



**ACMFN CASE STUDY SERIES**

**A SNAPSHOT OF THE CHINESE  
CLEANTECH FINANCING ECOSYSTEM**

*BUILD. ACCELERATE. MAINSTREAM.*



## ABOUT THE CASE STUDY SERIES

The Case Study Series is part of the Asian Cleantech MSME Financing Network (ACMFN) project and was prepared by the project partner adelphi. The project is a four-year project co-financed by the European Union that aims to build and leverage a cleantech financing ecosystem to spark improved access to finance for Asian cleantech enterprises and enhance sustainable consumption and production patterns in Asia.

The Case Study Series accompanies the report “A Snapshot of the Chinese Cleantech Financing Ecosystem. ACMFN Flagship Report Series” and provides in-depth case studies on the organisations interviewed for the report.

# LIST OF ORGANISATIONS

## Micro-, Small-, and Medium-sized Cleantech Enterprises

Kebai Science

Muyu Technology

## Financial Institutions

China Industrial Bank

Huaxia Bank

China Impact Ventures

Tianjin Venture Capital

Qingyu Capital

CreditEase

Green Technology Bank

Asian Development Bank

## Intermediaries

Asian Venture Philanthropy Network (AVPN)

GIZ

Greenpeace East Asia - Power Lab

Tsinghua x-Lab

TREERI

China Energy Conservation Association (EMCA)

# Case Study



## Kebai Science and Technology

Kebai Science commits to the development of intelligent, high-performance, low-cost agricultural Internet of Things (IoT) systems & big data. Their focus lies on supporting farmers and cleantech SMEs by offering solutions for agricultural improvements and for climate-smart management of water systems and fertilizer.



*"One of our biggest advantages is that most of our competition does [only] parts of what we do, but we do everything, we are the Number 1 in providing full solutions."*

### ORGANISATION PROFILE



Clean Technology Provider



Established in 2008



- Maximise resource efficiency**
- ✓ Resource-efficient and low-cost technology
  - ✓ Energy & Water Management Systems
  - ✓ Renewable energy technology application



70 staff



Based in Beijing, China



**Impact:** Significantly reduce farmer's costs and substantially increase their crop quality and yield.

### CLEANTECH MODEL SNAPSHOT



### INVESTMENT HISTORY



- Equity financing through an angel investor in 2016 (an individual interested in agriculture)
- Non-equity assistance from Microsoft Accelerator Beijing in 2017
- Series A investment through ECC in 2019

### CHALLENGE



- Rely on trading and have difficulties receiving a loan
- Long time period to prove the success of clean technologies

### BEST PRACTICES



Technologies reducing pesticide use and applying green production provide environmental benefits



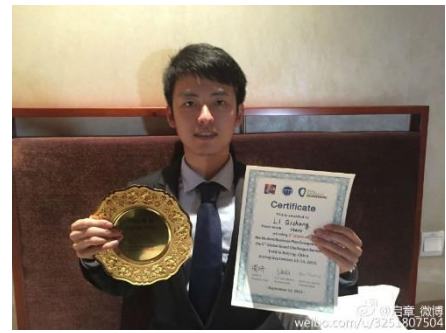
Positive poverty effects on farmers through technology offering cost reduction and quality improvement opportunities

# Case Study



## Beijing Muyu Technology Co Ltd.

The clean technology provider Muyu Technology commits to developing highly efficient water-saving technology by putting forward a totally new water-saving idea as the first-generation of product, "Air Faucet".



*"We aim to create a comfortable, healthy, and environmentally-friendly use of water for people around the world."*

### ORGANISATION PROFILE



Cleantech Provider



Started selling in 2017



< 11 staff; 4 core management staff members



Based in Beijing, China



### Enable broad-based resource-saving

- ✓ Innovative water-saving technology
- ✓ Use in public places
- ✓ Technology upgrades in process
- ✓ Won Gold Medal of the 2nd Global Grand Challenge Summit in Geneva

**Impact:** 90% water saving rate from high-speed airflow faucet system comparing to common water faucet & cost reduction for clients at installation.

### CLEANTECH MODEL SNAPSHOT



### INVESTMENT HISTORY



- Raised 3 million RMB in total equity from angel investors
- Won several competitions, each time at 50-100,000 RMB average
- 150 pieces produced and 100 sold; 1 piece sold at 1,000 RMB, uses 100 Watt

### CHALLENGE



- Proof of concept to attract finance is the main barrier
- Team member's lack of experiences in manufacturing
- Combining green technology with market needs

### BEST PRACTICES



Provide innovative clean technology meeting market needs while providing environmental benefits



Achieve higher impact since main customers are distributors who sell technology for public places

# Case Study



## CHINA INDUSTRIAL BANK

China Industrial Bank (CIB) was the first commercial bank in China to fully embrace sustainable development and green finance. Although the bank has no specific product for cleantech SMEs financing yet, it is an important provider of sustainable finance in China.



