ANALYTICAL REPORT ON THE STATUS OF THE CHINA GHG VOLUNTARY EMISSION REDUCTION PROGRAM

EDF
ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

SinoCarbon Innovation & Investment
中创碳投
SinoCarbon Innovation & Investment Co., Ltd

I ABOUT THIS REPORT

Since the China GHG Voluntary Emission Reduction Program officially launched its registry in 2015, each of China's local carbon markets have introduced offset mechanisms and conducted a variety of related tests and adjustments. The China GHG Voluntary Emission Reduction Program has already become an important component for each of China's local carbon markets, while China's national emission trading system (ETS) also plans to use China Certified Emission Reductions (CCERs) as offset credits in the future. Furthermore, CCER has been adopted both by the "Implementation Guidelines for Carbon Neutrality of Large-Scale Events (Trial)" as a recommended voluntary emission reduction credit and by CORSIA as one of the eligible emissions units.

The purpose of this report is to summarize both the current status of the China GHG Voluntary Emission Reduction Program with comprehensive data analysis and the design of offset mechanisms in China's local carbon markets with detailed elements comparison, in turn providing reference material for future development of the China GHG Voluntary Emission Reduction Program and on how to introduce the offset mechanisms into the national ETS.

II CURRENT STATUS OF THE CHINA GHG VOLUNTARY EMISSION REDUCTION PROGRAM

The National Development and Reform Commission (NDRC) began developing the framework of the China GHG Voluntary Emission Reduction Program in 2009. The NDRC officially published the "Interim Measures on the Management of the GHG Voluntary Emission Reduction Program" (hereinafter referred to as "Interim Measures") in June 2012 and then the "Guidelines on Certification and Verification of Voluntary GHG Emissions Reduction Projects" in October 2012. These two documents set the guideline for China GHG voluntary emission reduction project development and clarified its working procedures. In January 2015, the national registry of Voluntary Carbon Emission Reductions was launched, marking the official start of trading for China's GHG Voluntary Emission Reduction Program and signifying that China Certified Emission Reductions (CCERs) can be used for compliance of China's local carbon markets. In March 2018, the responsibilities for addressing climate change and managing the China GHG Voluntary Emission Reduction Program were transferred from the NDRC to Ministry of Ecology and Environment (MEE). As of April 2020, a total of 9 exchanges, 12 verification bodies, and 200 emission reduction methodologies (173 of which were adopted or modified from Clean Development Mechanism (CDM), while 27 are newly developed methodologies) A have been successfully certified or approved. Milestones in the development of the China GHG Voluntary Emission Reduction Program are shown in the table below.

Table 2-1 Milestones in the Development of the China GHG Voluntary Emission Reduction Program

Date	Milestones in the Development of the China GHG Voluntary Emission Reduction Program
Jun 13, 2012	Issued the "Interim Measures on the Management of the GHG Voluntary Emission Reduction Program"
Sep 21, 2012	Released application forms for both project registration and emission reductions issuance for the GHG Voluntary Emission Reduction Program
Oct 09, 2012	Issued the "Guidelines on Validation and Verification of GHG Voluntary Emissions Reduction Projects"
Jan 16, 2013	Certified 5 GHG voluntary emission reduction exchanges: China Beijing Environment Exchange, Tianjin Climate Exchange, Shanghai Energy and Environment Exchange, China Emission Exchange (Guangzhou) and China Emission Exchange (Shenzhen)
Mar 04, 2013	Approved 52 GHG voluntary emission reduction methodologies (first round of additions)
Jun 13, 2013	Certified 2 GHG voluntary emission reduction verification bodies (first round of additions): China Quality Certification Center and the CEPREI Certification Body
Sep 02, 2013	Certified an additional GHG voluntary emission reduction verification body (second round of additions): China Environmental United Certification Center (CEC)
Oct 24, 2013	The China Certified Emission Reduction Exchange Info-Platform[1] was launched, which published information related to CCER project verification, registration, and emission reductions issuance
Oct 25, 2013	Approved 2 additional GHG voluntary emission reduction methodologies (second round of additions)
Jan 22, 2014	Approved an additional 123 GHG voluntary emission reduction methodologies (third round of additions)
Feb 26, 2014	Released the template for the GHG Voluntary Emission Reduction Project Design Document ("F-CCER-PDD") - Version 1.1

