The Potential for Scaling Innovative Climate Finance in China
Agenda

Climate Finance and Innovation in China
Opening Remarks

The State of Climate Finance in China
Report Overview

The Global Innovation Lab for Climate Finance
Lab Overview
Lab Instruments Presentation

Discussion and Q&A
Climate Finance and Innovation in China

Speakers:

Yiting Sun, Standing Committee Member of CIFA
Shanning Dong, Director of Green Finance, Bank of Jiangsu
Marilyn Waite, Program Officer in Environment, Hewlett Foundation
Climate Finance and Innovation in China

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Yiting Sun, Standing Committee Member, Climate Investment and Finance Association (CIFA)
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Marilyn Waite, Program Officer in Environment, Hewlett Foundation
The State of Climate Finance in China

Speaker:

June Choi, Analyst, Climate Policy Initiative
China achieved significant progress in the past five years

Integrated Reform Plan for Promoting Ecological Civilization
Green Bond Endorsed Project Catalogue

2015
13th Five-Year Plan (2016-2020)
Green Finance Study Group presents 14 recommendations at the G20 Summit
Guidelines for Establishing the Green Financial System

2016
Green Finance Pilot Zones established

2017
Implementation Plan for Green Bank Evaluation (Trial)

2018
Guidance Catalogue for Green Industry (NDRC)
Constitution amendment to include the goal of “Ecological civilization”
Guidelines for the Conduct of Assessment and Certification of Green Bonds (Interim)
Notice on Establishing a Special Statistical System for Green Loans

2019
14th Five Year Plan
Guiding Opinions on Building a Modern Environmental Governance System
Guidance on Promoting Investment and Financing to Address Climate Change

2020
Carbon Neutrality by 2060

Green Finance: $320 billion

Climate Finance: $201 billion

Mitigation
$193 billion

Adaptation
$8.3 billion

Other Environment
$118 billion

Solar

Wind

Other RE

Transportation

Adaptation

Ecological Construction

Water

AFOLU

Pollution Control

Resource Conservation

*Data represents domestic sources of finance.

Source: Global Landscape of Climate Finance (CPI), CBIRC, WIND
Public actors were the largest contributors of green finance

Public
$162 billion

Joint ownership
$79 billion

Private
$77 billion

Policy banks

State-owned Commercial Banks*

Central SOEs

Other Public

Joint Stock Commercial Banks*

Green PPP funds (Local government actors, banks, and private investors)

Project Developers and Corporates*

Institutional Investors*

Leasing Companies*

EV Sales

* Estimated breakdowns

Source: Global Landscape of Climate Finance (CPI), CBIRC, WIND
China faces an annual $1 trillion investment gap in green investment needs

- Total estimated green investment needs are based on the State Council’s climate goals established in 2015.

- Investment gap likely higher, given that the emissions target is based on reducing carbon intensity and not absolute reduction.

- According to Tsinghua ICCSD, China’s energy transition will require $21 trillion in energy infrastructure investments in 2020-2050.
Opportunities

• Enhancing incentives for exploring innovative structures

• Increasing diversity of capital

• Improving access to formal financing channels

• Increase visibility and credibility for green project pipelines

• Reducing policy uncertainty
The Global Innovation Lab for Climate Finance

Speaker:

Carla Orrego, Project Manager, Climate Policy Initiative
The Global Innovation Lab for Climate Finance
A public-private partnership: The Lab brings together over 70 institutions to address the sustainable investment gap
Since 2014, the Lab has supported 55 solutions that tackle investment barriers in the most critical sectors and regions for action on climate change.

Number of Lab instruments (including 2021 class):

- **Renewable Energy**: 22
- **Sustainable Cities**: 21
- **Climate Risk**: 18
- **Agriculture, Land Use, Forestry**: 17
- **Energy Access**: 11
- **Energy Efficiency**: 10
- **Africa**: 24
- **Asia**: 22
- **Latin America**: 20
- **Global**: 7
$2.45+ bn mobilized by 49 instruments for climate action in developing countries

$370+ mn invested by Lab Member institutions

$2.0+ bn catalyzed in additional investment

Lab instruments have mobilized 200x what funders have invested in the Lab Secretariat
The Lab model could be an effective approach to help foster China and the broader region’s transition to net zero.

**Strong opportunities for innovation**

- Small and medium-size banks
- Green funds
- PPP structures
- Green finance pilot zones
- BRI countries

**Growth potential for climate finance**

- Fintech
- Retail investing
- Increasing awareness of green financing instruments
- Increasing channels for foreign capital participation

Catalyze more *financial innovation* and mobilize more *climate investments*
• Steve and Max work for the Climate Business Department (CBD) of the International Finance Corporation (IFC), the private sector arm of the World Bank Group.