*"Green finance has great market potential plus social and economic benefits."*

### ORGANISATION PROFILE



**Joint-stock Commercial bank**



**Founded in 1988**



- Enable large-scale cleantech financing**
- ✓ Renewable energy & natural gas
  - ✓ Clean railway transportation
  - ✓ Sustainable water and wastewater management

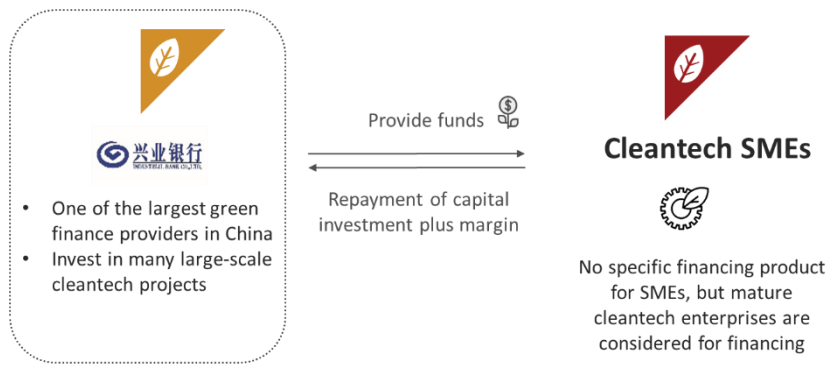


**Almost 10,000 Green Finance Corporate Clients**



**Headquarter based in Fuzhou, China**

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY



- Green Bonds: CIB issued the first green bond in China & it was the biggest issuer of Green Bonds in 2017 (USD 7.8 billion issued)
- In 2017, CIB's Green Financing Portfolio added up to RMB 674.5 billion

### CHALLENGE



- Decreasing loans due to economic downturn
- New regulations for asset management causes that a lot of financial institutions are short in cash

### BEST PRACTICES



Creates significant environmental impact as one of the largest Green Bond issuer in China



Drafted an internal Green Bond Framework, pioneering commercial green finance provision

## Case Study



### HUAXIA BANK

Huaxia Bank is the 42<sup>nd</sup> biggest bank in China, present across all regions, and counts more than 1000 second-level-branches. For its green finance and social responsibility practices, the bank received several awards in recent years, including the award “Annual Best Bank Providing Green Financial Services”, from Financial News.



*“Unlike other banks, we have established a Green Financing Department [to boost sustainable finance].”*

#### ORGANISATION PROFILE



Publicly traded  
Commercial Bank



Founded in  
1992



US\$ 700 Mio.  
Total Investment  
in 2016



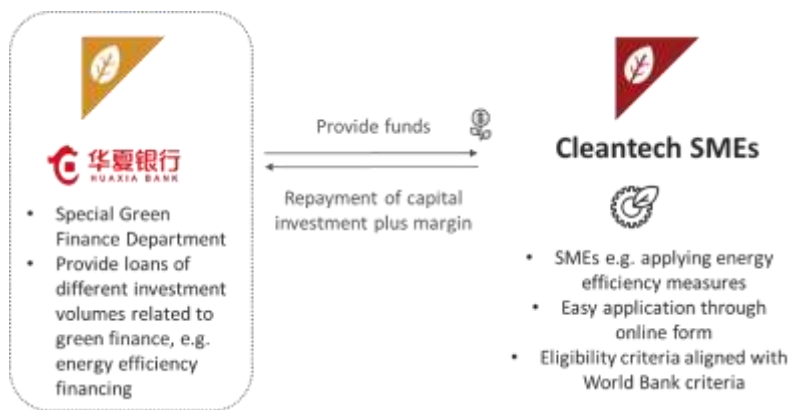
Based in  
Beijing, China



#### Ensure impact of cleantech SMEs in focal provinces

- ✓ Energy efficiency
- ✓ Renewable energy
- ✓ Air pollution reduction
- ✓ Emission and energy saving
- ✓ Third party evaluation
- ✓ Green finance capacity

#### CLEANTECH FINANCING MODEL SNAPSHOT



#### INVESTMENT HISTORY



- US\$ 700 Mio. total investment in 2016, different loan distribution per customer
- RMB 314,270 million of SME financing provided in last reporting period
- 54 enterprises supported across the country

#### CHALLENGE



- Financing small projects is less profitable as consulting process is long
- Green finance capacity center staff not trained enough in energy efficiency-matters