1 China Certified Emission Reduction Exchange Info-Platform , http://cdm.ccchina.gov.cn/ccer.aspx

Date	Milestones in the Development of the China GHG Voluntary Emission Reduction Program
Apr 01, 2014	Certified 2 additional GHG voluntary emission reduction exchanges (second round of additions): Chongqing United Assets and Equity Exchange and China Hubei Emission Exchange
Apr 14, 2014	Approved an additional GHG voluntary emission reduction methodology (fourth round of additions)
Apr 16, 2014	Released the template for the GHG Voluntary Emission Reduction Project Monitoring Report ("F-CCER-MR") - Version 1.0
Jun 20, 2014	Certified 3 additional GHG voluntary emission reduction verification bodies (third round of additions): Foreign Environmental Cooperation Center (under the Ministry of Ecology and Environment), China Classification Society Certification Company (CCSC), and SinoCarbon Innovation & Investment Co., Ltd.
Aug 19, 2014	Certified 3 additional GHG voluntary emission reduction verification bodies (fourth round of additions): China Academy of Agricultural Sciences, CTI Certification, and the Research Institute of Forestry Policy and Information (RIFPI) of the Chinese Academy of Forestry (CAF)
Dec 10, 2014	Issued the "Interim Measures for the Carbon Emissions Trading Management"
Jan 14, 2015	The Registry of the China GHG Voluntary Emission Reduction Program Program was launched
Jan 27, 2015	Approved 3 additional GHG voluntary emission reduction methodologies (fifth round of additions)
Nov 29, 2015	Approved 11 national standards related to greenhouse gas emissions accounting and reporting, including the "General Guidelines of Greenhouse Gas Emissions Accounting and Reporting for Industrial Enterprises."
Feb 25, 2016	Approved 7 additional GHG voluntary emission reduction methodologies (sixth round of additions)
Mar 10, 2016	Certified 1 additional GHG voluntary emission reduction verification body: China Building Material Test & Certification Group Co. Ltd.
May 20, 2016	Certified 1 additional GHG voluntary emission reduction exchange: Sichuan United Environment Exchange
Jun 02, 2016	Approved 3 additional GHG voluntary emission reduction methodologies (seventh round of additions)
Jun 20, 2016	Approved 1 additional GHG voluntary emission reduction methodology (eighth round of additions)
Jul 22, 2016	Approved 1 additional GHG voluntary emission reduction methodology (ninth round of additions), and certified 1 additional GHG voluntary emission reduction exchange: Haixia Equity Exchange
Jul 28, 2016	Approved 4 additional GHG voluntary emission reduction methodologies (tenth round of additions)
Aug 12, 2016	Approved 1 additional GHG voluntary emission reduction methodology (eleventh round of additions)
Aug 31, 2016	Approved 2 additional GHG voluntary emission reduction methodologies (twelfth round of additions)
Mar 14, 2017	Issued the "NDRC Announcement on Suspending Applications for GHG Voluntary Emission Reduction Methodologies, Projects, Emission Reductions Issuance, Verification Bodies, and Exchanges." CCER projects' development were suspended accordingly as the GHG Voluntary Emission Reduction Program entered the reform stage
Mar 15-16, 2017	Certified 2 additional GHG voluntary emission reduction verification bodies: Zhengzhou Non-Ferrous Metals Research Institute Co., Ltd. of Aluminum Corporation of China Limited (CHALCO) and Jiangsu Xinglin Carbon Engineering Consulting Co., Ltd.
Jun 14, 2019	Issued the "Implementation Guidelines for Carbon Neutrality of Large-Scale Events (Trial)," which has recommended CCER as the preferred option for achieving carbon neutrality

Information on the China GHG Voluntary Emission Reduction Program can be found via the China Certified Emission Reduction Exchange Info-Platform. This platform is the official channel for CCER-related information, including registered projects information, approved emission reductions' issuance, approved GHG emission reduction methodologies, and related technical standards. As of April 2020, 2,856 CCER projects have been validated, 1,047 CCER projects have been registered, and 287 CCER projects have had their emission reductions approved for issuance.

The 1,047 registered CCER projects are expected to reduce emissions by 139.57 million tCO_2e annually. Among these 1,047 projects, 786 projects belong to the first project category[1] and are expected to reduce emissions by 82.07 million tCO_2e annually; 61 projects belong to the second project category and are expected to reduce emissions by 12.17 million tCO_2e annually; and 200 projects belong to the third project category and are expected to reduce emissions by 45.32 million tCO_2e annually. Wind power, photovoltaic power, hydropower, and rural household biogas utilization are the most numerous types of registered projects and account for 81% of all registered projects. A comprehensive view of registered project types is shown in the figure below.

