Environmental Defense Fund

CEEX
广州碳排放权交易中心
GUANGZHOU EMISSIONS EXCHANGE

# OUTLOOK FOR THE INTERNATIONALIZATION OF CHINA'S VOLUNTARY GHG EMISSION REDUCTION PROGRAM

## THE STUDY OF VOLUNTARY EMISSION REDUCTION COOPERATION ALONG THE BELT AND ROAD INITIATIVE

2024.06

广州碳排放权交易中心
GUANGZHOU EMISSIONS EXCHANGE

## About Guangzhou Emissions Exchange (CEEX)

Guangzhou Emissions Exchange (CEEX) was co-founded by the People's Government of Guangdong Province and the People's Government of Guangzhou Municipality, under the pilot Emissions Trading Scheme (ETS) endorsed by the Central People's Government. It was designated as the sole auction and trading platform for carbon emissions allowances in Guangdong and was one of the first organizations certified by the National Development and Reform Commission (NDRC) as CCERs (China Certified Emission Reductions) trading platform. CEEX is the only organization within the Guangdong-Hong Kong-Macao Greater Bay Area selected for both the pilot ETS and the Pilot Zone for Green Finance Reform and Innovation.

CEEX Wechat Official Account

CEEX Official Website

Environmental Defense Fund

## About Environmental Defense Fund

Founded in 1967 and headquartered in New York, Environmental Defense Fund (EDF) is one of the world's leading environmental organizations. Areas that EDF works in include: Climate and energy, oceans, ecosystems, health, etc. Since inception, EDF has been guided by principles of science and economics to find practical and lasting solutions to the most serious environmental problems.

Environmental Defense Fund (EDF) has been working in China since 1991. EDF China Program endeavors to help China effectively achieve goals for environmental protection and low-carbon development through market mechanisms. In 2017, EDF registered as the first foreign NGO under the supervision of China's Ministry of Ecology and Environment.

EDF China Wechat Official Account

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# INTRODUCTION

Carbon emissions from countries and regions along the Belt and Road account for about 61% of the global total carbon emissions, representing enormous significance to the global carbon reduction efforts. China has established solid cooperation with countries involved in the Belt and Road Initiative (BRI) in addressing climate change. Advancing the BRI carbon emission reduction collaborations is a positive endeavor to further implement the Paris Agreement and promote global climate governance.

Under the international landscape for carbon emission reduction cooperation, voluntary emission reduction cooperation will serve as an entry point for carbon emission reduction cooperation between China and the BRI countries. In 2012, China launched the Voluntary GHG Emission Reduction Program[1] (CCER program) and has since accumulated substantial experience in the establishment and operation of the voluntary carbon market, and the development and trading of voluntary emission reductions. This experience can inform cooperation on carbon emission reductions in the form of voluntary emission reductions along the BRI. Meanwhile, the voluntary emission reductions generated by the BRI countries can take the CCER program as the market for increasing the supply and demand.

This report, set against the backdrop of international cooperation on global climate governance and joint efforts to build a green BRI, systematically reviews the basic landscape of international collaboration in carbon emissions reduction. Drawing upon well-established and mature international models of carbon emission reduction cooperation, the report, starting from voluntary emission reductions, proposes a carbon emission reduction cooperation model and its implementation pathway centered on voluntary emission reduction cooperation under the BRI. The report also analyzes the potential of demand and supply of voluntary emission reductions under the BRI, identifies the potential challenges and risks associated with the BRI's voluntary emission reduction cooperation, and offers targeted recommendations to support both China and the BRI countries in their climate change efforts.

[1] The carbon credits generated by China GHG Voluntary Emission Reduction Program (CCER Program) are the China Certified Emission Reductions (CCERs).

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# TERMS AND ABBREVIATIONS

| | |
|---|---|
| Article 6.2 | Article 6.2 of the Paris Agreement |
| Article 6.4 | Article 6.4 of the Paris Agreement |
| AAUs | Assigned Amount Units |
| A6.4ERs | Article 6.4 Emissions Reductions |
| CA | Corresponding Adjustment |
| CAT | Climate Action Tracker |
| CCER | China GHG Voluntary Emission Reduction Program |
| CCERs | China Certified Emission Reductions |
| CCF | Climate Cent Foundation |
| CCS | Carbon Capture and Storage |
| CDM | Clean Development Mechanism |
| CERs | Certified Emission Reductions |
| Cooperative Approaches | The approaches in Article 6 paragraph 2 of the Paris Agreement |
| $CH_4$ | Methane |
| $CO_2$ | Carbon Dioxide |
| CORSIA | Carbon Offsetting and Reduction Scheme for International Aviation |
| CQCERs | Chongqing Certified Emission Reductions |
| EPC | Engineering Procurement Construction |
| ERPA | Emission Reduction Purchase Agreement |
| ERUs | Emission Reduction Units |
| FFCER | Fujian Forestry Certified Emission Reduction Program |
| FFCERs | Fujian Forestry Certified Emission Reductions |
| GHG | Greenhouse Gas |
| Gt | Gigaton |
| ICAO | International Civil Aviation Organization |
| ICAP | International Carbon Action Partnership |
| IET | International Emissions Trading |
| ISSB | International Sustainability Standards Board |
| ITMOs | Internationally Transferred Mitigation Outcomes |
| JCM | Joint Crediting Mechanism |
| JI | Joint Implementation |
| Klik | The Foundation for Climate Protection and Carbon Offset KliK (Klik Foundation) |
| MOPA | Mitigation Outcome Purchase Agreement |
| MoU | Memorandum of Understanding |
| NDC | Nationally Determined Contribution |
| NRA | Non-Resident Account |
| PDD | Project Design Document |
| PHCER | Puhui Certified Emission Reduction Program |
| PHCERs | Puhui Certified Emission Reductions |
| RDC | RDC Aviation Limited |
| SDM | Sustainable Development Mechanisms |
| SEA | Swedish Energy Agency |
| UNFCCC | United Nations Framework Convention on Climate Change |

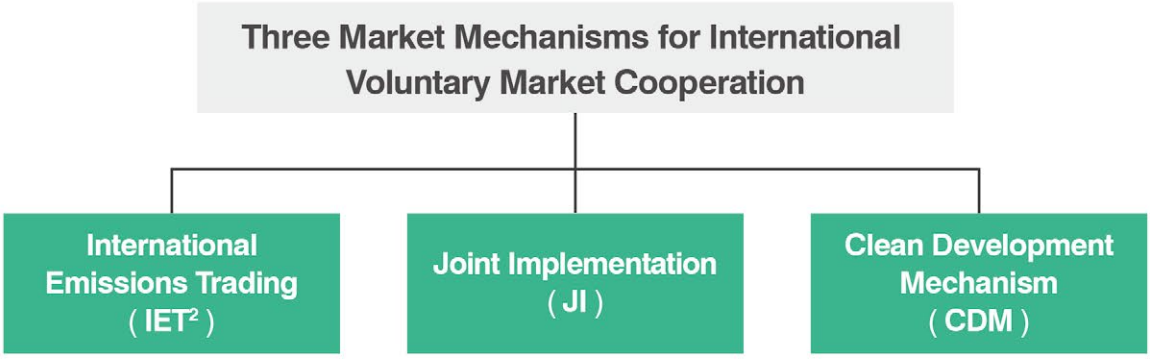
# CHAPTER I

## PATHWAYS FOR INTERNATIONAL COOPERATION ON CARBON EMISSION REDUCTION UNDER THE BELT AND ROAD INITIATIVE

# Overview of International Carbon Emission Reduction Cooperation

## International Cooperation on Voluntary Carbon Emission Reduction in the Era of the Kyoto Protocol

International climate negotiations established the basic framework for international carbon emission reduction cooperation. In 1992, the United Nations Framework Convention on Climate Change (UNFCCC) initiated the process of international cooperation in global climate governance. The Kyoto Protocol adopted in 1997 was the first regulatory document to establish limits on greenhouse gas emissions, setting the global climate governance structure in place up to 2012. The document also identified three market mechanisms for international voluntary market cooperation:




Under these three mechanisms, transactions can be conducted by the governments or by legal entities (companies or individuals) authorized by the governments, while the relevant governments bore the ultimate responsibility for compliance.

[2] IET allows developed countries to trade portions of their Assigned Amount Units (AAUs), permitting one developed country to trade its surplus beyond its emission reduction targets to another developed country that has not met its obligations. Simultaneously, the corresponding amount of the transaction is deducted from the seller's allowable emission allowances. The CDM mechanism specifies that developed countries can carry out emission reduction projects in developing countries by providing financial resources and technology. Once developing countries receive these resources and technology, the developed countries can acquire Certified Emission Reductions (CERs), which the developed country parties can use to offset an equivalent amount of carbon emissions. The JI mechanism is akin to the CDM mechanism, with the main difference being that it involves "developed country-developed country" exchanges, and the emission reduction credits generated are called Emission Reduction Units (ERUs).

**Table 1 Market Mechanisms under the Kyoto Protocol Framework**

| | International Emissions Trading (IET) | Joint Implementation (JI) | Clean Development Mechanism (CDM) |
|---|---|---|---|
| **Eligible Emission Reductions for Trading** | Assigned Amount Units (AAUs) | Emission Reduction Units (ERUs) | Certified Emission Reductions (CERs) |
| **Type of cooperation** | Cooperation between developed countries | | Cooperation between developed and developing countries |
| **EU-ETS Compliance Requirements** | Not eligible for fulfilling EU-ETS compliance | **Stage 3 (2013-2020):** Participate in compliance through the allowance substitution[3].<br>**Stage 4 (2021-2030):** Not eligible for fulfilling EU-ETS compliance | **Stage 3 (2013-2020):** Within the total cap, CERs that meet project type and regional requirements can be used to fulfil the compliance.<br>**Stage 4 (2021-2030):** Not eligible for fulfilling EU-ETS compliance |

In addition, during the Kyoto Protocol period, some countries sought more flexible market mechanisms based on the Kyoto Protocol, which led to the spontaneous formation of regional or bilateral cooperative relationships, such as Japan's Joint Crediting Mechanism (JCM)[4].