#### BEST PRACTICES



Significant impact through accumulative savings of almost 3 million tons of standard coal & reduction of 6 million tons of carbon dioxide



Established a Green Financing Department, mainstreaming green financing

# CHINA IMPACT VENTURES

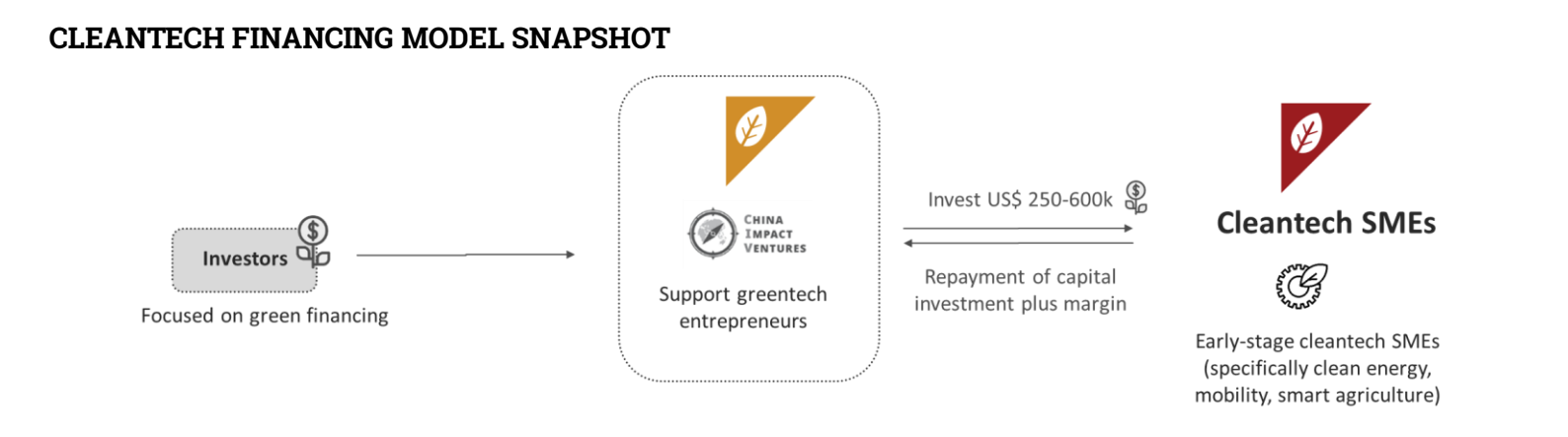
China Impact Ventures (CIV) is a private impact investor with a focus on early-stage investments across the clean energy, mobility and smart agriculture sector. Through its investments, CIV aims to tackle social and environmental challenges in China.



*"We want to build the ecosystem and support entrepreneurs who make high contributions to the cleantech area."*

**ORGANISATION PROFILE**

	<b>Venture Capital Firm</b>		<b>Founded in 2016</b>		<b>Boost impact of early-stage energy and agriculture SMEs</b>
	<b>US\$ 4 Mio. Co-investments leveraged</b>		<b>Based in Shanghai, China</b>		<b>Interact directly with SMEs</b>
					<ul style="list-style-type: none"> <li>✓ Emission reduction</li> <li>✓ Energy saving</li> <li>✓ Livelihood improvements</li> </ul>
					<ul style="list-style-type: none"> <li>✓ Provide professional services and resource support</li> <li>✓ Potential follow-up investment</li> </ul>



**INVESTMENT HISTORY**

- Investment of US\$ 250K to 600K per early-stage enterprise
- Investment in two to four enterprises per year
- Strong investment focus on specific cleantech enterprises (clean energy, mobility & smart agriculture)

**CHALLENGE**

- Lack of cleantech experts in the government
- Mainstream investors have low interest in cleantech investments
- Immature green investment market in China

**BEST PRACTICES**

	Ecosystem building & investments to tackle pressing environmental and social challenges		Empower early-stage SMEs through essential support provision such as technical and financial resources
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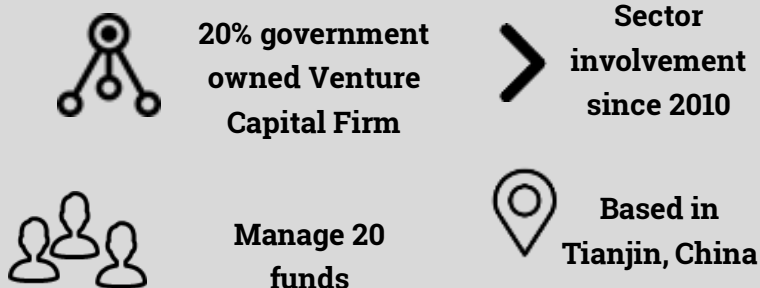
## TIANJIN VENTURE CAPITAL

Tianjin Venture Capital firm (TVC) invests in information technology, new energy, and other sectors including cleantech, and it specializes in seed stage, growth capital, emerging growth, and pre-IPO investments. The VC invests in cleantech companies through a green financing fund.