• CBD has a broad mandate of supporting and increasing IFC’s climate-related business, including new climate investment product development.
THE URBAN AIR POLLUTION PROBLEM AND CHALLENGE

The Problem:
- Cities are at the nexus of climate change and air pollution – and have made growing commitments to tackle both challenges
- 97% of urban populations in low- and middle-income countries are exposed to unsafe air quality, resulting in about 7 million premature deaths per year
- Cities are responsible for 70% of CO2 emissions globally

The Challenge:
- Addressing air pollution requires diverse capabilities including air quality monitoring and apportionment analyses, project preparation and funding capability
- Significant funding requirements may require private sector involvement
The Breathe Better Bond (BBB) is a solution that IFC could offer to its sub-national clients to improve air quality.

The BBB is a fixed income security issued by urban local authorities to provide funding for projects that reduce both air pollution and GHG emissions. The BBB will have two components:

1. **Technical assistance** for capacity building for activities such as emissions inventory, project preparation, debt issuance, etc.

2. **Financial support** including an anchor investment by IFC, and potentially concessional funding (results-based payments, blended finance)
**BBB STRUCTURE**

**Grant Funding Sources**
(Donors, national governments)

**Institutional Investors**

**Results Based Payments Funding**
(Donors, national governments)

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**The BBB Initiative**

**Phase I: Technical Assistance**
Pollution assessments, bond structuring, project selection

**Phase II: Bond Issuance**

**Phase III: Results Based Payments**

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**Municipal Government or PPP**

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Grant Finance

Bond Proceeds

Interest and Principal

Results Based Payments

Technical Assistance

Repayment Capital

Results Based Payments

Pollution-Reducing Projects
BBB RELEVANCE FOR CHINA

- The National Action Plan improved pollution levels, with PM2.5 concentrations falling by an average of 36% from 2013 levels.¹

- While the COVID-19 pandemic temporarily reduced pollutant levels, air pollution is increasing again as consumer demand and industrial activity rebounds, highlighting the need for additional solutions.

¹: “Is China Winning its War on Pollution?”, Air Quality Life Index; March 2018
WORLD BANK HEBEI AIR POLLUTION PROGRAM

• **What was the Program?** From 2016 – 2019 the World Bank implemented its $500m Hebei Air Pollution Prevention and Control Program in conjunction with the Central and Provincial Government. The Program identified key sources of pollution in Hebei province and designed solutions to reduce PM2.5, SO2, and NOx pollution levels. Sectors targeted included industry, transport, agriculture, and clean cookstoves.

• **What were the results?** The Program exceeded its pollution reduction targets, reducing air pollution by 840k tonnes and GHG emissions by about 5 million tonnes per year. This helped reduce pollution in Hebei Province and JingJinJi region by ~ 35% from 2015-19.

• **What were the lessons learned?** Strong analytical frameworks, improved local capacity, and refined implementation arrangements were effective in reducing harmful emissions and can serve as model for future programs.

*Through the BBB, IFC is can leverage the lessons from WB program and introduce private sector funding to continue pollution reduction efforts by Chinese sub-national governments.*
BBB RELEVANCE FOR CHINA

- Several cities having joined climate-focused coalitions such as C40 or are low-carbon pilot cities.

- Local government bond issuances have increased since 2015, with special purpose or local government financing vehicles serving as the primary financing mechanisms.

- Financing mechanisms lack a framework to track the environmental benefits and as a result, green municipal financing has been limited.

- With air pollution as a national priority, and good access to capital and strong project execution capabilities, several cities are potential issuers of a Breathe Better Bond.
IFC used a pollution model to assess the impact of three projects implemented in a hypothetical South Asian city.

<table>
<thead>
<tr>
<th>Mitigation Actions</th>
<th>Starting Year</th>
<th>Debt</th>
<th>Equity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electricity Generation</strong></td>
<td>2021</td>
<td>101</td>
<td>34</td>
<td>135</td>
</tr>
<tr>
<td>- Project to install a 200MW Solar Plant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transport</strong></td>
<td>2021</td>
<td>155</td>
<td>52</td>
<td>207</td>
</tr>
<tr>
<td>- Replace 300 diesel buses with 250 electric trolleys.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Waste</strong></td>
<td>2021</td>
<td>131</td>
<td>44</td>
<td>175</td>
</tr>
<tr>
<td>- a plant that can process 420,000 tons of municipal solid waste.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>387</td>
<td>130</td>
<td>517</td>
</tr>
</tbody>
</table>