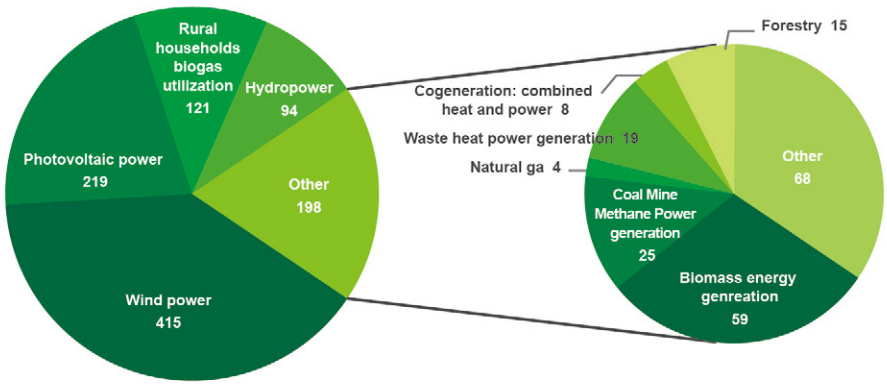


Figure 2-1 Number of Registered Projects

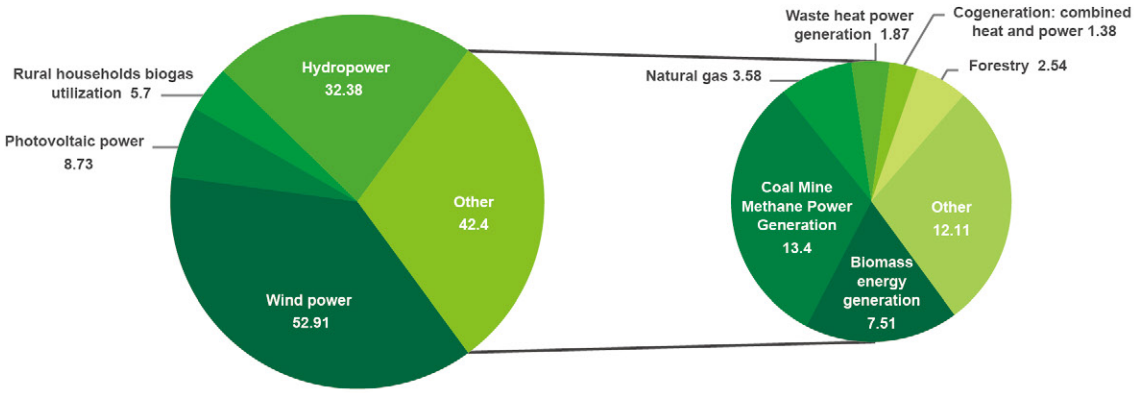


Figure 2-2 Anticipated Annual CO_2 Emission Reductions from All Registered Projects (millions of tCO_2e)

1 The first project category includes voluntary emission reduction projects that use methodologies approved by the China's national government authority. The second project category includes the projects approved by NRDC for CDM project registration but have not been registered as CDM projects. The third project category includes the projects approved by NRDC for CDM registration and had generated emission reductions prior to their CDM project registration; and the forth project category includes projects registered as CDM projects and have not been issued any Certified Emission Reductions (CERs).

254 of the 287 CCER projects that have had their emission reductions approved for issuance have detailed project information published on the China Certified Emission Reduction Exchange Info-Platform. The combined emission reductions approved for issuance of these projects reaches a total of about 52.83 million tCO_2e. Among these 254 projects, 139 projects are in the first project category and have 18.9 million tCO_2e emission reductions approved for issuance; 17 projects are in the second project category and have 3.72 million tCO_2e emission reductions approved for issuance; and 98 projects are in the third project category and have 30.31 million tCO_2e emission reductions approved for issuance. Wind power, photovoltaic power, hydropower, and rural household biogas utilization projects are the most numerous types of registered projects that have emission reductions approved for issuance. Other project types account for a relatively small portion of the total registered projects that have emission reductions approved for issuance, and include waste heat power generation; biomass power generation; and land use, land use change, and forestry (LULUCF).

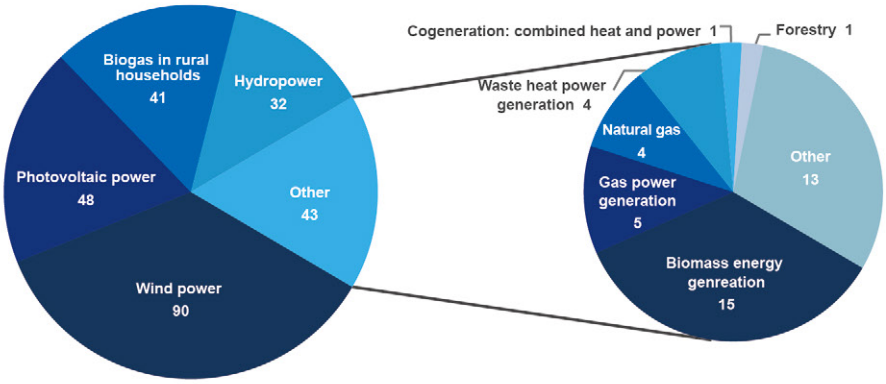


Figure 2-3 Number of Projects with Emission Reductions Approved for Issuance

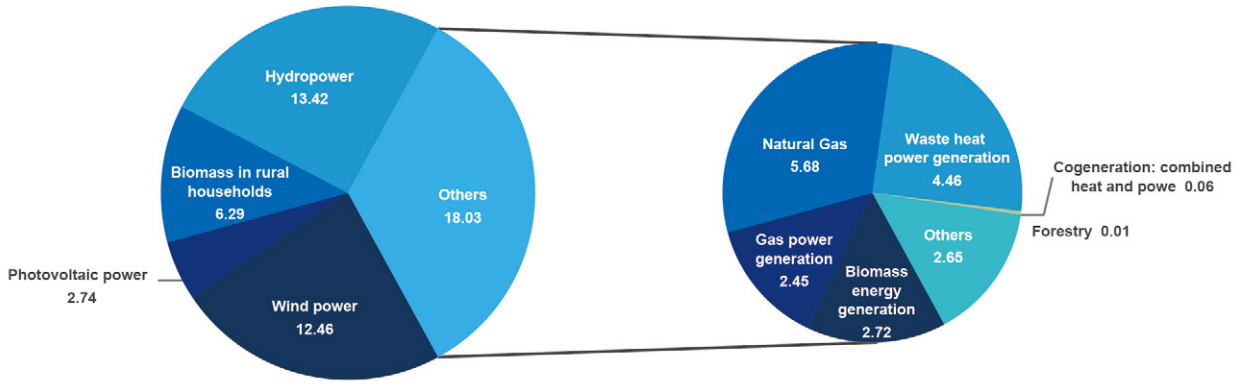


Figure 2-4 Approved Emission Reductions for Issuance by Project Type (million tCO_2e)