*"In the context of international obligations, our motivation is to help people and to make profit at the same time."*

### ORGANISATION PROFILE



### Enable technology innovation through cleantech SME investments

- ✓ No regional focus
- ✓ TMT (IT/Media,Technology),
- ✓ Cleantech
- ✓ Pharmaceutical
- ✓ Environmental Protection /
- ✓ Waste water treatment
- ✓ Solid waste
- ✓ Air pollution

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY

- 
- Investment of RMB 5-100 million per customer; average investment size per customer: RMB 200 million
  - 20-40% financed through SOC or other government agencies and 60-80% through private investors

### CHALLENGE

- 
- Government budget tighter since 2017, i.e. less funds could be invested
  - Large policy & government dependence
  - Only 20% of cleantech companies stay stable

### BEST PRACTICES



Drive technology development for enhanced cleantech application and impact



Provide an incentive for government backed cleantech investments and support

## QINGYU CAPITAL

Qingyu Capital is a leading VC firm which runs four funds in the cleantech area and provides post investment management to help companies in their growth. The equity finance provider focuses only on green investments.



*"With new methodologies in the cleantech field we can restructure the sector and get some good returns."*

### ORGANISATION PROFILE



Venture Capital Firm



Founded in 2013



4 cleantech funds in operation



Based in Beijing, China

### Foster efficient growth of cleantech enterprises



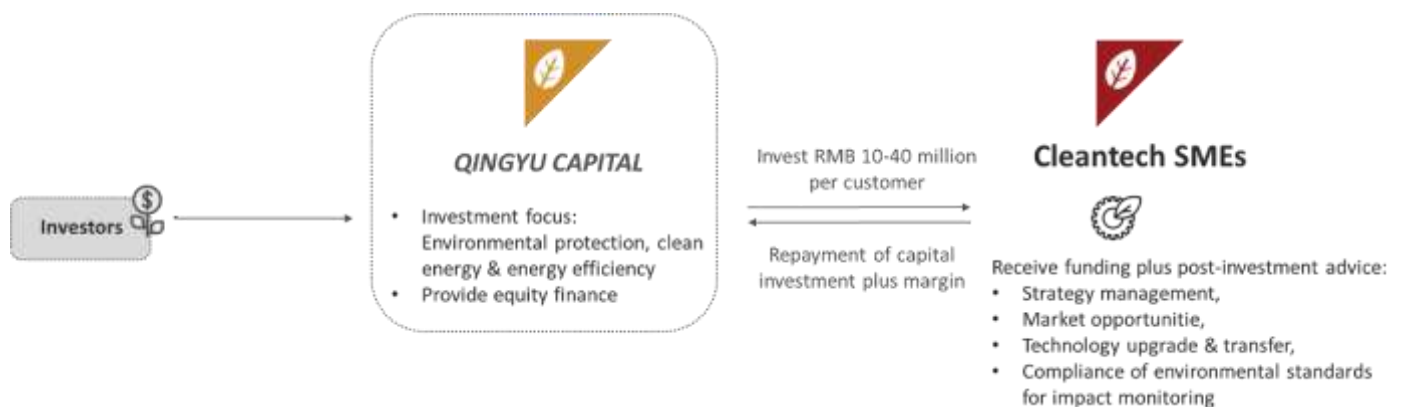
- ✓ Clean energy
- ✓ Pollution treatment
- ✓ Recycling
- ✓ Renewable energy
- ✓ Energy efficiency

### Interact directly with SMEs



- ✓ Post-investment management
- ✓ Technology transfer
- ✓ Environmental standards

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY



- Total cleantech investment of RMB 3 billion
- Equity investments through a total of 4 cleantech funds
- Local government support for cleantech fund provision

### CHALLENGE



- Finding growth pathways and opportunities for green investments
- Government-controlled sub-sectors
- SMEs have limited access to resources
- General need for new (green) models to change the traditional technologies.

### BEST PRACTICES



Focus on green investments contributes to mainstreaming cleantech innovations



Provided post-investment management improves business development



## CREDIT EASE

As the first P2P micro-lending platform in China, Credit Ease launched in 2006, providing financing for SMEs, including cleantech enterprises. Today, the leading FinTech conglomerate specializes in inclusive finance and wealth management in China, and it actively engages with global FinTech innovators through business incubation, commercial cooperation and investment.