[3] European Commission. Use of International Credits [EB/OL].https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets/use-international-credits_en

[4] The JCM (Joint Crediting Mechanism) mechanism is a multilateral emission reduction mechanism proposed by the Japanese government in 2010, drawing on the framework of the market mechanism of the Kyoto Protocol, and it is one of the more mature market-based cooperation mechanisms among the existing pilot projects. The JCM mechanism was initially established for the purpose of exporting low-carbon technologies, products, services, and infrastructures to promote the sustainable development of developing countries, so the emission reductions issued under the JCM mechanism do not have a price attached to them and cannot be traded twice. But with the conclusion of the Paris Agreement and the introduction of the NDC target, the Japanese government has begun to explore the feasibility of trading emission reductions under the framework of Article 6 of the Paris Agreement, and has vigorously pushed for the application and implementation of the JCM mechanism globally. The emission reductions generated by JCM projects will partly accrue to the investing countries and partly to Japan's offset credits, and both Japan and the host countries will be able to use the JCM projects to achieve their respective GHG emission reduction targets. As of April 2023, Japan has signed JCM bilateral cooperation plans with 26 countries. 230 JCM projects are planned to be financed. 76 JCM projects have been registered. 40 projects have been issued with emission reductions. And 126,628 tonnes of carbon dioxide equivalent emission reductions from JCM projects have been issued.

## International Cooperation on Voluntary Emission Reduction in the Era of the Paris Agreement

The post-Kyoto framework for global climate governance was not solidified until the Paris Agreement in 2015. The Paris Agreement established global long-term goals for addressing climate change and created a bottom-up approach centered on "Nationally Determined Contributions + Global Stocktake" to progressively increase ambition over time. Article 6 of the Paris Agreement introduces new market mechanisms as solutions for addressing climate change, with relevant implementation guidelines continually being refined to provide countries with rules, modalities, and procedures for enacting the Agreement.

### The Paris Agreement

| | |
|---|---|
| Established | Global long-term goals for addressing climate change |
| Created | A bottom-up mechanism centered on "Nationally Determined Contributions + Global Stocktake" to progressively increase ambition |

## International Cooperation Framework under Article 6 of the Paris Agreement

Article 6 of the Paris Agreement encourages voluntary cooperation among Parties to facilitate two-way flows of emissions mitigation outcomes, technology, finance and other sustainable development assets, promoting win-win emission reduction cooperation. This establishes two frameworks as Articles 6.2 and 6.4, that are shown in Table 2.

**Table 2 Comparison of Article 6.2 and 6.4 of the Paris Agreement**

| | Article 6, Paragraph 2 | Article 6, Paragraph 4 |
|---|---|---|
| **Mechanism** | Cooperative Approaches | Sustainable Development Mechanism (Tentative, also known as A6.4 Mechanism) |
| **Model** | Parties to the agreement generate mitigation outcomes through bilateral or multilateral carbon emission reduction cooperation. By means of national authorization, these reductions can be applied to achieving the Nationally Determined Contribution (NDC) targets, used for other international mitigation purposes, or committed to the voluntary carbon market. | An international carbon emission reduction mechanism supervised by a specialized United Nations agency, to incentivize and facilitate participation in the mitigation of greenhouse gas emissions by public and private entities authorized by Parties. |
| **Emission Reduction** | ITMOs (Internationally Transferred Mitigation Outcomes) | A6.4ERs (Article 6.4 Emission Reductions, when it is authorized by the relevant countries for the purpose of achieving NDCs or other international mitigation goals, fall within the category of ITMOs) |
| **Form of Emission Reduction** | Emission reductions and removals (measured in metric tonnes of carbon dioxide equivalent or in other non-GHG metrics determined by the participating Parties that are consistent with their NDCs) | Emission reductions and removals (measured in metric tonnes of carbon dioxide equivalent) |
| **Similarity** | Both paragraphs do not provide a clear definition on emissions avoidance projects like forest carbon sequestration and methane recovery. | |

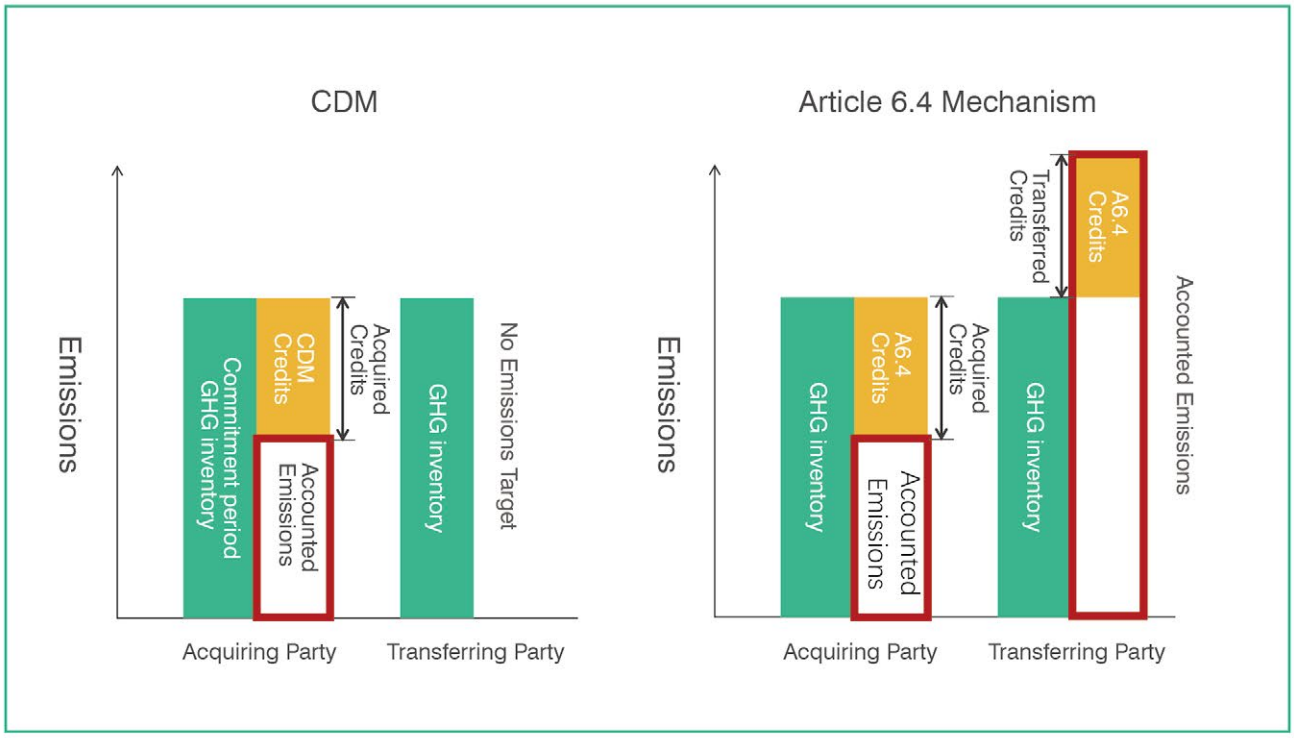



**Figure 1 Comparison of the CDM Mechanism and the Article 6.4 Mechanism[5]**

## International Cooperation Pilots Based on Article 6 of the Paris Agreement

A study[6] indicates that as of November 2023, the investments in all pilot cooperative implementation under Article 6 were at least I.8 billion USD. Currently, the ITMOs for all Article 6.2 pilot projects are calculated in terms of carbon dioxide equivalent. Notably, pilot projects initiated by Switzerland and Sweden have contributed ideas for the design and implementation of market mechanisms under Article 6.

[5] OECD. Designing the Article 6.4 mechanism: assessing selected baseline approaches and their implications[R]. 2019.

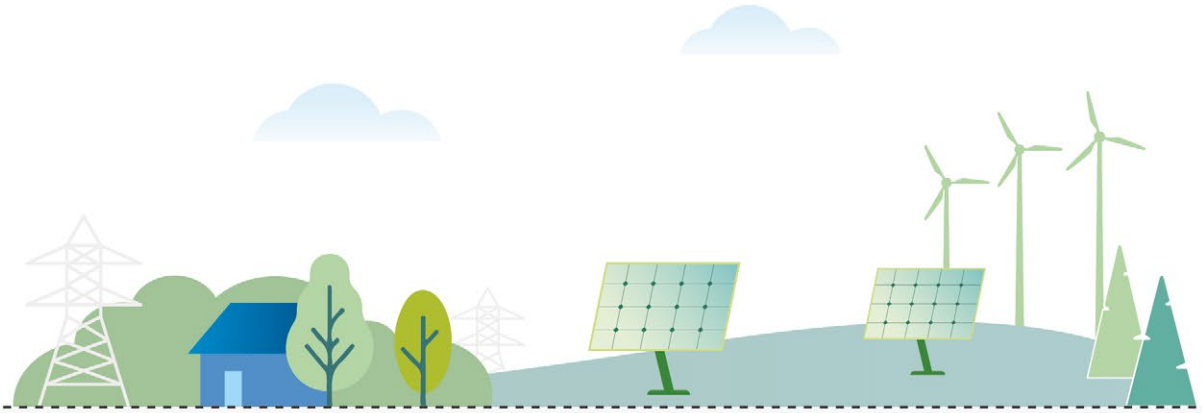
[6] Climate Finance Innovators. The Landscape of Article 6 Implementation[R].2023.

