100 Euro
Banking		None	Unlimited	Unlimited
Offset		None	About 1.6-1.7 billion offset credits from CDM and JI project during phase I&phase II	About 1.6-1.7 billion offset credits from from CDM and JI project during phase I&phase II Only accept offset credits from LDC

Key features of existing ETSs

b. Legal foundation: EU Emission Trading Directive

c. Unique aspect:

- From Semi-centralized to centralized approach
- The first multi-national installation-level cap-and-trade scheme

d. Key issues

- ✓ Over-allocation and surplus of allowances
- ✓ Windfall profits
- ✓ Price volatility
- ✓ Banking "hot air"
- ✓ Abuse of offsets

Key features of existing ETSs

2. Regional Green House Gases Initiatives (RGGI)

a. Design features

	Phase 1	Phase 2	Phase 3
Compliant period	2009- 2011	2012 - 2014	2015 - 2020
Coverage	Ten states, CO ₂ , Power	9 states, , CO ₂ , Power	9 states, , CO ₂ , Power
Cap	188 million short tons of CO ₂ per year for the ten-state region.	Original cap was 165 million short tons of CO ₂ per year for the nine-state region. 2012-2014 cap cut 45% to reflect 2012 emissions. 2014 RGGI cap of 91 million short tons.	Cap declines 2.5% each year from 2015 to 2020.
Allocation	auctioning	Auctioning	Auctioning
Enforcement	3 times the number (tons) of excess emissions. Plus state-specific penalties for non-compliance	3 times the number (tons) of excess emissions. Plus state-specific penalties for non-compliance	3 times the number (tons) of excess emissions. Plus state-specific penalties for non-compliance
Banking	None	Unlimited	Unlimited
Offset	None	Within RGGI states or sign MOU with RGGI	Within RGGI states or sign MOU with RGGI

Key features of existing ETSs

- b. Political framework: Memorandum of Understanding entered by 10 states
- c. Characteristics:
 - ✓ Composed of individual CO₂ Budget Trading Programs in each participating state
 - ✓ Each Trading Program is established and implemented under independent state regulation
 - ✓ Design and operation is guided by a common **Module Rule**
 - ✓ Auctioning most of allowances
 - ✓ Recycling auctioning proceeds

Key features of existing ETSs

d. Assessment of RGGI

● Positive Impacts

- ✓ Market Leadership in addressing CO₂ emissions in US.
- ✓ Cost effective emission reductions
- ✓ Increasing Investment in Clean Energy and financing consumer Benefits
- ✓ Providing a foundation for the North American Carbon Market
- ✓ Successful demonstration of an auction based system
- ✓ Providing a successful Model for regional market by linked Cap and Trade Systems

Key features of existing ETSs

- Key issues

- ✓ Over allocation
- ✓ Low price

3. Western Climate Initiative Regional Cap-and-Trade Program (WCI)

- a. Political framework: Western Regional Climate Action Initiative and Western Climate Initiative Statement of Regional Goal
- b. Design feature

Regional Target	Cap	Coverage	Allocation	Enforcement	Banking	Offset	Linking
15% below 2005 emission levels by 2020	Annual allowance budget declining linearly each year to reach jurisdiction's target	CO ₂ , CH ₄ , N ₂ O, NF ₃ , HFCs, PFCs, SF ₆ ; Electricity generation industrial processes and fuel combustion, in first phase. Second phase (from 2015) to cover transportation, residential and commercial fuel use.	Minimum 10% auctioning, increasing to 25% by 2020	Penalty of 3 allowances for every excess emission must be surrendered	Unlimited	Domestic offsets outside regulated sectors, limited to 49% of emissions reduction target. International offsets are not included	Interlinked within WCI jurisdictions

Key features of existing ETSs

c. Characteristics

- ✓ Composed of seven US states and four Canadian provinces cap-and trade programs
- ✓ Each individual program is established through independent jurisdiction regulation
- ✓ Design and operation of individual programs comply with Design for WCI regional Program
- ✓ To be linked through intergovernmental recognition agreements to form a regional allowance market

d. Assessment

- **Positive Impacts**
 - ✓ Innovation in development approach
 - ✓ Providing a model for linking