- Using recent investments as a benchmark, IFC estimated the capital required to achieve specific changes in the energy mix.
- The pollution model then assessed the impact on GHG emissions and several types of pollutants.
- Conclusion: A $130 million BBB issue coupled with $387 million of project debt would result in reductions of 3.4 million tons of CO2 and almost 2 million tons of PM2.5 over 8 years.
BBB IMPLEMENTATION PATHWAY

**Phase I: Technical Assistance (6 months – 2 years)**
- Establishing relationship with city and understanding SLCP problem and potential solutions
- Project selection and bond design and choice of performance metric

**Phase II: Issuing the BBB**
- Issuance of the BBB with proceeds to be used for SLCP-reducing projects
- Implementation of projects

**Phase III: Measuring Results and Incentives**
- Ongoing impact assessment oversight and project monitoring & Results Based Payment
## OPPORTUNITIES FOR INVOLVEMENT

<table>
<thead>
<tr>
<th>Stakeholder Type</th>
<th>Expected Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>State / Municipality</td>
<td>BBB Issuer</td>
</tr>
<tr>
<td>Grant Funders (Donor/Philanthropy)</td>
<td>Phase 1: Technical Assistance</td>
</tr>
<tr>
<td>Institutional Investors</td>
<td>Phase 2: Bond Issue</td>
</tr>
<tr>
<td>Results Based Payer (Donor/Philanthropy)</td>
<td>Phase 3: Results Based Payments</td>
</tr>
</tbody>
</table>
RISCO Restoration Insurance Service Company
The RISCO team has expertise in conservation finance, mangrove conservation, and climate risk. We are hiring a Project Director with insurance expertise.

Conservation International is a global environmental non-profit. Our Asia-Pacific Division has over 200 employees, is headquartered in Singapore, and has field offices in 8 countries, including China. Our Conservation Finance Division has deployed more than US$ 500 million in innovative conservation finance.

The Team

Romas Garbaliauskas
Emily Pidgeon
Ricky Nunez
Allie Goldstein

The RISCO team has expertise in conservation finance, mangrove conservation, and climate risk. We are hiring a Project Director with insurance expertise.
Mangroves are critical for climate adaptation and mitigation yet continue to be deforested.

➢ Globally, mangroves protect more than 18 million people and **prevent property flood damages of US$ 65 billion/yr.**

➢ Mangroves also provide enormous **mitigation potential** (up to 10x more than terrestrial forests).

➢ However, **mangrove cover has declined 30-50% in past 50 years** due to conversion to aquaculture coastal development, or other uses.

➢ Reliance on **scarce public finance** for conservation and restoration is **unsustainable.**
RISCO is a social enterprise that invests in mangrove conservation and restoration in areas with high-value coastal assets, protecting blue carbon and reducing flooding and property damage risk.
RISCO identifies sites and invests in mangrove conservation and restoration, securing revenue from insurance companies who accrue mangrove risk reduction benefits and from the sale of blue carbon credits.

**RISCO Mechanics**

RISCO identifies sites and invests in mangrove conservation and restoration, securing revenue from insurance companies who accrue mangrove risk reduction benefits and from the sale of blue carbon credits.
Chinese Market

Insurance Sector

• Rapid development of the industry, with direct premium income tripling between 2012-2019
• Significant catastrophe insurance protection gap

Hazards

• Rapid economic development along coasts put an increasing amount of infrastructure at risk
• In 2019, 11 storm surges caused RMB 11.7 billion in direct economic losses

Mangroves

• About 15,000 hectares of mangrove forest protect China’s coastline
• A lot of deforestation in the 1960s-1990s, but coverage now increasing significantly

The RISCO model proposes a nature-based solution that can also be applied to other ecosystems, such as terrestrial forests.
Impact

Modeled RISCO site potential impact: **Pilot of 4,000 ha in the Philippines**

<table>
<thead>
<tr>
<th>Mitigation Actions</th>
<th>Metric</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Emissions reductions</em></td>
<td>600,000 tCO₂ over 10 years</td>
</tr>
<tr>
<td><em>Reduce flood risk</em></td>
<td>&gt; 7,000 people</td>
</tr>
<tr>
<td><em>Flood reduction value</em></td>
<td>$12.8 million ($3,200/ha)</td>
</tr>
</tbody>
</table>

At scale, RISCO could generate **US$ 200-280 million in insurance sector and blue carbon revenue** over a 10-year period.
The RISCO model aims to implement several pilots across different countries with strong potential to be expanded and replicated.