On March 14, 2017, the NDRC issued the "NDRC Announcement on Suspending Applications for GHG Voluntary Emission Reduction Methodologies, Projects, Emission Reductions Issuance, Verification Bodies, and Exchanges." According to the announcement, the NDRC was revising the "Interim Measures" in order to improve and standardize the China GHG Voluntary Emission Reduction Program, to promote green and low-carbon development, and to optimize the relevant administration and management processes. Since the announcement, national authorities have suspended applications for methodologies, projects, emission reductions issuance, verification bodies, and exchanges for the China GHG Voluntary Emission Reduction Program. After the institutional restructuring in March 2018, the MEE is now responsible for revising the "Interim Measures." Once the revision is complete, applications related to the China GHG Voluntary Emission Reduction Program will be handled by the MEE in accordance with the new measures. Transactions, deliveries, and retirements of CCERs that were issued prior to March 14, 2017 will not be affected.

Ⅲ THE DESIGN OF CARBON OFFSET MECHANISMS IN CHINA'S LOCAL CARBON MARKETS

Under the carbon market framework, offset mechanisms are commonly used to allow covered enterprises to use voluntary emission reductions in fulfilling their compliance obligations. The goal of adopting offset mechanisms in carbon markets is to effectively reduce covered enterprises' compliance costs and to promote a low-carbon transformation, as well as encourage projects that have not been included in the carbon market to voluntarily generate emission reductions, in turn making profits that can be seen as a subsidy for the project. Due to the different rules for each of China's local carbon markets, emission reductions have varying restrictions, including those on the type of the emission reduction project, the region generating the emission reductions, and generation date of the emission reductions.

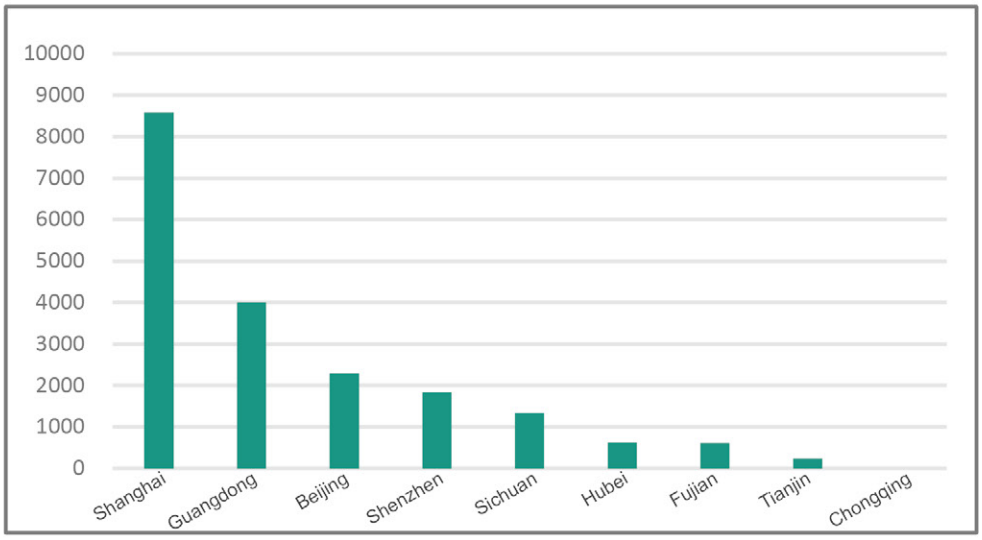


Figure 3-1 Cumulative CCER Trading Volumes for China's Local Carbon Market, August 2019 (millions of tCO_2e)

1 AN ANALYSIS OF OFFSET MECHANISMS IN LOCAL CARBON MARKETS

Each of China's local carbon markets have different regulations on offset mechanisms. Chongqing highlighted offset mechanism rules in its carbon market management measures; Beijing, Shenzhen, Guangdong, and Fujian have published their respective offset mechanism management measures or regulations; while Shanghai, Hubei, and Tianjin have issued respective notices on adopting offset mechanisms.