*“Clean finance in China is usually big projects. Our approach is different.”*

### ORGANISATION PROFILE



**Leading FinTech  
Conglomerate**



**Founded in  
2006**



**Stimulate technology innovation  
& transfer for cleantech SMEs**

- ✓ Crowdfunding
- ✓ Marketplace lending
- ✓ Payment technology



**Investment  
Commitment of  
US\$ 1 billion**



**Based in  
Beijing, China**



**Interacts directly with SMEs**

- ✓ Micro-lending
- ✓ Matchmaking with investors

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY



- + 40,000 clients use loans
- Customers generate at least RMB 100,000 turnover per month
- In total, 26,000 people get financing for agricultural purposes (loan at low interest rate; 2% for borrowers)

### CHALLENGE



- Low government initiative to push green finance, especially for small SMEs
- Chinese SMEs are facing challenges since 2018 due to an economic downturn

### BEST PRACTICES



Technology transfer helps cleantech SMEs to function more effectively and increase their market access



Inclusive finance provision empowers SMEs and boosts triple-bottom-line impacts



## GREEN TECHNOLOGY BANK (GTB)

GTB serves as a green industry fund & capacity platform alongside the Administrative Centre for China's Agenda 21 launched in 2016 by the Ministry of Science and Technology of China and the City of Shanghai to integrate technology and finance under the sustainable development framework.



*"Green Technology Bank serves to promote the sustainable development of green technology [in China]."*

### ORGANISATION PROFILE



**Green Industry Fund and Platform**



**Launched in 2016**



**+ US\$ 300 Mio. fund**



**Based in Shanghai, China**



### Integrate technology and finance to tackle sustainable development goals

- ✓ Implementation through domestic and international partners
- ✓ Practical resource-saving and environmentally-friendly technology solutions
- Interact directly with SMEs**
- ✓ Green energy projects
- ✓ Support financing & exchange of know-how

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY



- Focus on green technology investments
- Total investment of +US\$ 300 mio.
- Investment into big green technology projects

### CHALLENGE



- Difficulty accessing cleantech expertise
- No concrete cleantech goals specified

### BEST PRACTICES



Investments directly promote sustainable development goals



Comprehensive capacity platform providing research and technology solutions for sustainable development

# Case Study



Asian Development Bank

## ASIAN DEVELOPMENT BANK (ADB)

ADB's Climate Technology Finance Center (CTFC) was launched to provide cleantech financing mechanisms to startups, connecting startups with investors through networking events, and supporting the ecosystem through capacity building, market acceleration and commercialization.



*"Investment in the cleantech sector is hard, there is a missing gap especially for early stage investments, but lots of opportunities for impact."*

### ORGANISATION PROFILE



**International Development Bank**



**Pilot launched in 2010**



**Boosts the impact of early-stage cleantech SMEs**

- ✓ Financing
- ✓ Ecosystem Support
- ✓ Networking events
- ✓ Capacity building
- ✓ Market acceleration
- ✓ Commercialization
- ✓ Technology transfer



**+ USD 200 million to be invested**



**Based in Beijing, China**

### CLEANTECH FINANCING MODEL SNAPSHOT



### INVESTMENT HISTORY



- US\$ 660 million of financing expected to be mobilized
- Clean Energy Venture Capital Initiative will invest US\$ 60 million in several venture capital funds

### CHALLENGE



- Limited financing opportunities for startups in the market
- High investment risks
- Investors limited knowledge about technology
- Government-controlled sub-sectors

### BEST PRACTICES



Bring startups, investors and big companies together to promote commercialization and relationship opportunities



Focus on technology innovation to enable sustainable progress of cleantech initiatives

# AVPN Asian Venture Philanthropy Network (AVPN)

AVPN is a Social Investment Networking Platform with an active presence in China, which aims to highlight the impact of social enterprises. AVPN builds the ecosystem for social investors - from foundations and impact funds to corporations, and other intermediaries, through capacity building and policy work.