**Implementation Pathway**

- **Pilot site selection**
- **Business case development**
- **Pilot deal structuring**
- **Pilot setup**

**Current phase**

**Progress**
- Developing first RISCO pilots in the **Philippines (2021)**
- Supported by **Swiss Re Foundation**

**Next Steps**
- **(1) Asia:** China, Indonesia, Vietnam
- **(2) Latin America:** Costa Rica
Moving Forward

1. **Insurance Companies**
   Looking to engage with innovative insurance companies interested in using nature-based solutions to reduce risk and improve resilience.

2. **Grant Funding**
   Seeking grant funding for additional pilot development in Asia ($1-1.2 M).

3. **Impact Investors**
   Looking for impact investors to invest in RISCO pilots (debt/equity), once business plans are complete (2022-23).
Market Transformation: Servitisation of Cooling Industry
Who we are and what we do?

• The Basel Agency for Sustainable Energy (BASE) is a Swiss not-for-profit founded in 2001 whose mission is to develop innovative, actionable financial strategies and market-driven solutions to unlock investment in Sustainable Energy and to tackle climate change.

• Specialized Partner of UN Environment and member of United for Efficiency (U4E).

• We works with a variety of players and acts as a bridge between the public and private sectors.

• Partners: multilateral development banks, national banks, financial institutions, development agencies, intergovernmental and philanthropic organizations.
Cooling demand is rising dramatically

Cooling demand will **triple by 2050, from 10 to 30% of global electricity consumption** (= China’s electricity use today) *

Market of **6.9 trillion USD** over next 30 years (**230 billion USD/year**) that could be invested in clean efficient cooling.

*IEA, The Future of Cooling, 2018*
SERVITISATION - COOLING AS A SERVICE INITIATIVE (CaaS)

The business model aligning people, profit and the planet.

Design and selection of solution based on long term considerations.
Key to a circular economy.

- Maximising operating efficiency makes business sense for the provider.
- Enables a system thinking approach.
- Maximises reutilisation of equipment, and reuse of components through modular designs.
- Encourages providers to keep innovating also for existing customers.

Different to Energy Savings Contracts
Mega-trend growing rapidly across equipment industries
KEY ACTORS AND BENEFITS

**Cooling users**
- No capital expenditure.
- Off-balance service.
- Full transfer of performance risks.
- User can focus and invest in core business.
- Full out-sourcing of cooling service.

**Technology Providers**
- Increase demand and deployment of most efficient technologies.
- Predictable and continuous revenue streams.
- Bring additional value by selling outcome instead of selling equipment and parts.

**Banks / Investors**
- Opportunity to place green funding..
- Investing in assets generating cashflows.
- Become front-runner to finance servitisation models (new trend).
CaaS Initiative Pillars

- Alliance
- Tools
- Awareness raising
- Demos

• +50 members on the alliance
• Standardising contracts
• Pricing models
• Explanatory Documentation
• 14 companies supported to implement CaaS
• Multiple case studies, articles, webinars, E-summit

www.caas-initiative.org
Case Studies

**Real Estate Complex in India**
- Reducing energy use by 30%
- Fully powered by Solar
- Low GWPs

**Data center in Singapore**
- Reducing energy use by 20%
- Low GWP chillers

**Industrials in South Africa**
- Reducing energy use by 20%
- Powered by Solar

**Cold Storage in India & Nigeria**
- Reducing emissions up to 49%
- Reducing spoilage 20-30%
- Increasing revenues for farmers by 30-50%
Opportunity in China

- **Cooling demand continues to grow**
  From 2017 to 2030, the installed capacity in China is estimated to double.

- **Strong potential emission reductions**
  EE and low-GWP cooling could enable cumulative GHG emissions reductions of 16.9Gt CO2e from 2020 to 2030 (equivalent to 2 billion homes’ energy use for one year).

- **Favorable policies**
  CaaS is consistent with China’s long-term endeavor to improve energy efficiency of refrigeration and air-conditioning equipment.
Q&A and Discussion

Moderator:

Barbara Buchner, Global Managing Director, Climate Policy Initiative
Q&A and Discussion

Discussion Questions

**Cooling as a Service**
Basel Agency for Sustainable Energy
dimitris.karamitsos@energy-base.org

**Restoration Insurance Service Company (RISCO)**
Conservation International
agoldstein@conservation.org

**Breathe Better Bonds**
International Finance Corporation
sbaillie@ifc.org

**What are some key opportunities for replicating innovative instruments in China?**
What specific factors should be considered?

在中国应用这些创新型的解决方案的机遇是什么？有哪些具体因素需要考虑？

**What are some of the main challenges or bottlenecks that may hinder the replication of innovative instruments in China?**

在中国应用这些创新型的解决方案的挑战或瓶颈有哪些？

**How can we further mobilize investments in climate finance solutions?**

如何能进一步扩大对绿色/气候金融解决方案的投资？
謝謝！