Table 3-1 Offset Mechanism Regulations of China's Local Carbon Markets

Local Carbon Markets	Regulations
Shenzhen	Interim Measures for Shenzhen Carbon Emissions Trading Management Regulations for Offset Credits Management of the Shenzhen Carbon Emissions Trading Market (Interim)
Shanghai	Shanghai Municipality's 2013 – 2015 Carbon Emission Allowances Allocation and Management Plan Shanghai Municipality's 2016 Carbon Emission Allowances Allocation and Management Plan Shanghai Municipality's 2017 Carbon Emission Allowances Allocation and Management Plan Shanghai Municipality's 2018 Carbon Emission Allowances Allocation and Management Plan Notice of the Provisions on the Use of Offsetting Mechanisms during Shanghai Municipality's Carbon Emission Trading Pilot Phase
Beijing	Measures for Beijing's Carbon Emission Offsets Management (Trial)
Guangdong	Interim Measures for Guangdong Province's Carbon Emissions Management Regulations of the Guangdong Provincial Development and Reform Commission for Carbon Emission Allowances Management Interim Measures of the Guangdong Provincial Development and Reform Commission for Puhui Certification and Emission Reduction Management
Tianjin	Interim Measures for Tianjin Municipality's Carbon Emissions Trading Management Notice of the Tianjin Municipal Development and Reform Commission on the Use of Offset Mechanisms in the Tianjin Carbon Emissions Trading Pilot
Hubei	Notice of the Provincial Development and Reform Commission on the Relevant Matters Concerning the Hubei Province Carbon Emission Offset Mechanism in 2015 Notice of the Provincial Development and Reform Commission on the Relevant Matters Concerning the Hubei Province Carbon Emission Offset Mechanism in 2016 Notice of the Provincial Development and Reform Commission on the Relevant Matters Concerning the Hubei Province Carbon Emission Offset Mechanism in 2017 Notice of the Provincial Development and Reform Commission on the Relevant Matters Concerning the Hubei Province Carbon Emission Offset Mechanism in 2018
Chongqing	Chongqing Carbon Emission Allowances Management Regulations (Trial)
Fujian	Measures on Fujian Province's Carbon Emission Offsets Management (Trial)

(1) Choices in Voluntary Emission Reduction Programs

All of China's local carbon markets allow covered enterprises to use CCERs in fulfilling their compliance obligations. In addition, Beijing, Guangdong, and Fujian also allow certain carbon emission reduction products other than CCERs to fulfill covered enterprises' compliance obligations.

Beijing has designed two local voluntary emission reduction programs, specifically an energy saving program and a forestry carbon sequestration program. The energy saving program allows certain project types developed by enterprises that are not covered by the Beijing local carbon market to generate their emission reductions through energy efficiency retrofitting projects, energy performance contracting (EPC) projects, or cleaner production (CP) projects. This program design represents an attempt to connect different market-based mechanisms, including energy saving exchanges and EPC, to others like carbon emissions trading. As for the forestry carbon sequestration program, after receiving confirmation from Beijing municipal government authority and applying for registration as a CCER project in accordance with the "Interim Measures", forestry carbon sequestration projects can receive up to 60% of the pre-issued certified emission reductions from Beijing municipal government authority.

Fujian has also introduced a provincial forestry carbon sequestration program. According to the "Measures on Fujian Province's Carbon Emission Offsets Management (Trial)", forestry carbon sequestration projects must be developed in accordance with methodologies issued by the national or provincial government authorities. Fujian Forestry Certified Emission Reductions (FFCER) can be used to fulfill enterprises' compliance obligations in Fujian's local carbon market upon approval by Fujian government authority. Currently, the approved methodologies for forestry carbon sequestration projects include afforestation for carbon sequestration project methodology, forestry management for carbon sequestration project methodology, and bamboo forest management for carbon sequestration project methodology.

Additionally, Guangdong has introduced the Puhui Certified Emission Reduction Program. Guangdong Provincial Puhui Certified Emission Reductions Program (PHCER) is a complementary mechanism for Guangdong's local carbon market and can be used to fulfill its covered enterprises' compliance obligations. Currently, there are 5 approved PHCER methodologies covering 4 different project types, including forest protection, forest management, distributed photovoltaic power generation, and energy saving.

(2) Quantity Restrictions on Voluntary Emission Reductions

Each of China's local carbon markets allows covered enterprises to use a certain amount of voluntary emission reductions for fulfilling their compliance obligations. The limit on using voluntary emission reductions for compliance purposes is set as a portion of the covered enterprise's total emissions in a compliance cycle, ranging from 1% to 10%. Additionally, each local carbon market has their own rules for calculating the amount of voluntary emission reductions that can be used for compliance. In general, there are two major types of rules: those based on actual emissions and those based on emission allowances. Within the general category of rules based on emission allowances, there are also two subcategories: those based on pre-allocated emission allowances and those based on verified emission allowances. Shanghai's is the strictest of this type, allowing enterprises to use voluntary emission reductions for no more than the equivalent of 1% of their pre-allocated emission allowances for the compliance year. Beijing allows enterprises to use voluntary emission reductions for no more than the equivalent of 5% of their verified emission allowances for the compliance year, while Chongqing allows enterprises to use voluntary emission reductions for no more than 8% of their annual verified emissions. Conversely, Fujian allows enterprises to use voluntary emission reductions from forestry carbon sequestration programs for no more than 10% of their verified emissions per compliance year, and those from other projects to reach no more than 5% in total. All other local carbon markets allow enterprises to use voluntary emission reductions for up to 10% of either their annual emissions or their annual pre-allocated allowances.

3) Project Type Restrictions for Voluntary Emission Reductions

Each of China's local carbon markets has restrictions on the types of voluntary emission reduction projects that covered enterprises can use for fulfilling their compliance obligations. Shanghai, Beijing, Tianjin, Guangdong, and Chongqin do not allow the use of hydropower projects to fulfill covered enterprises' compliance obligations. Beijing

also does not allow projects that reduce emissions of non-CO_2 industrial greenhouse gases (such as HFCs, PFCs, N_2O, and SF_6) to be used towards fulfilling enterprises' obligations. Similarly, Guangdong only allows enterprises to use voluntary emission reductions from projects in which CO_2 and CH_4 constitute over 50% of the total reduced GHG emissions. Meanwhile, Guangdong also prohibits the use of voluntary emission reductions from fossil fuel-based power generation projects and waste heat power generation projects, with the exception of coal mine methane power generation projects. In 2015, Hubei banned the use of large and medium-scale hydropower projects in meeting compliance obligations; in 2016, Hubei further stipulated that only voluntary emission reductions from forestry related projects and rural household biogas utilization projects can be used for fulfilling compliance obligations.

