

RENEWABLE ENERGY MARKETS ASIA 2024 PANEL DISCUSSION

MARKET SPOTLIGHT: CHINA



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Tuesday, 30 April 11:30AM-12:00 PM



**Renewable Energy
Markets™ Asia 2024**



Key market trends for RE sourcing in China

REM Asia 2024 - Spotlight on China

Agenda

Introduction of South Pole

Chinese market refresher

Where are we today?

What is Green Power Trading?

What is new?

Where are we headed?



Meet your speaker



Jingwei Zhong
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Managing Consultant

Offices and representations worldwide:

Amsterdam, Bangkok, Beijing, Bogotá, Brussels, Hanoi, Jakarta, London, Madrid, Medellín, Melbourne, Mexico City, Milan, New Delhi, New York, Paris, San Francisco, Singapore, Stockholm, Sydney, Zurich.

Who we are

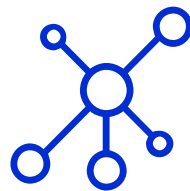
South Pole helps clients address climate change impacts by transitioning to renewable energy.

Our advisory and implementation services aim to **maximize impact, mitigate risk,** and deliver on **cost saving opportunities.**



Innovative solutions

An award-winning, 16-year history of providing sustainability solutions



Diverse expertise

Our staff of 1000+ employees in more than 39 offices includes engineers, consultants, scientists, and finance experts



Global impact

Facilitated the procurement of **92 TWh** of renewable energy to be delivered over the next 10 years. Delivered **26 TWh** of EACs. Provided advisory on sourcing RE in **146 countries.**

Chinese market refresher

What are typical RE sourcing options?

Typically cost saving solutions

Onsite renewable

Various investment models are available in China, including **CAPEX** (self-financed) and **OPEX** (third-party financed).

Power purchase agreements (PPAs)

Only physical PPAs are available in China and these are transacted under the Green Power Trading programme.*

Virtual PPAs are not currently available in China.



Unbundled energy attribute certificates (EACs)

International Renewable Energy Certificates (**I-RECs**), Green Energy Certificates (**GECs**), Tradable Instrument for Global Renewables (**TIGR**)