Key features of existing ETSs

- **Key issues**
 - ✓ Decentralized structure could delay Implementation
 - ✓ Significant diversity in abatement costs would lead to political reluctance
 - ✓ Potential carbon leakage

4. New Zealand ETS

a. **Legal foundation:** Climate Change Response Act (2002)

b. **Design feature**

Target	Cap	Coverage	Allocation	Enforcement	Offset	Linking
5% reduction on 1990 level by 2020 increasing to 10-20% if conditions on international agreement are met.	No specific cap for the ETS, the system is operating under emission reduction commitment	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs, SF ₆ ; Stepwise inclusion of all sectors of the economy; industry - specific thresholds for participation. Forestry was the first sector with retrospective inclusion in 2008.	Free allocation for industries exposed to international competition. Declines 3% pa from 2013-2025. In the transitional period no auctions have taken place. NZUs may also be purchased for NZ\$25.	NZ\$30/tCO ₂ e penalty, up to NZ\$50,000 and potential prison terms. Units still need to be surrendered.	Unlimited use of Kyoto Protocol units and domestically issued AAUs but restrictions on international AAUs. New Zealand will not have access to Kyoto units after May 2015	No linking agreements in place.

Key features of existing ETSs

- c. Characteristics**
 - ✓ Adopting international emission reduction commitment as cap
 - ✓ Cover all sectors
 - ✓ Unlimited use of offset credits
- d. Assessment**
 - **Positive outcome**
 - ✓ Emissions Reduced at Lower Cost
 - ✓ Further Development of Renewable Energy
 - ✓ Increasing Afforestation
 - **Key issues**
 - ✓ Falling Prices.
 - ✓ Offset Arbitrage & Windfall Profits
 - ✓ Barriers for Future Linking

Key features of existing ETSs

5. Tokyo ETS

- a. **Political and Legal framework:** Tokyo Climate Change Strategy & Ordinance Amendment for ETS Implementation
- b. **Design feature**

Target	Cap	Coverage	Allocation	Enforcement	Offset
25% below 2000 emission levels by 2020.	Absolute cap. Phase I (2010-2014): 6% reduction Phase II (2015-2019): 17% reduction on baseline emissions.	CO2, remaining 5 kyoto gases will be phased in; Commercial and institutional buildings, industrial facilities.	Free allocation of all allowances, based on the average historic emissions and an emissions target.	Penalty 1.3 times the shortfall, up to ¥500,000	Unlimited use of renewable energy certificates or Tokyo based offsets from SME programmes. No international offset allowed

Key features of existing ETSs

c. Characteristics

- ✓ The first large-scale city based ETS
- ✓ Include coverage of large-scale office buildings.
- ✓ longer compliance period
- ✓ No distribution of allowances ex ante

d. Assessment

- **Positive impact**
 - ✓ Reducing emissions in industry and commercial buildings
 - ✓ Building a City Based Cap-and Trade Model
 - ✓ Integrated offsets
- **Issues**
 - ✓ Low Market Liquidity & High Prices
 - ✓ High transaction cost

Key features of existing ETSs

6. Alberta ETS

- a. **Political and Legal framework:** Climate Change and Emissions Management Act, Specified Gas Reporting Regulation and Specified Gas Emitters Regulation (SGER)
- b. **Design feature**

Target	Cap	Coverage	Allocation	Enforcement	Flexible mechanism	Linking
12% reduction on 2003-2005 emissions intensity (does not decline over time)	Starting from 2007, Relative cap based on a 12% reduction in carbon intensity relative to 2003-2005 emissions for each installation.	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆ ; Electricity generation and industry, large emitters (> 100,000 tCO ₂ /y)	Baseline and credit scheme, so no free allocation or auctioning. Companies awarded credits for reducing emissions beyond targets.	CAD\$200 penalty for every tonne of CO ₂ , limited to CAD\$50,000 for individuals and CAD\$500,000 for corporations.	Unlimited use of Alberta - based offsets outside the scope of the emissions trading program. And paying for CAD\$15/t to purchase fund credit from Climate Change and Emissions Management Fund, Purchase Emissions Credits (EPCs)	No