(4) Originating Region Restrictions on Voluntary Emission Reductions

Local carbon markets in Beijing, Guangdong, and Hubei have stipulated that a certain amount of voluntary emission reductions used for fulfilling covered enterprises' compliance obligations must be generated within the respective province. Specifically, Beijing requires that at least 50% of voluntary emission reductions used for fulfilling covered enterprises' compliance obligations are locally generated, while voluntary emission reductions generated from projects outside of Beijing shall not exceed 2.5% of an enterprise's verified emission allowances for the compliance year. For reductions generated outside of Beijing, Beijing gives preference to those from areas it has signed cooperative agreements with on addressing climate change, ecological civilization development, and atmospheric pollution control, such as Hebei and Tianjin. An example of this is a transaction for thousands of tonnes of voluntary emission reductions on the Beijing carbon market in the first quarter of 2015, which were generated from an afforestation project in Chengde, Hebei. Additionally, Guangdong requires that at least 70% of voluntary emission reductions that are used for fulfilling covered enterprises' compliance obligations are locally generated, while Hubei and Fujian require that all voluntary emission reductions used for fulfilling covered enterprises' compliance obligations are locally generated.

In Hubei, a regulation was issued in April 2015 allowing an annual maximum of 50,000 tCO_2e in voluntary emission reductions from regions that have signed a carbon market cooperation agreement with Hubei Province. However, exact regions that had signed such agreements were not clearly specified in the regulation. In July 2016, Hubei then issued a notice stipulating that projects used towards covered enterprises' compliance obligations must be generated within a specifically designated poor region of Hubei. In June 2018, the regional restriction on voluntary emission reductions' usage in Hubei's carbon market was further narrowed down to poor counties, either nationally or provincially defined, along the area of the Yangtze River within Hubei.

(5) Date Restrictions on Voluntary Emission Reductions

Shanghai, Beijing, Tianjin, Guangdong, Hubei, Chongqing and Fujian all have use restrictions concerning voluntary emission reductions' date of generation. For example, Shanghai, Beijing, and Tianjin only permit the use of voluntary emission reductions that were generated after January 1, 2013. This is in part because the Registry of the China GHG Voluntary Emission Reduction Program did not record date information for each generated tonne of emission reductions, and only recorded the first and last generation date of the project's emission reductions that were approved for issuance. Thus, there remains a need to clarify whether emission reductions issued with a first generation date before and an last generation date after January 1, 2013 can be used for fulfilling compliance obligations. In response to this issue, Shanghai, Beijing and Tianjin have clarified that issued emission reductions with its first generation date that precedes January 1, 2013 cannot be used. Conversely, Hubei makes annual adjustments to its date restrictions for voluntary emission reduction projects based on the its market supply and demand for emission allowances. In 2016, the project crediting period time frame for compliance-eligible voluntary emission reductions was from January 1, 2015 to December 31, 2015, while in 2017 and 2018, the project crediting period was changed to January 1, 2013 to December 31, 2015. Guangdong prohibits the use of pre-CDM projects, meaning it does not allow the use of projects in the "third project category". Chongqing also has restrictions on the start time of projects generating compliance-eligible voluntary emission reductions, stipulating that projects must have been initiated in 2011 or later. Finally, Fujian indicates that projects must have begun construction after February 16, 2005 in order for their voluntary emission reductions to be eligible for compliance purposes.

Table 3-2 Design Overview of China's Local Carbon Markets Offset Mechanisms (continued)

