

Shenzhen Emission Trading System Pilot

October 31, 2013

Abstract. At the June 18, 2013 launching ceremony, National Development Reform Commission Vice Minister Mr. XIE Zhenhua said: “*The official launch of Shenzhen’s carbon trading program that we just witnessed once again demonstrated Shenzhen’s speed and pioneering spirit. By providing valuable experience for the pilot work, Shenzhen serves as leading model for the carbon trading pilots.*” Though Shenzhen’s emission inventory represents a small fraction of China’s total emission, it’s a vivid proof of the market mechanism concept. And the lessons learned from Shenzhen will be instructive to the other six ETS and China as a whole. In this sense Shenzhen ETS will have far reaching and profound impacts.



(Left to Right) Mr. SU Wei (Director-General of Department of Climate Change, NDRC), Mr. XU Shaohua (Executive Vice Governor of Guangdong Province), Mr. XIE Zhenhua (Vice Minister of NDRC), and Mr. LV Ruifeng (Executive Vice Major of Shenzhen Municipal Government) at the Shenzhen ETS launching ceremony on June 18, 2013.

Shenzhen, First of Seven Pilots

Shenzhen, a vibrant city of 15 million population with annual GDP growth rate of 10% (2012), is the first of seven pilots to launch its carbon trading system. In the coming months Beijing, Shanghai, Tianjin, Chongqing and the provinces of Guangdong and Hubei are expected to join Shenzhen and launch their own ETS systems. Together, these regions have a CO₂ inventory over 1.5 billion tons; a population of approximately 250 million, a geographic area bigger than 481,000 km², nearly equal to that of California and New England combined. The cumulative economies of these seven pilots exceed 29% of China’s GDP.

Aggressive Goals

The Shenzhen ETS covers about 40% of its total CO₂ inventory. Its primary goals are to cap enterprise emissions and reduce CO₂ intensity by 25%. Ultimately China’s leaders will refer to the experience again through Shenzhen ETS when they were to consider the emission trading on national level.

Multi-Sectoral

The ETS includes 635 enterprises and 197 large buildings in 2013. The sectors covered by the ETS are energy sector (primarily power sector), water supply sector, large-scale public buildings sector, and manufacturing sector. Over time, transportation sector is also expected to be included into the program since 2014.

Mechanics Prior to program launch, Shenzhen inventoried its sources, defined its total cap, and allocated emission allowances that are useable over the three-year term of the pilot. During the course of the ETS, covered enterprises must measure and report their CO₂ emissions first and then use qualified third party verification bodies to verify their emissions. The goal of the enterprises are to keep their emissions no more than their allocated carbon intensity—either through process changes or via efficiency upgrades. Those that are able to operate below their cap may either bank (keep for later use or sale) or sell their surplus allowances.

Meaningful Penalties

If the enterprises emit more emissions than the quantity of allowances/CCERs surrendered, then the enterprise must: (a) forfeit an equal quantity of allowances; and (b) pay a monetary penalty equal to three times the average market price of allowances.

Lessons for the Pilots, China, and the Rest of the World

In the context of China’s billions tons CO₂ (2011) and 1.3 billion people (2012), Shenzhen’s scope has been referred to as a *drop in the bucket*. However, it is important to remember that lessons learned through the Shenzhen experience will be incorporated into the remaining 6 pilots and ultimately into the national cap-and-trade scheme that China was planning. In this sense, *Shenzhen will bring about significant and profound impacts.*