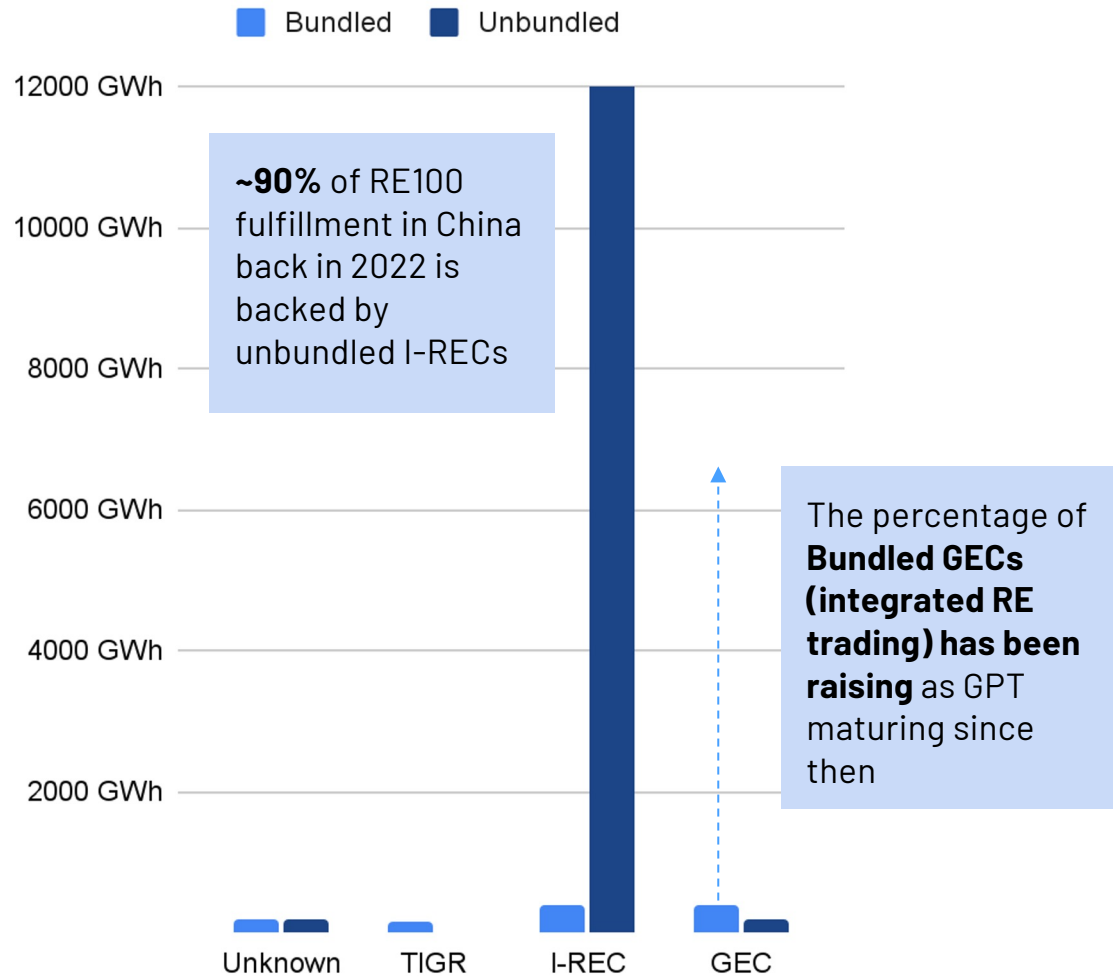
Green Tariffs

Green Tariffs is not available in China.

Typically cost premium solutions

Where are we today?

Unbundled EACs are popular with companies in China



Source: RE100 annual disclosure report 2023

RE100 indicated that **South Korea, Japan, Singapore and China** are the **most challenging markets for corporates to source RE**.

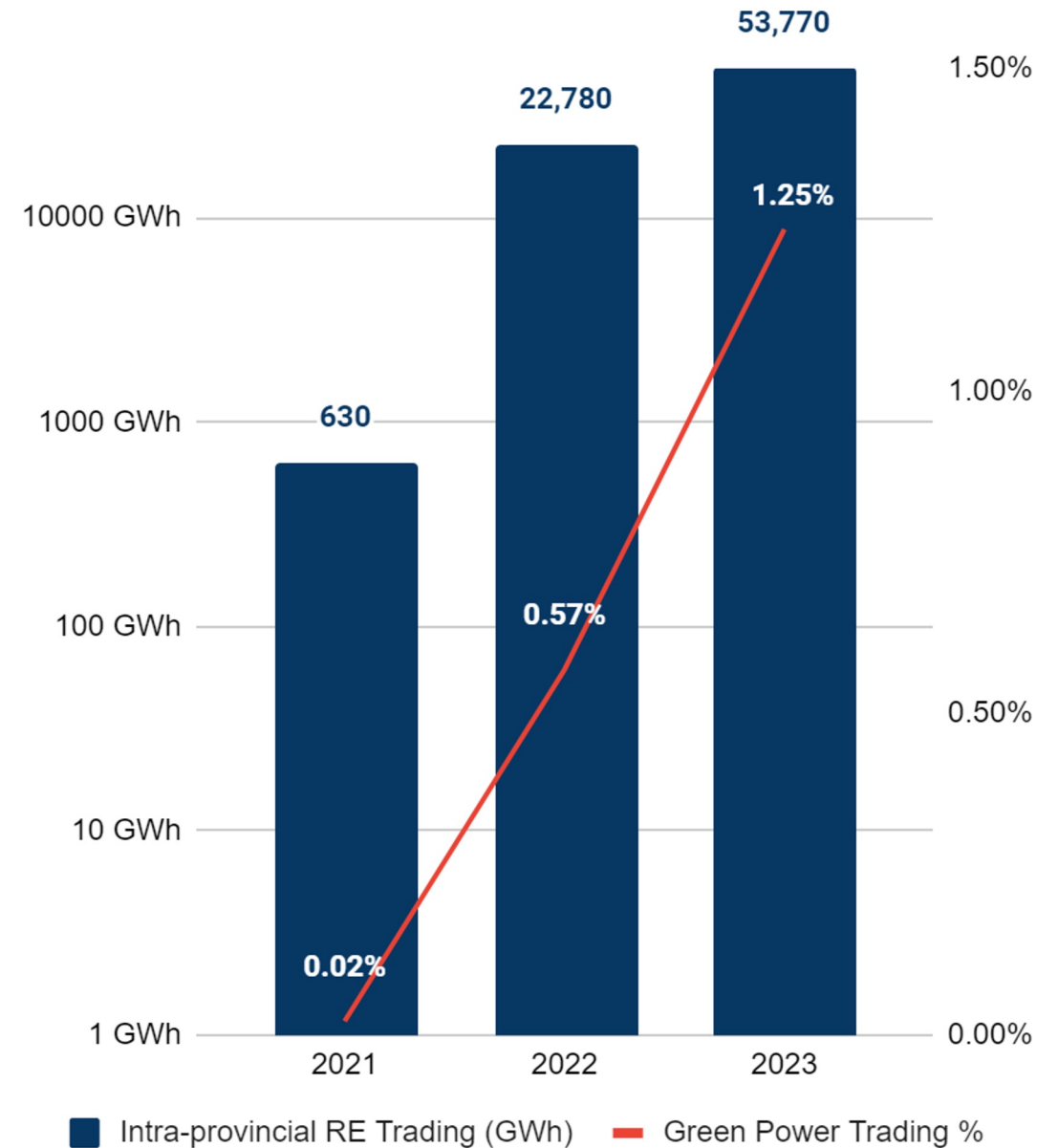
Reported by RE100, **249 RE100 companies reporting operations in China have reached 50% share of renewable electricity** by the end of 2022 through a mix of **corporate PPAs (wholesale), contract with suppliers (Retail), and unbundled EACs**.