Local Carbon Market	Quantity Restrictions	Permitted Voluntary Emission Reduction Programs	Originating Region Restrictions	Project Type and Date Restrictions
Shenzhen	Voluntary emission reductions can be used for no more than 10% of annual emissions	CCER	Designated the project originating province of wind, solar, and incineration power generation projects; Preferential use of voluntary emission reductions from regions that have signed carbon trading cooperation agreements with Shenzhen; Agriculture and forestry-related projects are not subject to region of origin restrictions	Renewable energy projects (wind, solar, incineration power generation, biomass power generation, and rural household biogas utilization projects); clean transportation projects; marine carbon sequestration projects; forestry carbon sequestration projects; and agricultural emission reduction projects are eligible
Shanghai	Voluntary emission reductions can be used for no more than the equivalent of 1% of pre-allocated emission allowances for the compliance year	CCER	None	Voluntary emission reductions should be generated after January 1, 2013. Hydropower projects are excluded from eligibility.
Beijing	Voluntary emission reductions can be used for no more than the equivalent of 5% of verified emission allowances for the compliance year	CCER, energy saving program emission reductions, and forestry carbon sequestration program emission reductions	Voluntary emission reductions generated outside of Beijing shall be used for no more than the equivalent of 2.5% of an enterprise's verified emission allowances for the compliance year; preferential use the voluntary emission reductions from the regions that have signed cooperative agreement with Beijing on addressing climate change	CCERs and energy saving program emission reductions should be generated after January 1, 2013; Forestry carbon sequestration program emission reductions should be generated after February 16, 2005; Hydropower projects and industrial GHG-related projects (such as HFCs, PFCs, N_2O, and SF_6) projects are excluded from eligibility.
Guangdong	Voluntary emission reductions can be used for no more than 10% of annual emissions	CCER, Puhui Certified Emission Reductions (PHCER)	At least 70% of an enterprise's verified voluntary emission reductions must be generated in Guangdong	Projects shall have CO_2 and CH_4 constitute over 50% of their reduced GHG emissions; Hydropower projects, coal, oil, and natural gas (excluding coal mine methane) power generation projects, other fossil fuel power generation projects, and heating and waste heat power generation are excluded from eligibility; Pre-CDM projects in the "third project category" are also excluded
Tianjin	Voluntary emission reductions can be used for no more than 10% of annual emissions	CCER	Preferential use of voluntary emission reductions that are generated in the Beijing-Tianjin-Hebei ("Jing-Jin-Ji") Region	Voluntary emission reductions should be generated after January 1, 2013; Hydropower projects are excluded from eligibility
Hubei	Voluntary emission reductions can be used for no more than the equivalent of 10% of annual pre-allocated allowances (emission reductions without issuance approval may be used for no more than 60% of its original designed reductions within the crediting period)	CCER	Poor counties, either nationally or provincially defined, along the area of the Yangtze River within Hubei	Limited to rural household biogas utilization and forestry related projects; Crediting period is from January 1, 2013 to December 31, 2015
Chongqing	Voluntary emission reductions can be used for no more than 8% of verified annual emissions	CCER	None	Projects must have begun operation after December 31, 2010 (this restriction does not apply to carbon sequestration projects); Hydropower projects are excluded from eligibility
Fujian	Voluntary emission reductions can be used in the following amounts for verified emissions per compliance year: no more than 10% of total from forestry carbon sequestration projects and no more than 5% from other projects	CCER, Fujian Forestry Certified Emission Reductions (FFCER)	All voluntary emission reductions must be locally generated in Fujian	Only projects that reduce CO_2 and CH_4 emissions are eligible. (This restriction does not apply to hydropower projects.)

(6) Avoiding Double Counting for Emission Reductions

Each of China's local carbon markets shares a common principle of banning enterprises from using voluntary emission reductions generated by other covered entities within the same region. The goal of this regulation is to avoid double counting of both carbon emission allowances and voluntary emission reductions. However, due to limitations in each carbon market's scope of regulatory power, they have been unable to prevent their covered enterprises from using voluntary emission reductions that are generated by entities in other local carbon markets, leading to the issue of cross-region double counting. This problem requires a coordinated resolution at the national level.

2 ANALYSIS ON OFFSET MECHANISMS' IMPLEMENTATION IN EIGHT LOCAL CARBON MARKETS

According to transaction data released from China's local carbon market exchanges, cumulative transactions for CCERs have respectively reached the following trade volumes in each carbon market as of August 2019 (includes online transactions and over-the-counter transactions): 85,787,398 tCO_2e in Shanghai; 22,817,330 tCO_2e in Beijing; 40,019,747 tCO_2e in Guangdong; 18,371,748 tCO_2e in Shenzhen; 6,198,116 tCO_2e in Hubei; 2,407,827 tCO_2e in Tianjin; and 6,111,446 tCO_2e in Fujian; there were no recorded complete transactions in Chongqing. The eight local carbon markets have reached a combined CCER trading volume equal to 190 million tCO_2e. Under each local carbon market's current offsetting mechanism, project types such as wind power, photovoltaic power, and forestry carbon sequestration projects have been the most popular. Approximately 18 million tCO_2e of CCERs have been retired after fulfilling compliance obligations.

Currently, the China GHG Voluntary Emission Reduction Program displays several unique characteristics, three of which are outlined as follows.