## The Pilot of Switzerland Compensation Project[7]

The pilot of Switzerland compensation projects was launched in 2016 based on Article 6.2, with funding support from the Climate Cent Foundation (CCF) and Klik Foundation. It operates on a government-to-government basis, first signing Memorandums of Understanding (MoUs), followed by Mitigation Outcome Purchase Agreements (MOPAs). Since pilot project inception in 2016, Switzerland has signed bilateral cooperation agreements with 12 countries including Peru, Ghana, Senegal, Georgia, The Republic of Vanuatu, Dominica, Thailand, Ukraine, Morocco, Malawi, Uruguay, and Chile[8].

## Virtual Pilots by the Swedish Energy Agency

The Swedish Energy Agency (SEA) is conducting virtual pilot research projects in different regions. Taking the small-scale distributed PV (micro-grid) project in cooperation between SEA and Nigeria as an example, SEA referenced Nigeria's NDC target and combined Article 6 mechanisms with sovereign green bonds to create green bonds associated with ITMOs. These bonds are set with specific emission reduction objectives, aligning their cycles with the host country's NDC commitment periods. If the host country achieves its baseline emission reduction targets upon reporting, it can transfer the surplus mitigation outcomes to investors in the form of ITMOs, thereby yielding benefits for investors.



[7] Switzerland is legally obligated to purchase approximately 54 million tonnes of emission reductions through pilot projects between 2021 and 2030 to fulfill its Nationally Determined Contribution (NDC) target. The estimated investment for this initiative is CHF 50 million.https://www.bafu.admin.ch/bafu/en,lhome/topics/cllmate/info-specialists/reduction-measures/compensation/abroad/registered-projects-abroad.html

[8] Federal Office for the Environment(FOEN). Bilateral climate agreements [EB/OL]. https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/climate--international-affairs/staatsvertraege-umsetzung-klimauebereinkommen-von-paris-artikel6.html

# Pathways toward the Belt and Road International Carbon Emission Reduction Cooperation

## Lessons from International Carbon Emission Reduction Cooperation Models

### Reasons for Choosing Voluntary Carbon Emission Reduction as a Form of Carbon Emission Reduction Cooperation

One of the paths for achieving international cooperation on carbon emission reduction is establishing linkage between carbon markets. However, according to the International Carbon Action Partnership's (ICAP) *A Guide to Linking Emissions Trading Systems*[9], establishing carbon market linkage entails a preparatory phase, a negotiation phase, and an implementation phase. It is a long-term, complex, and systemic endeavor. Taking the linkage between the Australia and the EU carbon markets as an example[10], the carbon market linkage is a lengthy, iterative process. Given the complexity and long-term nature of such linkages, China's cooperation with the Belt and Road countries on carbon emission reduction may follow the principle of progressing from simple to complex and starting from easy to difficult. In the initial phase, cooperation based on voluntary emission reductions under the Article 6 framework of the Paris Agreement can be considered.

[9] ICAP. A Guide to Linking Emissions Trading Systems[R]. 2018.

[10] The plan to link Australia's carbon markets with the EU ETS was initiated in 2008. After numerous negotiations, details on the envisaged linkage of the two markets were released in 2013. However, the abandonment of Australia's carbon market in 2014 resulted in the collapse of the planned linkage.

## Experience in the Belt and Road Voluntary Carbon Emission Reduction International Cooperation

At present, some Belt and Road countries have initiated several pilot projects based on voluntary carbon emission reductions, providing experiences of cooperation in two distinct roles: as lead countries and as host countries.

Taking Singapore as an example of a lead country for voluntary carbon emissions reduction projects, Singapore has signed bilateral agreements or memorandums of cooperation under Article 6.2 with several developing countries to collaborate on emissions reduction development and trading. The reductions generated will count towards Singapore's NDC goals[11].

As a host country for voluntary carbon emission reduction projects, Thailand provides a notable example, participating in both Japan's Joint Crediting Mechanism (JCM) and Switzerland's ITMOs purchase projects. Thailand and Japan signed a bilateral document introducing JCM in 2015. The development of subsequent JCM projects and the issuance of emission reductions are handled by a Joint Committee comprised of representatives from both sides, with each side maintaining its own emissions reduction registry and issuing reductions based on agreed proportions[12]. As for the Switzerland ITMO projects, Switzerland and Thailand are jointly promoting the project to replace conventional (diesel and natural gas) buses with electric buses on Bangkok's bus routes. The collaboration period for this project is 8 years, starting from October 1, 2022, and concluding on December 31, 2030. The mitigation outcomes from this project, in the form of ITMOs, will potentially be counted towards the NDCs of both Thailand and Switzerland.

[11] As of September 2023, Singapore has established Memoranda of Cooperation (MoCs) with a total of 12 countries — Bhutan, Cambodia, Chile, Colombia, Dominican Republic, Indonesia, Kenya, Mongolia, Morocco, Papua New Guinea, Peru, and Sri Lanka. These agreements, formed under Article 6 of the Paris Agreement, stipulated the exchange of information, knowledge, best practices, and capacity-building in the area of emission reductions. While areas of cooperation is broadening, the actual development of voluntary emission reduction (VER) projects has not yet begun under most of these agreements. Additionally, Singapore's potential collaboration with Brazil, Brunei, and Thailand is in active discussion stages.

[12] As of September 2023, there are 11 JCM registered projects in Thailand, with project types dominated by energy demand and energy industry (renewable/non-renewable) types, with a cumulative total of 4,032 tonnes of emission reductions issued.

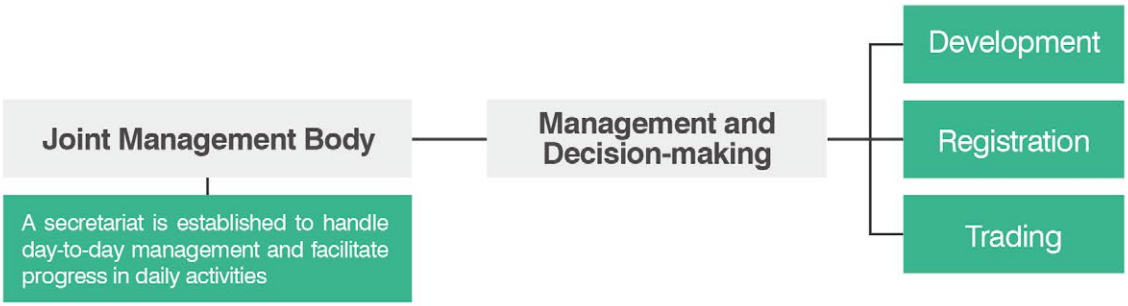
# A Design of Belt and Road International Carbon Emission Reduction Cooperation Model — Based on Voluntary Emission Reduction Cooperation

China's carbon emission reduction cooperation with Belt and Road countries and regions could be conducted under the Article 6.4 of Paris Agreement and based on developing voluntary emission reduction projects. This form can achieve cooperative consensus at minimal cost while balancing economic and emissions mitigation benefits for participating countries, realizing win-win outcomes and expanding channels to serve global decarbonization.

## Cooperation Model

### Project Management Approach

Within the framework of a bilateral agreement, representatives appointed by both parties will form a joint management body to manage and make decisions that involves development, registration, and trading of the emission reductions. A secretariat will be established under the joint management body to handle day-to-day management and facilitate progress in daily activities.




### Methods of Participation

Main methods for Chinese participants:

**Table 3 Main Methods for Chinese Enterprises or Chinese Institutions Participating the Belt and Road Initiative[13]**

| | |
|---|---|
| **EPC (Engineering, Procurement, and Construction) contracting** | EPC contracting is the primary method that Chinese enterprises engage in overseas energy projects. While there is a decline in the addition of EPC contracted hydroelectric power station, EPC contracted projects for wind and solar PV power are experiencing expansion |
| **Overseas factory construction** | Represented by solar PV companies constructing panel assembly plants overseas. |
| **Greenfield investment** | Chinese enterprises conduct project development and construction overseas through direct investment, with a relatively low overall proportion, mainly state-owned enterprises. |
| **Project mergers and acquisitions** | China carries out project development through overseas mergers and acquisitions, mainly wind power project mergers and acquisitions concentrated in European and US markets. |
| **Equipment export** | Equipment manufacturing enterprises participate in overseas EPC projects to drive exports of their products, including wind and solar PV equipment. |
| **Third-party market cooperation** | Chinese enterprises and financial institutions collaborate with enterprises in the project's host country and other international enterprises or institutions to form an international consortium for joint project development. |

## Project Development Funding Support

Developing carbon emissions reduction projects requires substantial funding to cover initial investment and costs of developing the emission reductions. Currently, financial institutions that can provide financing support for Belt and Road projects mainly include four types: national policy-based financial institutions, international development financial institutions, dedicated funds, and commercial banks. For voluntary carbon emissions reduction projects with Chinese participation, a dedicated Belt and Road emissions reduction project development fund could be established, or a special fund set up under the Silk Road Fund to provide support.

[13] Renewable Energy Committee of China Circular Economy Association. Renewable Energy Investment Trends and Recommendations in Belt and Road Countries [R]. 2020.