*“AVPN tries to connect stakeholders and localize investment into China while promoting Chinese investment”*

### ORGANISATION PROFILE



**Intermediary  
(Investment  
Platform)**



**Established  
in 2005**



### Build a strong social investment ecosystem

- ✓ Linking investors with SMEs
- ✓ Focus on social impact
- ✓ Capital and non-capital investments



**22 key partners  
500+ members**



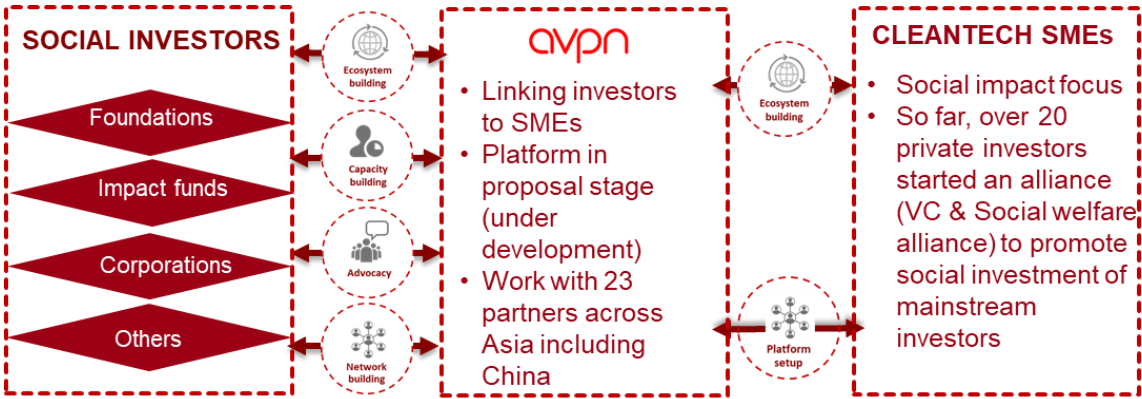
**Based in Beijing,  
China**



### Work with social investors

- ✓ Platform building
- ✓ Capacity building
- ✓ Networking

### INTERMEDIARY MODEL



### INVESTMENT HISTORY



- Focus on access to investment through international sources; so far AVPN is still in the networking phase
- Government interest in green investment is growing

### CHALLENGE



- Lack of investment channelled to social enterprises
- Chinese mainstream investors are not ready for social investment
- Lack of government regulation in the sector

### BEST PRACTICES



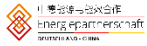
Strengthen the social investment ecosystem in China



Fill a market gap of bridging investment needs and social investors



Building a cleantech platform across industries



**GIZ**

The GIZ implements a range of projects related to cleantech including the Sino-German Energy Partnership which is a broad scheme EU-funded bilateral cooperation project based on a high-level city-to-city dialogue. The idea of the project is the development of business opportunities for European companies in China, with the aim of transforming the energy system towards a sustainable system based on energy efficiency and renewable energy.



*“It is difficult for Chinese SMEs because cleantech projects are usually big: there are big investors and almost no opportunities for smaller independent cleantech SMEs”*

**ORGANISATION PROFILE**



**Intermediary  
(Bilateral  
Partnership)**



**Sino-German  
Energy  
Partnership  
started in 2016**



**7 political &  
implementing  
partners**



**Based in Beijing,  
China**



**Foster the Chinese energy transition**

- ✓ Green financing
- ✓ Low carbon urban planning
- ✓ Green building & transport
- ✓ Clean energy
- ✓ Solid waste, water management



**Work with local partners**

- ✓ High-level Working Groups
- ✓ City-to-city dialogue
- ✓ Capacity building
- ✓ Policy work
- ✓ Promotion of ESG

**INTERMEDIARY MODEL**



**INVESTMENT HISTORY**



- GIZ does not provide direct finance, but supports the development of Sino Green Fund
- US\$ +1 billion fund investment through the Sino Green Fund

**CHALLENGE**



- Evolution of the green finance market in China is driven by government
- Not enough data available for ESG integration in financial products
- No clear definition of “green”

**BEST PRACTICES**



Sector focus allows targeted activities with direct impact



High-level working groups push the development of green bonds



Multi-stakeholder efforts promote the Chinese energy transition

**POWER LAB** Power Lab by Greenpeace East Asia

The Power Lab by Greenpeace & New Energy Nexus provides comprehensive incubator support for cleantech enterprises, specifically those active in clean energy. Activities include capacity building, mentoring and relationship building for Chinese cleantech startups.



*"We want to help enterprise bridge their needs through technologies and start up models from the market"*