Unbundled I-REC contribute to nearly 90% (~12,000 GWh) of renewable electricity (RE) procured by the RE100 signatories in China.

The percentage of **bundled GECs (intergsted RE trading)** has been **raising** as the trading rule of GPT published by each provincial PX being implemented.

In the past, China was noted as one of the most challenging markets for procuring renewable electricity... *but will it maintain this position?*

Green Power Trading (GWh/year)



Source: China Electricity Council

What is Green Power Trading?

Introduction to Integrated RE Trading in China

Wholesale trading 电力批发交易

Direct market access

Price transparency

Supports additionality



Retail trading 电力零售交易

Mitigation of volume deviation

Simplified electricity procurement

Broader access to energy sources

Volume deviation risk

Complex management

Financial exposure



Potential for higher costs

Typically from existing projects - thus limited additionality

Reduced market transparency

What certificates come with the Integrated RE Trading?



GECs (Green Electricity Certificates)
issued by

NREIMC (National RE Information Management Center)



GECCs (Green Electricity Consumption Certificates)
issued by

RPX (Regional Power Exchange Center, i.e. BPX & GZPEC)

Key terms to consider for negotiation



Contract tenure



Price mechanism



GEC exclusivity



Vintage limitations



Exit clause



Volume deviation



Information
confidentiality and
security



Due diligence of
sourcing project

Key Green Power Trading Trends

Recent decline in electricity prices

Lower electricity demand across both conventional and renewable sources.

RE equipment pricing faces artificial lows, with potential future price increase

Heightened competition among manufacturers leading to squeezed profits

Infrastructure challenges are hindering new RE project developments

Grid infrastructure struggles to accommodate rapid growth in renewable generation

I-RECs are inexpensive but may be phased out

Recent regulatory signals

An increase in GEC demand is anticipated due to new regulations

Sustainability reporting mandatory for publicly listed companies in 2026

GEC prices have been dropping

Lower short-term demand from corporates as most targets are 20230 onwards

What is new?