## Element Design

Given the flexibility and effective practice of the JCM mechanism in the global cooperation of carbon emission reduction, key elements of the cooperation model are designed with the reference from the JCM mechanism, as follows: Projects with emission reduction effects are developed in the host country, and the generated emission reductions (i.e., Belt and Road voluntary emission reductions) can be distributed according to the agreement. Both China and the host country establish their own registries and also implement registry security mechanisms to ensure security of the registries. The trading of emission reductions is conducted on the corresponding trading platforms. According to the Paris Agreement and allocation decision based on the collaboration agreement, the project's emission reductions can count towards the NDCs of both China and the host country respectively. If one of the project developers is a third party (i.e., not from China or the host country), the mechanism still permits them to develop emission reductions, but those reductions can only enter into either China's or the host country's registry and cannot be counted towards the NDC of a third party country.

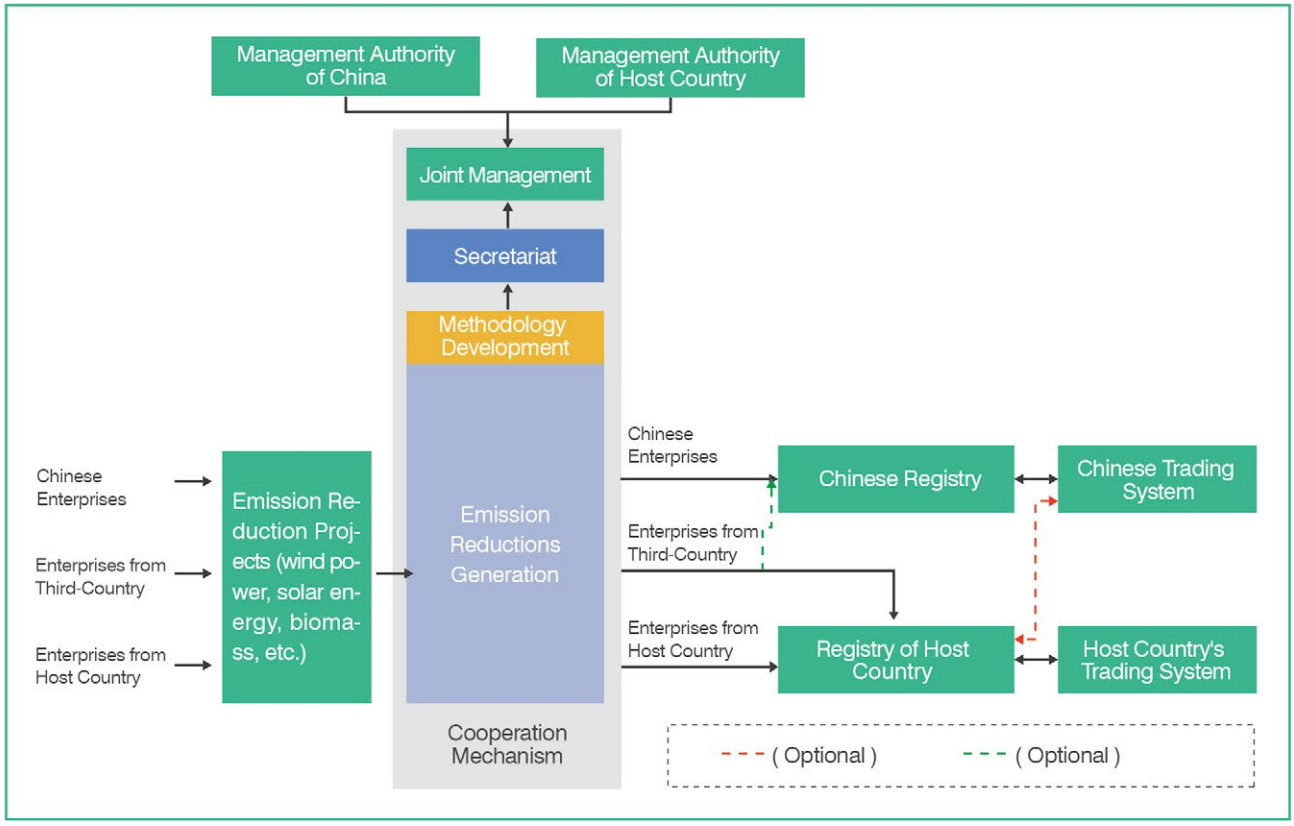



**Figure 2 Diagram of the Belt and Road Voluntary Emission Reduction Cooperation Mechanism based on Project-Level Emission Reduction**

## Emission Reduction Development Process Arrangements

Belt and Road voluntary emission reduction cooperation will generate Belt and Road voluntary emission reductions. Considering the potential positive role of China's voluntary emission reduction mechanism in enhancing the supply and demand capacity of the Belt and Road voluntary emission reduction projects, the development process for these emission reductions could primarily refer to the processes (previous version) used by CCER[14] (or CDM). The process is as follows:

| Development Process | Main Contents | Responsible Parties |
|---|---|---|
| 1. Methodology Identifiction | Select an appropriate methodology for the project; if none exists, develop a methodology. | Applicant |
| 2. Preparation of the Project Design Document (PDD) | Prepare the Project Design Document based on the methodology and templates. | Applicant |
| 3. Project Validation | A third-party entity validates the project and produces a validation report. | Third-Party Validation Entity |
| 4. Project Application and Documentation | Apply for project documentation with the joint management body, and organize technical review and evaluation. | Joint Management Body and Secretariat |
| 5. Project Monitoring | Monitor the project according to the PDD and complete the monitoring report. | Applicant |
| 6. Emissions Reduction Verification | A third-party verification entity verifies the project's emission reductions and issues a verification report. | Third-Party Verification Entity |
| 7. Application and Documentation for Emissions Reductions | Apply for issuance of emission reductions with the joint managment body, and organize a technical assessment. | Joint Management Body and Secretariat |
| 8. Issuance and Registration of Emission Reductions | The joint management body determines the amount of emission reductions to be issued and notifies both parties' management bodies for registration. | Joint Management Body, Both Governments' Management Bodies |

**Figure 3 Proposed Process for Developing Belt and Road Voluntary Emission Reductions**

[14] Interim Measures for the Administration of Voluntary Greenhouse Gas Emission Reduction Transactions (No. 1668 [2012] of the National Development and Reform Commission)

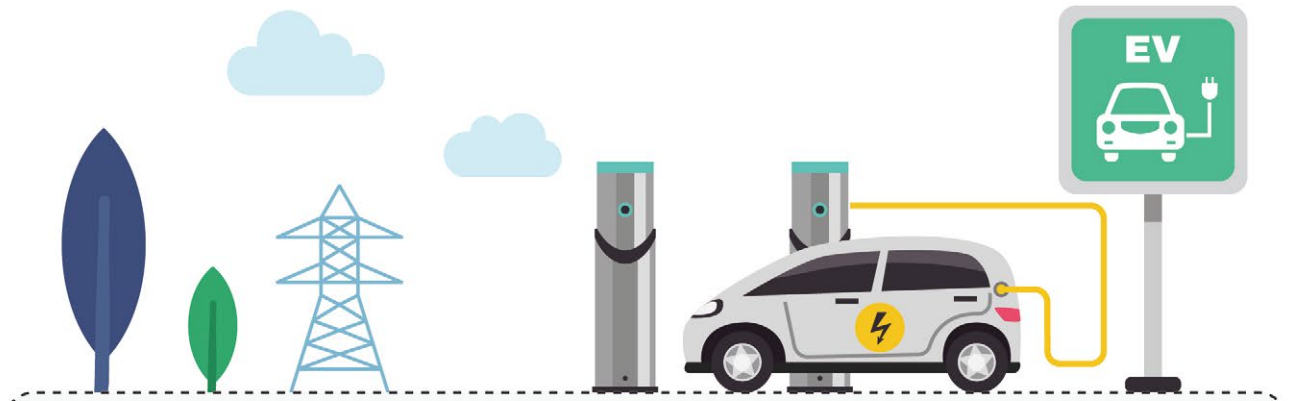
# CHAPTER II

## ANALYSIS OF DEMAND AND SUPPLY POTENTIAL FOR THE BELT AND ROAD VOLUNTARY EMISSION REDUCTIONS

# Demand Channels for the Belt and Road Voluntary Emission Reductions

## Nation-Level Demand — Demand under the Paris Agreement

In their NDCs, countries communicate actions they will take to reduce their greenhouse gas emissions to reach the goals of the Paris Agreement, of which the overarching goal is to hold "the increase in the global average temperature to well below 2°C above pre-industrial levels" and pursue efforts "to limit the temperature increase to 1.5°C above pre-industrial levels."For instance, to achieving the 1.5°C climate goal, current emissions control policies and latest NDC targets for most countries fall short of the 1.5°C target. According Climate Action Tracker (CAT)[15] quantitative analysis of the global emissions gap, taking 2030 as an example, even the most optimistic net zero emissions scenario[16] has a gap of 23 billion tonnes compared to the 1.5°C scenario. This emissions gap is what drives demand for emissions reductions under Article 6 market mechanisms of the Paris Agreement.




[15] Climate Action Tracker. Glasgow's 2030 credibility gap: net zero's lip service to climate action Wave of net zero emission goals not matched by action on the ground. 2021.

[16] Most optimistic net zero emissions scenario, covers the latest NDC targets and submitted, unsubmitted or discussed long-term development strategies of individual Parties.