**ORGANISATION PROFILE**



**Intermediary (Incubator)**



**Established in 2016**



**2 million RMB dedicated towards incubation**



**Based in Beijing, China**



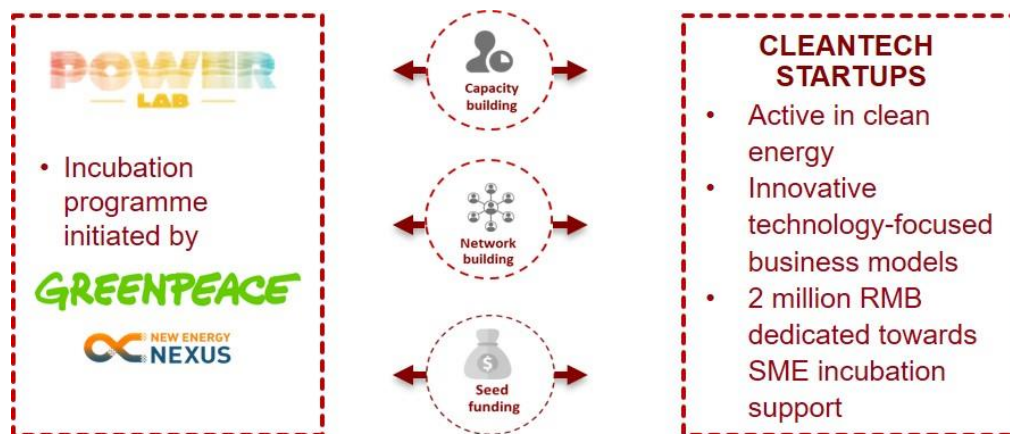
**Empower startups in energy transition process**

- ✓ Incubation activities
- ✓ Seed funding
- ✓ Knowledge & technology transfer

**Work with cleantech startups**

- ✓ Relationship building
- ✓ Mentoring
- ✓ Platform development
- ✓ Capacity building

**INTERMEDIARY MODEL**



**INVESTMENT HISTORY**



- Provide small seed-funding of 5,000-10,000 RMB
- Outstanding price money of 100,000 RMB for highly innovative startup (not delivered yet)

**CHALLENGE**



- Need for incubation services in the clean energy sector
- Lack of cleantech startup financing
- Not sufficient innovative cleantech enterprise business models with a technology focus

**BEST PRACTICES**



Offer cleantech SME incubation to boost innovation in clean energy



Build up cleantech startup capacity



Enable SME financing through networking and pitches with investors



## Case Study



### Tsinghua x-lab

Tsinghua x-lab is a university-based education platform for aspiring entrepreneurs, designed to foster creativity, innovation and entrepreneurship. They bring together students, faculty, alumni, experienced entrepreneurs, investors and experts from across society, to help startups, including cleantech startups, develop their ideas.



*“New startups need to be educated and trained; it is hard for students who want to start a business.”*

#### ORGANISATION PROFILE



**Intermediary**



**Established  
in 2013**



**Offer an active platform for cleantech  
innovation projects**

- ✓ Raising capital and expert mentoring
- ✓ Linking markets and research centers
- ✓ Cleantech innovation



**Worked with  
+1400 teams**



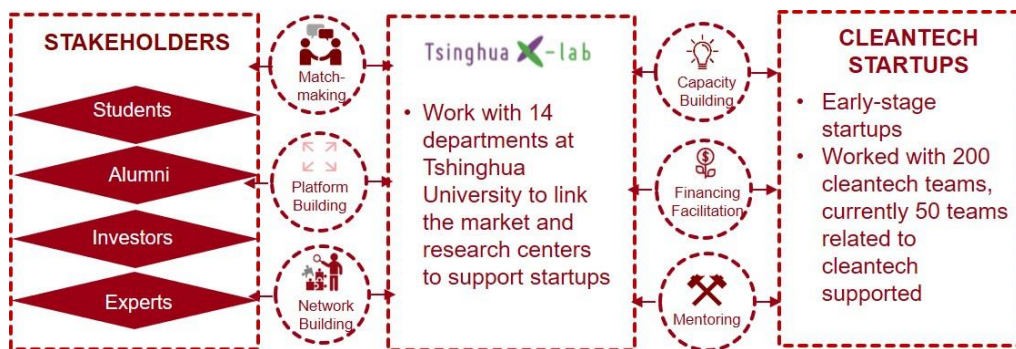
**Based in Tsinghua,  
China**



**Work with young entrepreneurs**

- ✓ Capacity building
- ✓ Mentoring
- ✓ Networking

#### INTERMEDIARY MODEL



#### INVESTMENT HISTORY



- +20 teams received seed or startup funding
- Seed funding facilitated is usually 1-5 million RMB of equity financing and Venture Capital for early stage enterprises

#### CHALLENGE



- Struggle to find venture capital with a focus on cleantech start-up investment
- Most investors provide only small amounts of financing to startups

#### BEST PRACTICES



Stimulate cleantech innovation through providing an entrepreneurship platform



Effective support through capacity building and investor matchmaking for cleantech entrepreneurs



# TR Energy and Environment Research Institute (TREERI)

TREERI, a national research organization closely tied to the government, conducting industrial research and consultation on China's energy issues. Among other activities, the institute interacts closely with banks and aims to push green finance.