Regulatory update to treatment of GECs

- The new GEC policy establishes **GECs as the sole certificates for verifying both the environmental attributes and the consumption of RE in China.**
- **Broadens the scope of generation assets that qualify for GECs.**
- Promises **integration with Chinese carbon markets - CCER.**
- May bring the GEC system in line with **international standards and increase acceptance of the system.**





Photo by [Gonz DDL](#) on [Unsplash](#)

Revised BPX Green Power Trading Rules

- Not in line with the new GEC policy, this new BPX rule **still limits the integrated RE trading to wind and solar RE generation assets**. This scope can gradually expand to include other sources.
- Continues to apply **GECs as unique EACs to signify the environmental attribute value of each MWh of RE generated**.
- Allows for **intra- and inter-province transactions** and offers multiple modes of transaction, such as **bilateral negotiations, public listings, and centralized bidding**.
- Stipulates that the trading cycles can range from multi-year to intra- month.
- Stipulates that the pricing mechanism is designed to reflect both **the electricity value** and **its environmental attribute** with a separate accounting principle set for these components.

Where are we headed?

Market Trends:

Maturing of the GPT policies along with increasing demand for RE

**Standardization of
Inter-provincial GPT
policies**

**Advancements in
PSCs' Ancillary
Services**

**Broadening the
coverage of RE
project types for
GPT**

Contact us if you have any questions !



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Thank you

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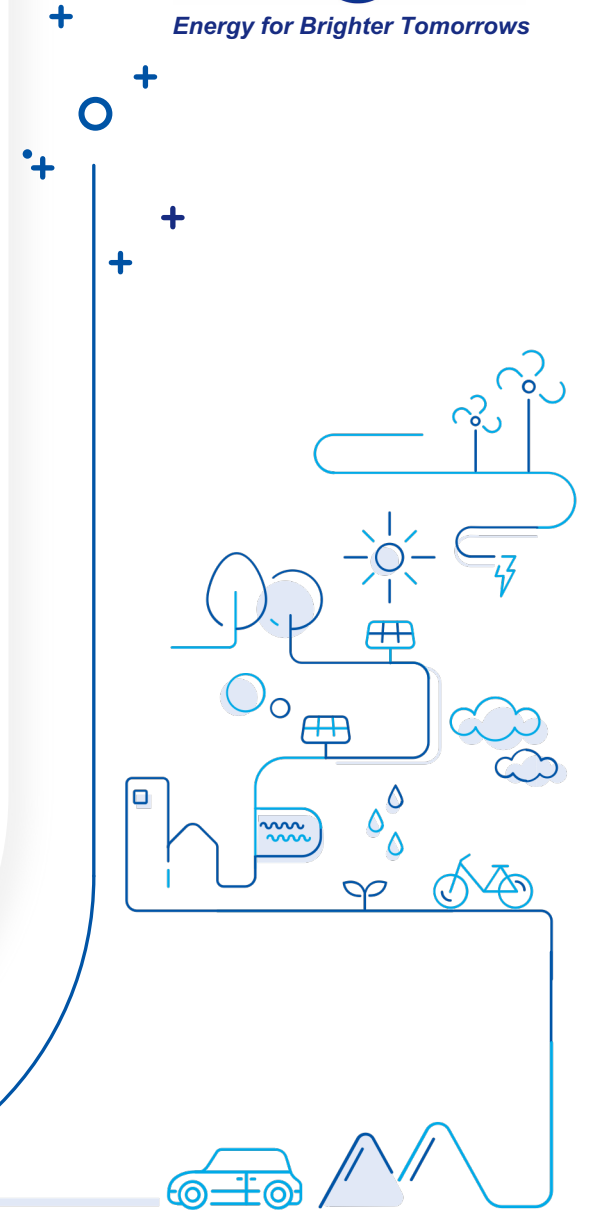
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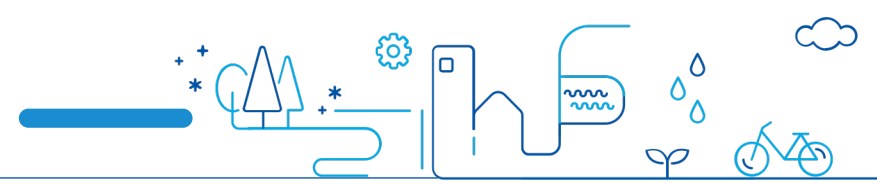
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Market Spotlight: China