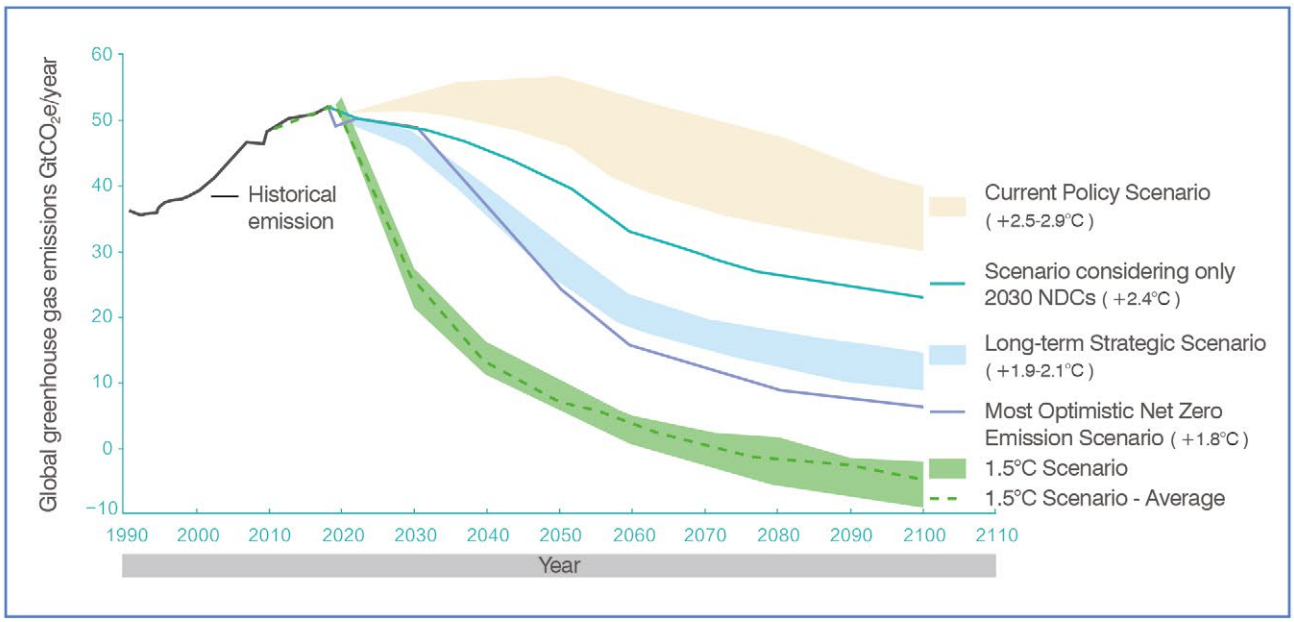



**Figure 4 Global Temperature Rise and Emissions Gap (based on CAT data as of the end of 2021)**

Therefore, under the rules of Article 6 of the Paris Agreement, Belt and Road voluntary emission reductions have potential to become an important channel for achieving the 1.5°C global goal.

## Demand from Compliance Carbon Markets

Compliance carbon markets often introduce offset mechanisms as supplementary measures for compliance. For instance, within China, both the pilot carbon markets, and the national carbon market allow a certain percentage of emission reductions to be used to fulfill the compliance need within the carbon market. Taking the initial scale of 4 billion tonnes' national carbon market as an example, with a 5% offset ratio, there would be a demand for 200 million tonnes of CCERs theoretically. Given the similarities between Belt and Road voluntary emission reductions and CCERs, the national carbon market and various pilot markets will be significant utilization channels for these emission reductions.

**Table 4 Offset Mechanism Design in China's Domestic Carbon Markets[17]**

| Market | Allowance Offset Mechanism |
|---|---|
| National | Entities can use CCERs to offset the carbon emissions allowances for surrender. The offset ratio shall not exceed 5% of the total emissions allowances that need to be surrendered. The CCERs utilized for offsetting must not be generated from emission reduction projects that are operated by entities already covered by the national carbon market. |
| Guangdong | Entities can use CCERs plus Puhui Certified Emission Reductions (PHCERs) to offset no more than 10% of their Guangdong carbon emissions allowances for surrender, more than 70% of CCERs must come from projects in Guangdong Province, and PHCERs can also be used for offset. |
| Shenzhen | Entities can use CCERs, Shenzhen's Tan Pu Hui Emission Reductions, and other certified emission reductions approved by the Ecology Environment Bureau of Shenzhen Municipality to offset the Shenzhen carbon emissions allowances for surrender. The maximum offset ratio shall not exceed 20% of emissions that is insufficient for compliance. |
| Beijing | Entities can use CCERs and Beijing's Tan Pu Hui Emission Reductions to offset the Beijing carbon emissions allowances for surrender. The offset ratio shall not exceed 5% of the total carbon emission allowances issued for that year. |
| Shanghai | Entities can use CCERs or Shanghai's Tan Pu Hui Emission Reductions to offset the Shanghai carbon emissions allowances for surrender. The total offset ratio shall not exceed 5% of the audited annual carbon emissions of the enterprise. The CCERs must originate from non-hydropower projects and should be generated after January 1, 2013. |
| Tianjin | Entities can use CCERs to offset the Tianjin carbon emissions allowances for surrender. The offset ratio shall not exceed 10% of the entity's actual carbon emissions for that year, and at least 50% of the CCERs should come from greenhouse gas voluntary emission reduction projects within the Beijing-Tianjin-Hebei region. |
| Hubei | Entities can use CCERs to offset the Hubei carbon emissions allowances for surrender. The offset ratio shall not exceed 10% of the validated emission allowances, CCERs must be from and registered within the province, project types are rural biogas and forestry, crediting period is Jan 1, 2013 - Dec 31, 2015. |
| Chongqing | Entities are allowed to use CCERs, Chongqing Certified Emission Reductions (CQCERs), and other qualified emission reductions to offset the Chongqing carbon emissions allowances for surrender. The offset ratio shall not exceed 8% of the annual emissions allowances that need to be surrendered. Moreover, of this offset amount, at least 90% must generate from the Chengdu-Chongqing Economic Circle, and at least 80% must be generated within the administrative region of the city itself. Additionally, all these offsets must come from non-hydropower projects. |
| Fujian | Entities are allowed to use CCERs and Fujian Forestry Certified Emission Reductions (FFCERs) to offset the Fujian carbon emissions allowances for surrender. The offset ratio shall not exceed 10% of the entity's verified emissions of that year. Within this limit, the offset ratio for forestry carbon sequestration must be no more than 10% of the verified emissions, while other types of emission reductions must be no more than 5% of the verified emissions. The CCERs used for offset should be generated within the province, not from key emitting entities, non-hydro projects, and from only $CO_2$ and $CH_4$ project reductions. The FFCERs used for offset should be generated within the province, from after Feb 16, 2005, and project owner has independent legal person status, project activities follow forestry carbon sequestration methodologies filed with the National Development and Reform Commission or the provincial carbon exchange. |

[17] Compiled based on publicly available information: National: Measures for the Administration of Carbon Emissions Trading (for Trial Implementation); Guangdong: Measures for the Administration of Carbon Emissions Trading in Guangdong (for Trial Implementation); Shenzhen: "Measures for the Administration of Carbon Emission Right Trading in Shenzhen"; Beijing: "Notice of the Beijing Municipal Bureau of Ecology and Environment on Doing a Good Job in the Management of Carbon Emission Units and the Pilot Work of Carbon Emission Right Trading in the City for the Year 2023" and "Measures for the Administration of Carbon Emission Right Offsetting in Beijing (for Trial Implementation)"; Shanghai: "Shanghai Municipal Carbon Emission Allocation Programme for the Year 2022"; Tianjin: "Municipal Bureau of Ecology and Environment Notice on the Arrangement of Carbon Emission Allowances in Tianjin for the Year 2022", "Interim Measures for the Administration of Carbon Emission Right Trading in Tianjin"; Hubei: "Notice of the Office of the Provincial Development and Reform Commission on Matters Relating to the Carbon Emission Right Offsetting Mechanism in Hubei Province in 2018", "Interim Measures for the Management and Trading of Carbon Emission Rights in Hubei Province"; Chongqing: "Implementation Plan for the Allocation of Carbon Emission Allowances for the Year 2021 and 2022 of Chongqing Municipality ( Solicitation of Opinions)"; Fujian: "Measures for the Management of Carbon Emission Right Offsetting in Fujian Province (for Trial Implementation)".

Carbon markets operating around the world cover around 18% of total greenhouse gas emissions (with China accounting for nearly 10.7%)[18], and most have adopted offset mechanisms. Current offset demand is around 57 million tonnes/year. If all operating carbon markets were to introduce offset mechanisms, given the prevalent cap of no more than 10% for offsets across many carbon markets, the potential demand for offsets could amount to approximately 300 million tonnes.

Besides the current carbon markets which are in force, most Belt and Road countries have actively made progress on carbon market development. According to *Study on Belt and Road Carbon Market Cooperation based on China GHG Voluntary Emission Reduction Program*, if these carbon markets are successfully established and become operational, with a cap of no more than 10% for offsets, the potential demand for offsets could reach up to 320 million tonnes (this estimate assumes that the carbon markets under construction or being considered will cover 70% of the respective country's greenhouse gas emissions).