Shenzhen, the first of China’s seven Emissions Trading Systems

Unique Elements of the Shenzhen ETS

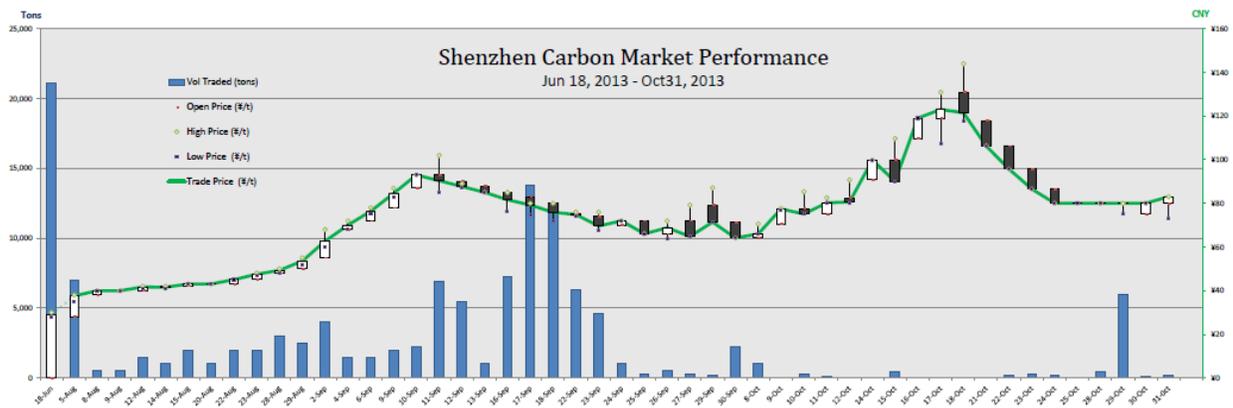
A Fixed Cap with Adjustable Features

Shenzhen has capped emissions between 2013 and 2015 at approximately 132 million tons, which is the sum of allowances cap 120 million tons (about 40 million tons allowances each year) and 12 million tons offsetting credits for three years. The cap includes the following design features that are uniquely designed to protect the needs of a growing economy, guard against extreme price swings, and protect the integrity of the cap:

1. A reserve equal to 2% of Shenzhen allowances (SZAs) will be provided to new entrants without charge
2. 90% of SZAs will be distributed without charge
3. A reserve equal to 3% be auctioned
4. An up to 10% of SZAs may be given to enterprises without charge based on the real production data and carbon intensity
5. Enterprises that fail to achieve their carbon intensity may have their allocated SZAs deducted by an unlimited amount
6. To mitigate price increases, a reserve equal to 2% of SZAs be offered for sale at a fixed price
7. To mitigate price crash, up to 10% of already distributed effective SZAs may be back purchased by the government for price stabilization

Market Results To Date

Five months after its kick-off, the Shenzhen carbon market holds trades nearly every business day, with total volume of more than 120,000 tons and total value more than 8 million RMB.



Daily and total trade volumes can be expected to increase when the final regulations are published (December 2013), compliance reports are submitted (March 31, 2014), verification reports are submitted (April 30, 2014), and when SZAs/CCERs must be surrendered (June 30, 2014).

Shenzhen Emissions Trading System FAQs

What is the Shenzhen ETS?

The Shenzhen emissions trading system (ETS) is one of seven pilot carbon trading programs that are under development in China. The others are in the provinces of Guangdong and Hubei and the municipalities of Beijing, Shanghai, Tianjin, and Chongqing.

Who developed the ETS?

The Municipality of Shenzhen developed the pilot ETS through consultations with the National Development and Reform Commission (NDRC). The Shenzhen Municipal Development and Reform Commission (SZDRM) led the research team that consists of the China Emissions Exchange and other research institutes to conduct the preparation for ETS, together with other government agencies.

Who administers the ETS?

The SZDRM administers the ETS and operates the Registry. The China Emissions Exchange operates the market through which allowances and CCERs are transacted.

What are the goals of the ETS?

1. Cap emissions between 2013 and 2015.
2. By 2015 reduce CO₂ intensity of covered enterprises by 25% (in the aggregate) as compared to 2010 levels.
3. Assist Shenzhen to meet its 2015 goal of 21% reduction in carbon intensity and approximately 22.5% reduction in energy intensity as compared to 2010 levels.
4. Demonstrate the feasibility of using market mechanism (i.e. carbon trading) to reduce CO₂ emissions.

How many enterprises are included in the ETS?

Currently, 635 enterprises and 197 large-scale public buildings are included in the ETS in 2013. A number of bus companies and taxi companies may be included in 2014. In addition, more industrial companies and large-scale public buildings will be included in since 2014.

How much CO₂ do the enterprises emit?