*“Several banks have [already] opened green startup departments. They want to enlarge their business and they need to find a new market.”*

### ORGANISATION PROFILE



Intermediary (Think Tank)



Long expertise in research & consulting



### Boost cleantech innovation and business development

- ✓ Industrial research
- ✓ Environmental technology
- ✓ Green finance support
- ✓ Financing services



>5 billion RMB invested through developed credit line



Based in Beijing, China

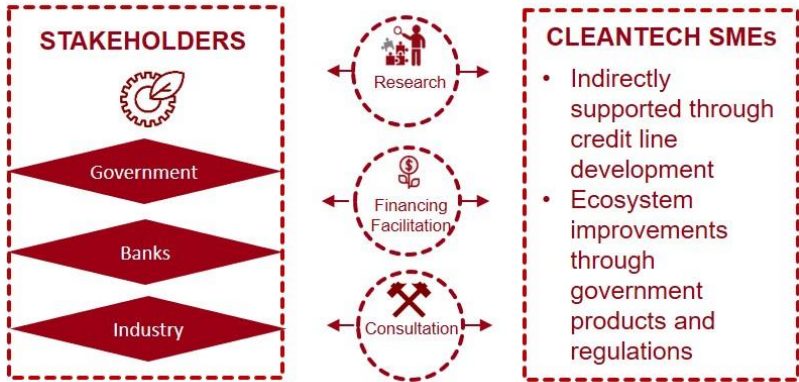


### Work with stakeholders

- ✓ Strategic planning consultation
- ✓ Business development
- ✓ Interaction with banks for finance facilitation

### INTERMEDIARY MODEL

### TREERI



### INVESTMENT HISTORY



- No direct finance provision
- >5 billion RMB invested in cleantech enterprises through developed KfW credit line

### CHALLENGE



- Lack of understanding of cleantech in the banking sector
- Not enough policy support from the government

### BEST PRACTICES



Offer focused cleantech consultation



Important partnerships with industrial and technology organisations in China



Effective strategy support on green finance



## China Energy Management Companies Association (EMCA)

EMCA is a Chinese environmental association, which provides practical technical assistance and services to both banks and SMEs, including emerging and potential Energy Service Companies (ESCOs) to foster their rapid growth. Part of EMCAs activities comprises linking financiers with cleantech SMEs.



Photo © Qilai Shen

*“Since the [cleantech] industry started, the possibilities to get finance has increased, but it depends on the project, their risk management and their return.”*

### ORGANISATION PROFILE



**Intermediary  
(Environmental  
Association)**



**Launched in  
2004**



### Enable cleantech SME growth

- ✓ Linking financiers with enterprises
- ✓ Providing finance tools for SMEs
- ✓ Training & capacity building for banks & SMEs



**Total investment  
of 70 billion RMB**



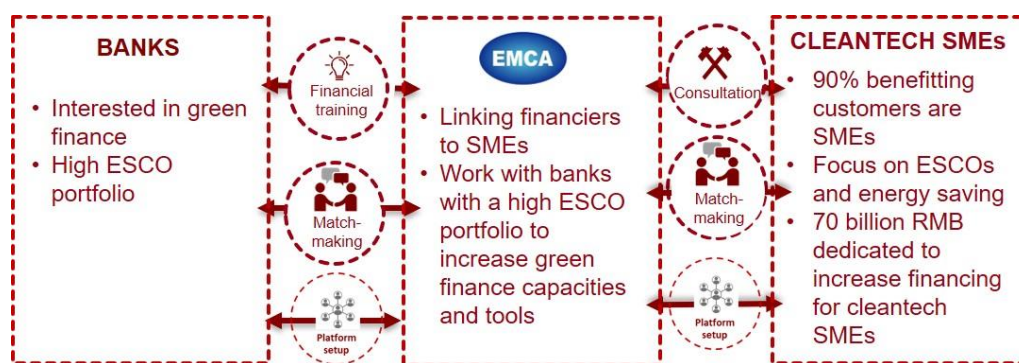
**Based in Beijing,  
China**



### Work directly with SMEs

- ✓ Consulting
- ✓ Financial training
- ✓ Platform building
- ✓ Matchmaking

### INTERMEDIARY MODEL



### INVESTMENT HISTORY



- About 4 billion RMB invested in smaller projects
- 20 million RMB invested in commercial construction
- 30 million RMB invested in industrial projects

### CHALLENGE



- In 2018, the policies for financing SMEs tightened, and it has become more difficult for SMEs to obtain finance
- In energy saving, there are obstacles in how to make money and how to get verification for energy saving

### BEST PRACTICES



Direct impact through technical advice on energy saving



Consultancy services for banks contribute to increased access to SME finance



Building a multi-stakeholder networking and matchmaking

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