**Table 5 Carbon Market Development in the Belt and Road Initiative Countries[18]**

| Country | Construction Progress | Feature |
|---|---|---|
| **Kazakhstan** | In Operation | In 2023, the total allocation of emission allowances is 163.7 million tonnes, covering carbon dioxide. Domestic emission reductions are permitted for offsetting without a quantitative limit, although there has been no precedent set for this practice. |
| **Korea** | In Operation | In 2023, the total emission allowance is 589.3 million tonnes, covering various gases. Both Korean offset credits and international offset credits are eligible for compliance, provided they are converted into KCUs. During the third phase (2021-2025), the maximum allowable offset ratio is 10%. |
| **New Zealand** | In Operation | 27.90 million tonnes in 2023, covering a variety of gases, no offset policy |
| **Montenegro** | In Operation | 3.20 million tonnes of allowance in 2022 |
| **Austria** | In Operation | Between 2022 and 2025, the system will operate with an annually increasing fixed price and a flexible cap, covering a variety of gases |
| **Ukraine** | Under Construction | About 327.30 million tonnes of greenhouse gas emissions in 2020 |
| **Vietnam** | Under Construction | About 356.2 million tonnes of greenhouse gas emissions in 2016 |
| **Indonesia** | Under Construction | About 891.02 million tonnes of greenhouse gas emissions in 2019 |
| **Sakhalin (Russia)** | Under Construction | About 12.30 million tonnes of greenhouse gas emissions in 2019 |
| **Chile** | Undetermined Construction | About 105.60 million tonnes of greenhouse gas emissions in 2020 |
| **Thailand** | Undetermined Construction | About 372.60 million tonnes of greenhouse gas emissions in 2016 |
| **Turkey** | Undetermined Construction | About 564.40 million tonnes of greenhouse gas emissions in 2020 |
| **Pakistan** | Undetermined Construction | About 489.90 million tonnes of greenhouse gas emissions in 2018 |
| **Argentina** | Undetermined Construction | About 308.50 million tonnes of greenhouse gas emissions in 2020 |
| **Malaysia** | Undetermined Construction | About 330.40 million tonnes of greenhouse gas emissions in 2019 |
| **Philippines** | Undetermined Construction | About 224.97 million tonnes of greenhouse gas emissions in 2020 |

[18] ICAP (2024). Emissions Trading Worldwide: Status Report 2024. Berlin: International Carbon Action Partnership.

## Demand under the Sector-Based Emission Reduction Mechanism

As the first global sector-based market emission reduction mechanism, Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) required that starting from 2021, the increase in carbon emissions from international aviation over the average levels of 2019 must be offset by purchasing corresponding emission reductions or by using sustainable alternative fuels.

Without considering the impact of the pandemic and based on the annual growth rates estimated by the International Civil Aviation Organization (ICAO) at 2.78% and by the aviation data company RDC at 4.39%, international aviation carbon emissions are projected to reach over 800 million tonnes and nearly 1.1 billion tonnes[19] by 2035, respectively. According to the analysis in *The Internationalization of the China GHG Voluntary Emission Reduction Program -CORSIA Perspective* [20], the total international aviation carbon emissions of the Belt and Road countries in 2018 were approximately 236 million tonnes, accounting for 46.9% of the global total emissions. It is estimated that by 2035, the international aviation carbon emissions of the Belt and Road countries will reach 380 to 510 million tonnes.

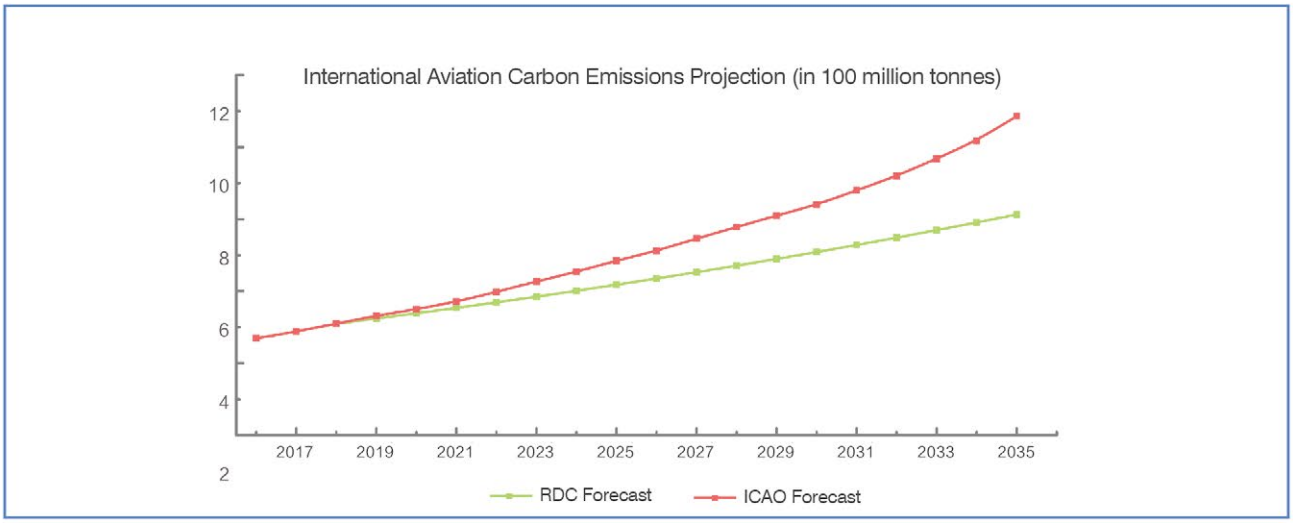



**Figure 5 Forecast of International Aviation Carbon Emissions (excerpted from the report *Research on the Development Path of CCER Based on CORSIA Mechanism*[21])**

[19] Refinitiv.Demand for offsets from CORSIA 2021-2035.2019

[20] *The Internationalization of China's GHG Voluntary Emission Reductions - CORSIA Perspective* is the first in a series of research reports released in December 2022 by the CEEX and the Beijing Representative Office of EDF. The report carries out a study on the development of the CCER project system in the context of CORSIA from the perspective of improving the CCER project system, and looks forward to the internationalization of the use and process of CCERs, providing ideas and suggestions for the future development of the CCER project system.

[21] Guangzhou Emissions Exchange, EDF. Research on the Development Path of CCER Based on CORSIA Mechanism [R]. 2020. https://files.cnemission.com/-carbon/202302/20230202163109115.pdf

Based on the findings in the report of *Research on the Development Path of CCER Based on CORSIA Mechanism*[21], the global international aviation sector's total offset demand between 2021 and 2035 is forecasted to reach between 2 and 3.5 billion tonnes. Within this, the offset demand for international aviation in the Belt and Road countries is expected to range from 940 million to 1.64 billion tonnes, creating prospects for the use of the Belt and Road voluntary emission reductions. China's CCERs were eligible for use as offsets during the CORSIA pilot phase (2021-2023). Should permission be extended to use CCERs in subsequent CORSIA phases, it could facilitate the mutual recognition between the Belt and Road voluntary emission reductions and CCERs, enabling them to serve for offsetting international aviation carbon emissions both along the Belt and Road Initiative and on a global scale.

## Demand Driven by Carbon Neutrality Goals

An increasing number of countries around the world have proposed medium- to long-term strategic plans for greenhouse gas emission reductions, including net zero targets. Industries and organizations outside the coverage of carbon markets are also setting carbon neutrality targets, such as carbon neutrality for major events, offsetting of individual office and travel footprints. International Sustainability Standards Board (ISSB) sustainability disclosure requirements for emissions information and compliance incentives are also potential important demand channels for emissions reductions.

# Analysis of the Supply for the Belt and Road Voluntary Emission Reductions

## Supply Channels

### Domestic Channel Analysis

China domestic carbon emission reductions are an important source of the Belt and Road voluntary emission reductions. Currently, the supply of carbon emission reductions at the China domestic level mainly comes from emission reduction systems such as CCER, PHCER, and FFCER, among which CCER is the main source. Statistics show that as of July 30, 2023, in the previous CCER system, a total of 2,871 CCER approved projects have been publicly announced, with a total of 1,315 approved projects and 391 issued projects, with an issuance volume of about 77 million tonnes. According to the report *Research on the Development Path of CCER Based on CORSIA*[21], if the supply trend of the previous CCER system is followed, the domestic supply of CCERs can reach 64 million tonnes/year (see figure 6, ignoring the impact of the CCER system relaunch policy for the time being).

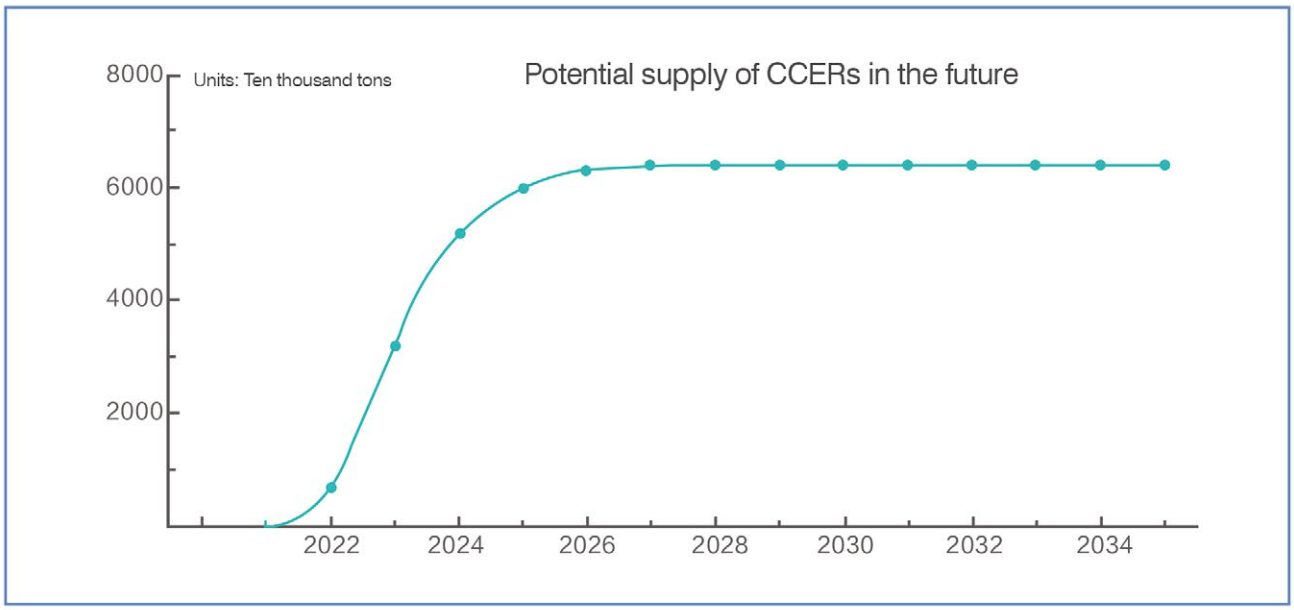



**Figure 6 Estimated Domestic CCER Emission Reduction Supply Potential Based on the Supply Trend of the Previous CCER System**