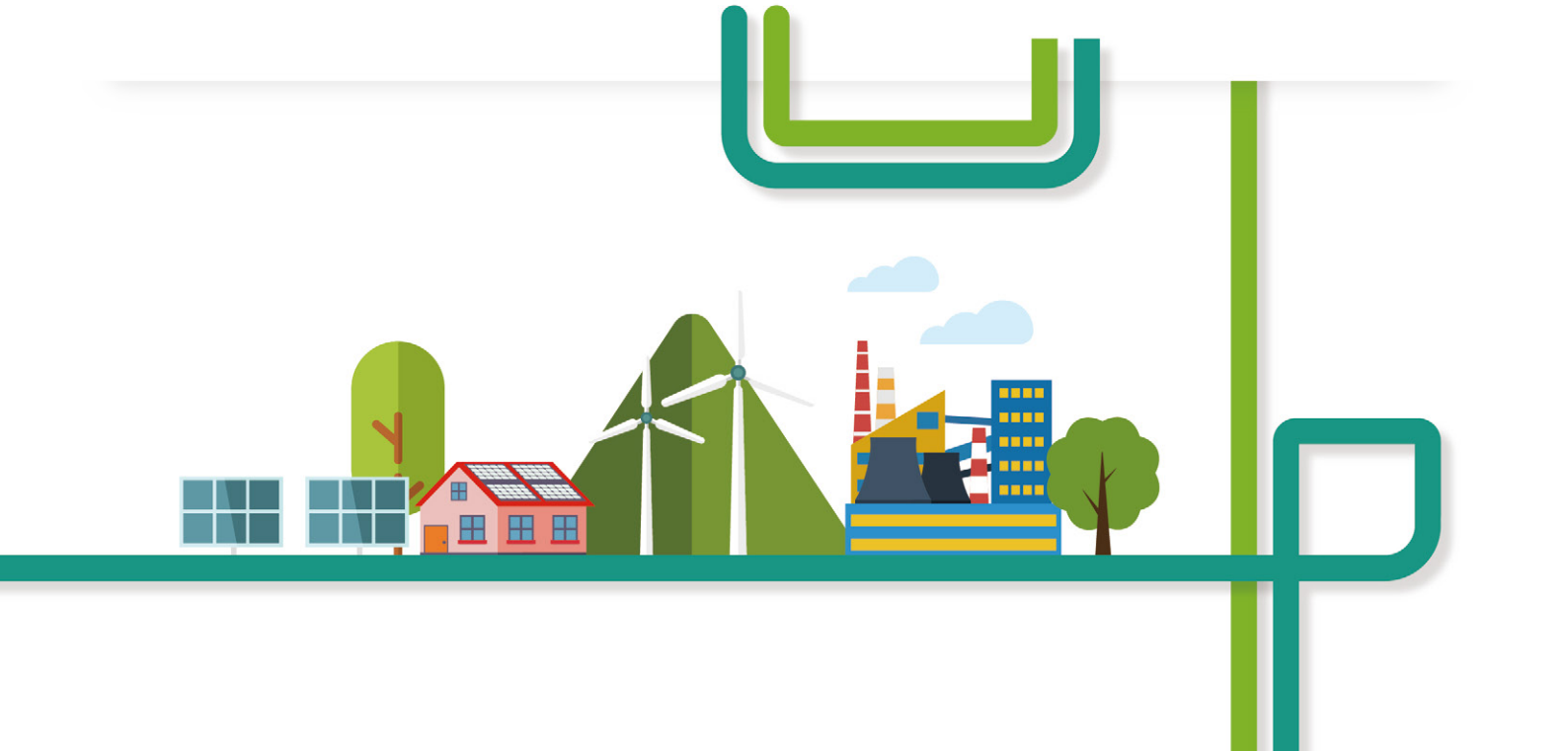
1) Over-the-counter (OTC) transactions are the main channel for trading of voluntary emission reductions. There are two main reasons. First, OTC transactions facilitate reaching a consensus and confirming details like transaction quantity, transaction volume, and delivery date at an early stage. Second, OTC transactions provide greater flexibility for both parties, especially in terms of discussing and reaching agreement on a suitable price for the transaction.

2) Price differentiation exists among the local carbon markets. There are two main reasons. First, local carbon markets' offsetting regulations have a decisive impact on pricing for CCERs. CCERs that are compliance-eligible in multiple local carbon markets are more expensive than ones that are more limited in scope. Second, CCER prices vary in different local carbon markets. The local supply and demand of emission allowances affect CCER prices, especially the CCER market price at local exchanges.

3) Investment institutions play a prominent role. Given that these organizations have a degree of related project development experience, they serve a two-part role in CCERs' development and in stimulating transactions. First, investment institutions actively participate in development of CCER projects, as well as help project owners on project registration. Second, investment institutions serve as a "middleman" in transactions, helping create trading opportunities and facilitating CCERs' general circulation.

IV CONCLUSION

At present, each of China's local carbon markets has conducted a variety of tests on and adjustments to their offset mechanisms. As more and more project owners and investment institutions participate, the China GHG Voluntary Emission Reduction Program has become an important component of China's local carbon markets and in turn promoted development for various types of voluntary emission reduction projects. Simultaneously, the national and local carbon markets' government authorities and related research institutions have accumulated considerable management experience for voluntary emission reduction projects and offset credits. China's national ETS also plans to adopt CCER as offset credits in the future. To this end, the "Implementation Guidelines for Carbon Neutrality of Large-Scale Events (Trial)" released by the MEE in May 2019 also recommended using programs such as CCERs to achieve carbon neutrality for large-scale events. Furthermore, the ICAO approved CCERs as an eligible emission unit for CORSIA in March 2020. As such, national government authority is currently adjusting the China GHG Voluntary Emission Reduction Program in order to accommodate both global and domestic needs. In the future, the China GHG Voluntary Emission Reduction Program will play an important role on both the global and domestic stage for carbon markets.



Environmental Defense Fund
Beijing Representative Office

C-501, Yonghe Plaza, 28 Andingmen East Rd
Dongcheng DIST, Beijing, China 100007
+86-10-64097088
http://www.edf.org
http://www.cet.net.cn

ZHAO Xiaolu
China Climate Initiative Senior Manager
xzhao@edf.org

LIU Hongming
China Climate Initiative Manager
hliu@edf.org

SinoCarbon Innovation
& Investment Co.,Ltd.

B922 Gehua Tower, No.1 Qinglong Bystreet,
Dongcheng District, Beijing, P.R.C 100007
+86-10-84186221
http://www.sinocarbon.cn
info@sino-carbon.cn

CHEN Zhibin
Senior Consultant

LI Dan
Senior Consultant