Key features of existing ETSs

c. Unique characteristics

- ✓ The first North American jurisdiction to implement a compliance carbon pricing program
- ✓ Carbon intensity based system
- ✓ Pay in fixed-price (\$15/t) for use of Alberta's CCEMC, unlimited use of EPC and offset credits

d. Assessment

- **Positive impact**
 - ✓ Reducing carbon intensity
 - ✓ Investment in GHG Mitigation Technology

Key features of existing ETSs

- **Issues**
 - ✓ Growing total emissions
 - ✓ Limited market scale and market liquidity
 - ✓ Emitters use flexible measures and payment to the CCEMF rather than cut emissions
 - ✓ Price cap limits investment

7. Australia's Carbon Pricing Mechanism

a. Design Feature

Target	Cap	Coverage	Allocation	Enforcement	Offset	Linking	containment measures
5% below 2000 emission levels by 2020.	No cap set during the fixed price period (1 July 2012 to 1 July 2015). No future periods.	CO ₂ , CH ₄ , N ₂ O and PFCs; Electricity generation and industry, fugitive emissions and waste, transport fuels (rail and shipping).	Free allocations for energy intensive industries and industries exposed to international competition. Declines 1.3% annually.	Penalty 130% of the fixed price in the fixed price period, 200% of benchmark auction price in the flexible price period.	50% of target for international offset credits and unlimited use of domestic offset credits	Prior to the CPM repeal linking with EU ETS was scheduled to take effect in July 2015 and a two way link in July 2018.	Price ceiling of A\$20 above international prices (linked to EU ETS prices based on linking agreement) and price floor of A\$15.

Key features of existing ETSs

c. Unique feature

- ✓ Take a phased in approach of starting with a fixed price
- ✓ Update five-year cap each year
- ✓ Take a set of supplementary measures to reduce impact of carbon price

d. Key issues

- ✓ Repeal of CPM due to public opinion and political views.
- ✓ Lack of global deal impacted acceptance of scheme
- ✓ High cost of compliance

2 、 Experience and lessons learned

- Experience and lessons learned
- Implication for future ETS development

Experience and lessons learned

1. Experience and lessons

① Political and legal frameworks:

- ✓ Political support and a legal foundation are critical for the success of an ETS;
- ✓ Long-term and consistent policy is important for stabilizing market development

② System design

- ✓ **Cap setting:** Cap needs to be long-term and ambitious with dynamic development through review and adjustment to ensure its stringency
- ✓ **Allocation:** Auctioning is the most effective allocation approach. Free allocation can reduce political and industrial reluctance but should be phased out over time. Need for measures to prevent windfall profits when using free allocations
- ✓ **Flexible measures:** need to not only improve short-term cost effectiveness but also drive low carbon investment in the long-term to ensure environmental effectiveness
- ✓ **Price management measures:** need to be more active and dynamic

Experience and lessons learned

- ✓ Take early consideration on future linking
- ③ **Reduce impact of carbon price:** measures need to be diversified and help foster industrial competitiveness in long-term
- ④ **Development strategy:**
 - ✓ phased approach can help prepare both industry and regulators for trading and minimize learning cost
 - ✓ A phased approach should maintain consistent design principles
- ⑤ **Take into account the interaction** between ETS policy and other policies

2. **Implications for future development of ETS**

- ✓ The need for a long term ambitious cap to provide consistent investment incentives and avoid short-term price volatility;
- ✓ The need for more flexible measures and frameworks to response to unexpected changes
- ✓ The need for a commitment to the long-term value of emission allowances and credits

3 、 Analysis of China Pilot ETSs

- Comparison of Pilot ETSs
- First year Performance
- Assessment

Comparison of Pilot ETSs

1. Similarity

- ❑ Caps are set in line with the carbon intensity targets
- ❑ Each pilot has adopted an absolute cap
- ❑ Each pilot has broad sector coverage and large number of participants
- ❑ Most allowances are free allocation with ex-post adjustments
- ❑ All pilots use China Certified Emission Reduction (CCERs) as offset credits
- ❑ All pilots prohibit borrowing and all (with the exception of Hubei) allow banking between years
- ❑ The same compliance Period

Comparison of Pilot ETSs

2. Difference

- ❑ Different baseline determination for free Allocations
- ❑ Slightly different allocation approaches
- ❑ Different MRV methodologies
- ❑ Different limits on use of offset
- ❑ Different Compliance and enforcement frameworks
- ❑ Different price Management Measures