The industrial sources that are part of the ETS directly or indirectly emitted about 32 million tons in 2010 and 33 million tons in 2012 which is approximately 40% of entire Shenzhen CO₂ inventory.

How big is the cap?

The three year (2013–2015) SZAs for 635 enterprises and the 197 buildings is 120 million tons. Each SZA = 1 ton of CO₂. In three years, the total cap consists of tons:

Tons	% of cap	Purpose/Distribution
2.4 million	2	New entrants
3.6 million	Up to 3	Auction
100 million	83	Initial free allocation
12 million	Up to 10	Post-adjustment without any charge
2.4 million	2	Price containment reserve

* May be increased (up to 10%) or down (unlimited amount)

Is the cap fixed and absolute?

Yes. Shenzhen ETS employs an absolute and fixed cap for all the covered entities and a fixed carbon intensity target for each covered entities. The real number of allowed given to covered entities without charge will vary and be kept below the absolute and fixed cap without any doubts.

Can enterprise allocation be adjusted?

Yes. SZAs issued for free can be adjusted up (by as much as 10% of the total SZAs) or down (no maximum) based on actual emissions and production data during the first quarter of each year and by May 31 of the year following emissions.

When are free SZAs distributed?

Free SZAs will be given to enterprises by the end of first quarter of each year. For new entrants, free SZAs will be given after the operation date of new entrants of that year.

How are free SZAs distributed?

Historical emission, sectoral emissions, expected future emissions and other factors are used to calculate how many SZAs are received by enterprises. Classified energy consumption and emission limits are used to determine how SZAs are distributed to buildings.

Are indirect and direct emission sources in the ETS?

Yes, both direct emission sources (enterprises that emit CO₂ from their on-site operations) and indirect emission sources (enterprise and buildings that use electricity derived from fossil-fuel fired power generation) are included in the ETS.

When must emission be reported and verified?

Enterprises must report emissions to the government by March 31 of each year. By April 30, third party verification reports are to be submitted to the government.

When must enterprises surrender their SZAs/CCERs for compliance?

By June 30 of each year, enterprises are required to submit SZAs (and/or CCERs) equal to their prior year emissions to the government.

How are emissions assessed and compliance determined?

Emissions are assessed through the use of data provided by: electronic reporting of controls employed, fuels purchased, and fuels consumed; third party verifier audits; and government inspections of enterprise operations. Compliant enterprises are those which the government determines, on an annual basis, surrender emission allowances and/or CCERs in quantities equal to their actual emissions.

Will the government buy back SZAs?

The government may purchase up to 10% of the effective SZAs in circulation in order to protect the price. Funds are sourced from auction proceeds, fines, and donations etc.

Is banking and/or borrowing allowed?

Banking is allowed. Borrowing is not allowed.

May enterprises use offsets?

Yes. Once approved and issued by the NDRC, the CCERs can be used up to 10% for compliance. Limits on the quantity, type, and geographic location of offsets will be forthcoming.

How is emissions accounting done for indirect sources?

Indirect sources are required to regularly measure and report on the energy and carbon intensity of their operations. Furthermore, such sources have been issued a fixed amount of SZAs that correlates with the electricity that they consume. These sources must track both the electricity that they consume and retire a corresponding amount of SZAs (and/or CCERs). Carbon emissions are calculated from data of electricity consumption and emission factors for sources in the local grid.

What are the penalties?

Enterprises that fail to retire sufficient allowances must: (a) pay a penalty equal to three times the average market price of emission allowances over the prior six months and (b) make up the deficit through allowance purchases or forfeitures. Failure to submit data in a timely manner can result in financial penalties. Penalties are also established for trading agencies, verification agencies, market participants, and the government itself.

Where do trades occur?

Trades occur on the China Emissions Exchange in Shenzhen.

Who can trade?

Covered enterprises and qualified entities and investors are allowed to participate in auctions and to trade emission allowances and CCERs.

Is there a price stabilization mechanism?

Yes. A quantity of SZAs equaling 2% of the allowances cap may be used by the government to stabilize prices. Also, in order to curb price declines, the government may buy back from the market up to 10% of effective allowances.