## Analysis of International Channels

International supply channels for Belt and Road voluntary emission reductions mainly leverage emissions reduction projects along the Belt and Road Initiative. Taking major Belt and Road projects for example, there are industrial projects like power plants, smelters and steel mills; infrastructure projects like railways and ports; Industrial park projects like the China-Belarus Industrial Park and the Malaysia-China Kuantan Industrial Park. Among these three categories, industrial projects generally have significant emissions reduction potential. According to related research, industrial projects commissioned before 2015 had emission reduction potential of around 17.46 million tonnes; industrial projects commissioned or newly commissioned from 2015-2020 had emission reduction potential of around 38.5 million tonnes; and projects commissioned or newly commissioned from 2020-2025 have emission reduction potential of around 72.79 million tonnes. Additionally, based on future Belt and Road power demand growth scenarios, overseas power investment and construction projects have emission reduction potential of 74.55 million tonnes from 2015-2020, and 136 million tonnes from 2020-2025.

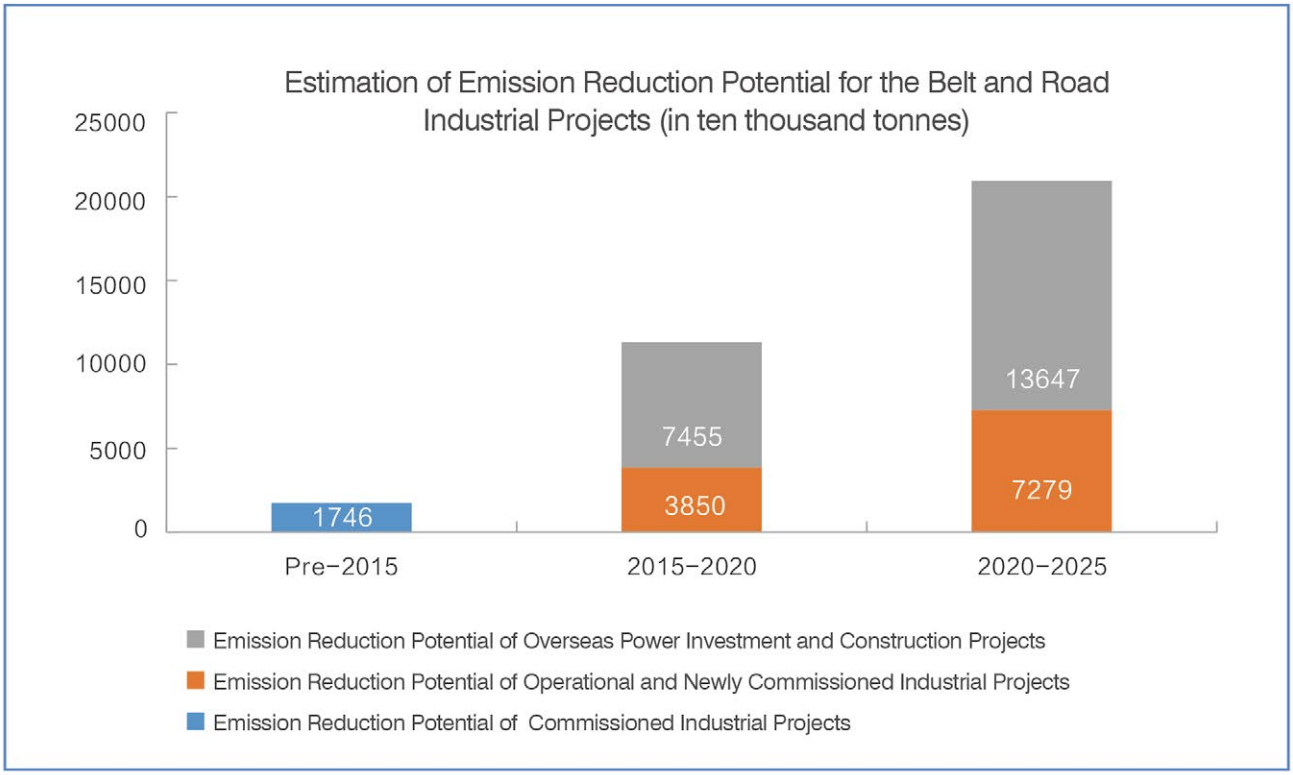
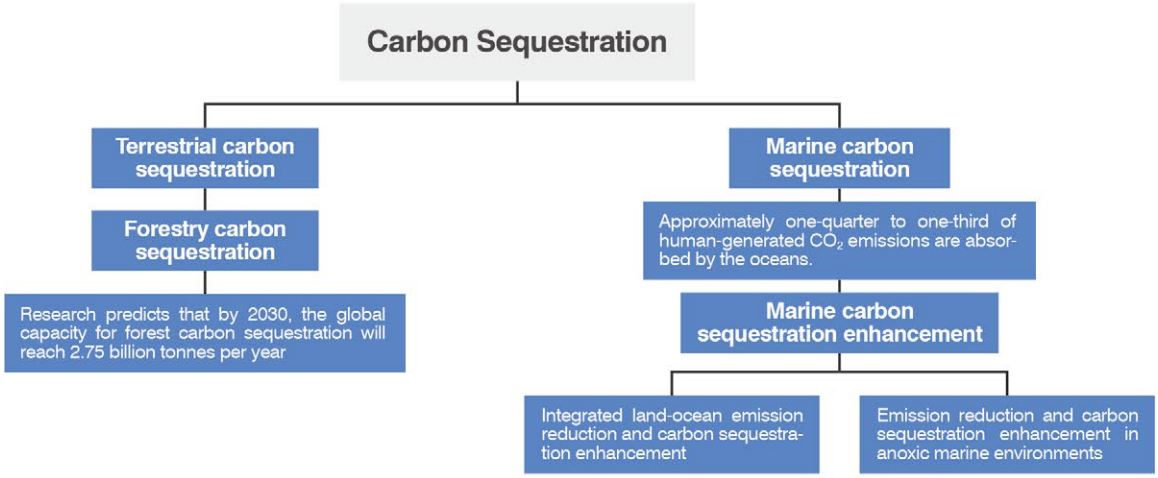



**Figure 7 Belt and Road Initiative Industrial Project Emission Reduction Potential (Data from research supported by EDF)**

With the advancement of the Belt and Road Initiative and the development and popularization of global technology, future emission reductions hold even greater potential with negative carbon technologies, including carbon sequestration as well as Carbon Capture and Storage (CCS) related projects.

Carbon sequestration is included in both terrestrial and marine ecosystems. Terrestrial carbon sequestration primarily consists of forestry carbon sequestration, and related research[22] predicts that by 2030, the global capacity for forestry carbon sequestration will reach 2.75 billion tonnes of $CO_2$ per year. As for marine carbon sequestration, approximately one-quarter to one-third of human-generated $CO_2$ emissions are absorbed by the oceans[23]. With the application of marine carbon sequestration enhancement technologies (such as integrated land-ocean emission reduction and carbon sequestration enhancement, and reduction of emissions in anoxic marine environments), the potential for marine carbon sequestration supply is immense. Countries and regions along the Belt and Road initiative are endowed with extensive forest and ocean resources, as well as biological diversity, making them channels with the greatest potential for supplying the Belt and Road voluntary emission reductions in the future.




In terms of Carbon Capture and Storage (CCS), research[24] shows that the Belt and Road countries have high theoretical potential for $CO_2$ sequestration in oil and gas reservoirs, capable of storing up to 620 billion tonnes of $CO_2$. This amount is equivalent to 32 times the total carbon emissions of the Belt and Road countries in 2017. The substantial potential of CCS provides a possibility for a stable supply of the Belt and Road voluntary emission reductions.

[22] JIA Lingxiao. Geological work and Carbon neutrality: Carbon sequestration. China Mining News, 2021.

[23] CAI Zhaonan, CHENG Lijing, LI Tingting et al. Key Scientific and Technical Issues in Earth System Science Towards Achieving Carbon Neutrality in China [J]. Bulletin of Chinese Academy of Sciences, 2021, 36(5): 602-613.

[24] SUN Lili, CUI Huijuan, GE Quansheng. Potential and prospect of carbon capture, utilization and storage (CCUS) in the main Belt and Road Initiative countries [J]. Climate Change Research, 2020, 16(5): 609-616.

## Analysis of Demand-Supply Matching

The channels of utilization are a major consideration in matching supply and demand of the Belt and Road voluntary emission reductions.