First Year Performance

1. Trading analysis

- Low Trading volume
- Disproportionately high trading volume in last month for compliance

	Cumulative Trading Volume (tCO2)	Trading volume relative to cap
Shenzhen	1,635,786	4.94%
Shanghai	1,553,460	0.57%
Beijing	952,655	1.11%
Guangdong	1,293,163	0.17%
Tianjin	1,059,740	0.33%

First Year Performance

2. Compliance

- Achieve high compliance rate with additional supporting measures

	Compliance Deadline	Actions Taken to Support Compliance	Percentage Compliance
Shenzhen	30-Jun-2014	Auctioning allowances at half market price	99.4%
Shanghai	30-Jun-2014	Auctioning allowances at 1.2 times market price	100.0%
Beijing	15-Jun-2014	No	47.6%
Guangdong	20-Jun-2014	Deadline Extended to 15 July 2014	98.9%
Tianjin	31-May-2014	Deadline Extended to 10 July 2014	96.5%

Assessment

1. Achievement

- Testing Different approaches for system design
- Laying a basic foundation for the trading infrastructure
- Building capacity
- Significant progress in environment compliance

2. Issues faced by pilots

- **system design**
 - ✓ Small geographical scope limiting market size and liquidity
 - ✓ A large number of participants creating challenges for MRV, administration and compliance

Assessment

- ✓ Reliance on free allocation reducing trading volume and market liquidity
- ✓ Lack of co-ordination between pilot regions creating barriers for future linking and transition
- ✓ No financial derivatives
- Lack of a legal foundation
- Uncertainty of future development
- Lack of understanding in emissions trading schemes
- Weak executive capacity for compliance and enforcement

4、 Recommendations for Establishing a national wide ETS

- Critical issues to be addressed
- Possible approaches
- Policy recommendation

Critical issue to be addressed for national ETS

- ❑ Quality of historic emissions data
- ❑ Capping emissions under a strong economic growth trend
- ❑ The disparity in economic development and market readiness
- ❑ Capacity for carrying out MRV
- ❑ Legal and regulatory Issues
- ❑ Coordination between policies
- ❑ Existing electricity regulations

Possible approaches

- 1. Option 1: Implementing a centralized national ETS**
 - ✓ Characteristics: Central government directly design and operate the system
 - ✓ Advantage: easy to manage
 - ✓ Disadvantage: one rule may not fit for all
- 2. Option 2: Developing multiple regional systems based on existing pilots**
 - ✓ Characteristics: Region collaboratively design and operate the system
 - ✓ Advantage: collaborate regional efforts to reduce carbon emissions and air Pollution
 - ✓ Disadvantage: lack of political and legal framework
- 3. Linking pilots and gradually integrating new systems**
 - ✓ Characteristics: Common rules for design and operation, decentralized management, centralized governance
 - ✓ Advantage: gradual development and considering disparity in development levels and market readiness
 - ✓ Disadvantage: weak local capacity for ETS and local trade barrier

Policy Recommendations

- 1. Establish a nationwide ETS by linking pilots and gradually integrating new systems**

Prerequisites:

- ✓ Set out a goal of establishing a nationwide system and timetable for provinces and cities to be phased in
- ✓ Develop a set of common rules for design and operation
- ✓ Formulate policies to permit the transaction of allowances/carbon credits for meeting respective carbon intensity targets
- ✓ Build a central registry or tracking system

- 2. Establish a long-term cap that reflects long-term targets with mechanisms to periodically review and adjust**

Policy Recommendations

- 3. Clarify the Long-term use value of emissions allowances and credits**
- 4. Establish national ETS legislation to ensure proper functioning of the ETS**
 - ✓ Establish National ETS Legislation Instead of Management Regulation
 - ✓ Enhance capacity for Implementation of MRV, Compliance and Enforcement
- 5. Address critical policy issues**
 - ✓ Formulate a long-term plan to address climate change
 - ✓ Ensure that energy policy being consistent with climate change mitigation objectives
 - ✓ Reform the electricity pricing system
- 6. Enhance coordination between emissions trading and energy development, energy conservation and environmental policies**

Thank you !

Imo@cmp-adb.org

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