### NDC channels

Due to the limited global supply of carbon emission reductions, currently, countries worldwide are more focused on the emissions gap between their current policy scenarios and their NDC target scenarios, which range from 2 to 9 billion tonnes per year (taking 2030 as an example). For the demand of Belt and Road voluntary emission reductions driven by this gap, specific country circumstances should be considered to ensure supply.

### Compliance Carbon Market Channels

For example, limits on the use of reductions for compliance can change with carbon market development stage or operation status. Hence, when tapping the compliance market channel, shifts and limits in demand should be monitored to ensure emission reductions meet market requirements.

### Sectoral Reduction Mechanism Channels

Facing aviation emissions reduction needs, the Belt and Road voluntary emission reductions can consider conforming with CCER standards (admitted at the voluntary phase of CORSIA) to leverage CCERs for accessing the CORSIA credit supply channel. Additionally, when supplying CORSIA, the Belt and Road voluntary emission reduction development should focus on the type of project and the timing of credit issuance.

### Carbon Neutrality Channels

Due to its voluntary nature, the demand driven by this channel tends to be market-oriented, so the supply of emission reductions needs to satisfy the market participant preferences. As an example from the current stage, the industry has a preference for emission reduction projects with good additionality, such as wind and photovoltaic power, while questioning the additionality of projects involving waste heat recovery, fossil fuel power generation, waste-to-energy, and hydropower. However, stimulated by the vast demand for carbon neutrality, the market's preferences for specific types of emission reduction could be adjusted for different needs. Carbon neutrality can be achieved through various types of Belt and Road emission reductions.

Matching between supply and demand for the Belt and Road voluntary emission reductions should take holistic consideration of the supply status and relevant requirements for international carbon emission reductions (e.g., demand for high-quality emission reductions), especially the difference between supply- and demand-side requirements for high-quality carbon emission reductions.

# CHAPTER III

## REFLECTIONS ON THE BELT AND ROAD CARBON MARKET DEVELOPMENT

### —— BASED ON BELT AND ROAD VOLUNTARY EMISSION REDUCTION COOPERATION

# Potential Challenges and Risks of the Belt and Road Voluntary Emission Reduction Cooperation

Belt and Road countries' voluntary emissions reduction cooperation will encounter challenges regarding trading, cross-border operations, supply-demand balance, and other aspects. The main challenges and risks include:

## Singular Trading Models and Product Structures

Currently, the domestic carbon pricing mechanism in China is in the process of improvement and lags behind the more mature pricing mechanisms of markets like the EU Emissions Trading System (EU ETS), and the mechanism of the Belt and Road voluntary emission reductions still needs to be developed. Moreover, the primary product emerging from voluntary emission reduction cooperation along the Belt and Road Initiative is a single product type, which in this case is voluntary emission reductions. One strategy to consider is the gradual introduction of carbon financial products based on the maturity of the spot market, which could make the market more attractive to participants and facilitate carbon asset management. Thus, the future pricing mechanism for the Belt and Road voluntary emission reductions and corresponding price management measures will be significant driving forces for accessing the global markets.

## Cross-Border Transfers, Settlements and Transfer Restrictions

The Belt and Road voluntary emission reduction cooperation mechanism involves the flow of cross-border funds, which is generally subject to strict regulation in most of the countries. Taking the transfer of funds in and out of China for carbon trading as an example, there is currently no unified regulatory and operational modes within the country. For instance, the Non-Resident Account（NRA) in Hubei is accounted as a capital account transaction, whereas in Guangdong, it is accounted as a current account transaction, and uniform guidance needs to be explored. Additionally, the settlement systems of domestic carbon markets are in their infancy. Considering the vast number of future Belt and Road market participants, it is necessary to study the introduction of central counterparties and tiered settlement systems. Moreover, the transboundary flow of emission reductions may also face restrictions under Article 6 of the Paris Agreement. For example, the transfer of internationally transferred mitigation outcomes across borders requires national authorization under Article 6, which could affect the willingness for cross-border transaction of emission reductions.

## Imbalance in Supply and Demand

The balance of supply and demand for the Belt and Road voluntary emission reductions should reflect the marginal cost of emission reductions within the Belt and Road cooperation region. However, actual circumstances may deviate from these costs. For example, in the face of significant demand, a limited supply of emission reductions could lead to a surge in their price. Similarly, in the future, as negative carbon technologies develop and other emission reduction technologies are applied, a sudden increase in the supply of emission reductions coupled with shrinking demand could lead to low emission reduction prices, thereby affecting the sound operation of the entire market and the application of emission reduction technologies. Ideally, market forces would stabilize supply and demand around the marginal cost of emission reductions, but actual conditions can differ. Short-term or long-term imbalances in supply and demand can cause carbon prices to deviate from the marginal cost of emission reductions, restricting the healthy development of the market.

## Multidimensional and Complex Risks

The Belt and Road voluntary emission reduction cooperation involves mechanism design, emission reductions development, trading, and cross-border flow of elements, each with its own set of risks and processes. For example, there are risks associated with policy uncertainty in the mechanism design phase, technological risks, approval, verification, issuance, and delivery risks in the emission reductions development phase, infrastructure integration, transaction operation, information disclosure, and pricing risks in the trading phase, and risks related to cross-border flow of capitals and emission reductions trading. The risks involve multiple sectors and are multidimensional and complex. Furthermore, the Belt and Road voluntary emission reduction cooperation is a bilateral or multilateral cooperation mechanism, with layers involving two or more countries. Therefore, effectively addressing cross-regional regulatory issues remains to be studied.

# Recommendations for Constructing a Belt and Road Carbon Market Based on The Belt and Road Voluntary Emission Reduction Cooperation

## Promotion of Innovative Model

The key to establish the effective Belt and Road voluntary emission reduction cooperation, especially the trading mechanism, is to establish reasonable pricing mechanisms to form mutually accepted reduction prices that appropriately reflect abatement costs in the region.

01 Promote the application of more mature pricing models for the trading of Belt and Road voluntary emission reduction.

02 Explore a wider variety of Belt and Road trading commodities and conduct research to launch related carbon financial and derivative financial products. Support the development of Belt and Road carbon emission reduction financing tools and carbon emission reduction support tools. Encourage integration between climate investment and financing products and Belt and Road carbon reduction efforts.

## Exploration of a Facilitated Support System for Cross-Border Factor Flows

Belt and Road voluntary emission reduction trading involves the cross-border circulation of funds and voluntary emission reductions, necessitating a more facilitative system for the trading of emission reductions to ensure the effective operation of voluntary emission reduction trades along the Belt and Road initiative.

01 Leverage the advantages and experiences of the domestic carbon market in the field of cross-border carbon trading to improve the existing cross-border payment and settlement system for funds. Introduce a cross-border RMB payment and settlement system to form a Belt and Road voluntary emission reductions trade settlement system that uses RMB for pricing and settlement, central counterparty settlement, and tiered settlement, and advocate relevant government authorities to issue guidance on cross-border capital flows in the field of carbon trading.

02 Communicate thoroughly with government authorities regarding international transfer of carbon credits, implementing provisions and detailed rules for the transfer of ITMOs under the Paris Agreement. Promote the establishment of management and operational mechanisms for the transfer of ITMOs, and open channels for the cross-border circulation of the voluntary emission reductions originated from Belt and Road .

## Improvement on the Supply and Demand of Voluntary Emission Reductions

Market supply and demand as well as the stage of social development need to be taken into account for the establishment of the Belt-and-Road emission reduction mechanism. A reasonable balance between supply and demand should anchor the marginal emission reduction cost of the corresponding stage within a certain range.

01 Expand the supply of emission reductions in the current phase in a demand-oriented and steady manner. By analyzing the characteristics of emission reductions along the Belt and Road, leveraging the function of climate investment and financing to facilitate the implementation of low-carbon projects, and collaboratively advancing the development of emission reduction projects, this ensures a stable supply of emission reductions.

02 Looking to the future, establish a dynamic adjustment mechanism for emission reduction development, creating benchmarks that match climate ambitions and stages of social development. Fully assess the quality of emission reductions, including the additionality, the permanency, and the social-benefits to ensure that supply and demand are matched in both quality and quantity.

## Establishment of Synergistic Mechanisms for Risk Prevention and Control

The potential risks in the Belt and Road voluntary emission reduction cooperation permeate the entire process, intertwining across regions and stages, requiring the development of a clear and collaborative mechanism for risk prevention.

01 Utilize a process-oriented and modular approach to systematically analyze the sources of risks in the Belt and Road carbon emission reduction cooperation, fully evaluate the impact of risks, establish a risk response checklist and responsible departments, and promote a joint response mechanism for risk management.

02 Rely on a cross-border joint management body, establish a joint risk response group, and form standardized procedures for handling cross-border risks.

03 Encourage the joint management body to communicate with domestic management authorities of all parties, establish regular communication channels and working mechanisms, and provide timely feedback on risk occurrence and management.

**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

**LIU Hongming**
Director, Carbon Market
hliu@edf.org

**XU Hansen**
Manager, Industry
hxu@edf.org

**ZHANG Xin**
Project Manager, Carbon Market
zhangxin@cet.net.cn

**Guangzhou Emissions Exchange**

6F，Building T4，Poly International Financial Center，
Huadu District，Guangzhou 510800
+86-20-35632333
http://www.cnemission.com

**XIAO Sirui**
General Manager Assistant
xsr@cnemission.com

**CHEN Liping**
Deputy Director, Strategy and Development Department
clp@cnemission.com

**LEI Shuran**
Senior Organizer, Strategy and Development Department
leisr@cnemission.com