At Renewable Energy Markets™ Asia 2024

CLP China





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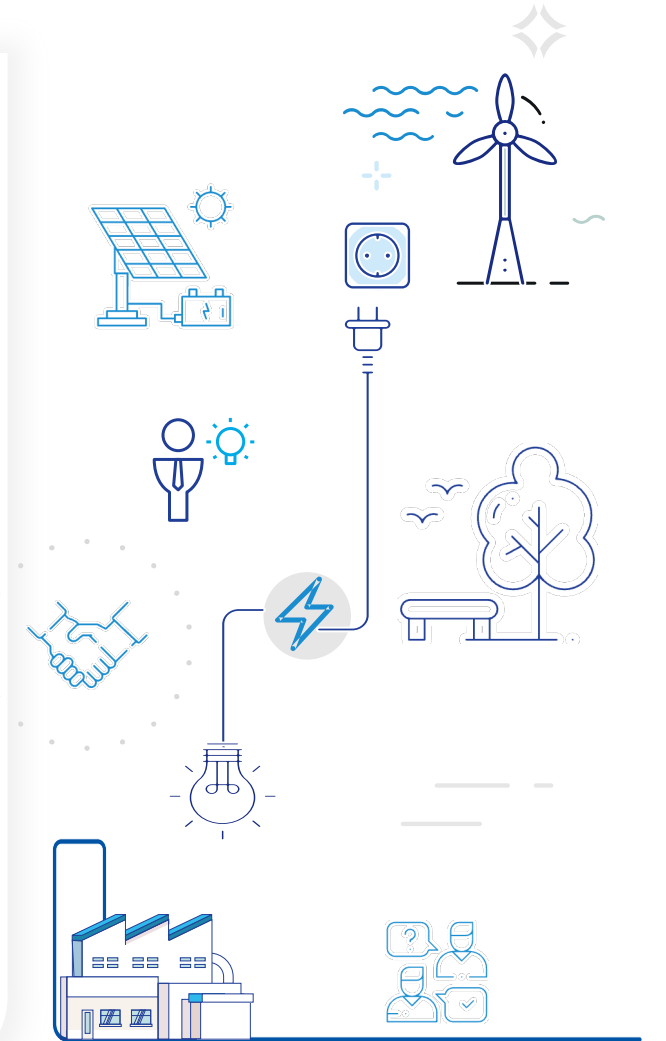
CLP at a Glance

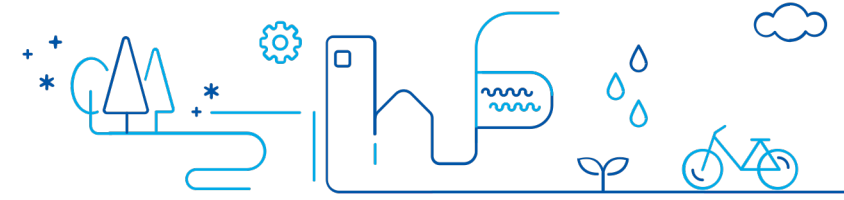
2

Introduce the China Power Market

3

Deep Dive into RE Procurement Options & Market Trends

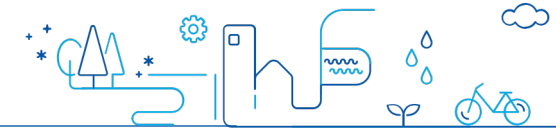




1

CLP at a Glance

CLP – Based in Hong Kong, Power up APAC



Founded in **1901**

2023 Revenue
HKD 87 bn

Operating Capacity
23.3 GW

Customer accounts
5.2 mn

Listed on **Hong Kong Stock Exchange**

Market capitalization
HKD 163 bn

Renewable Energy capacity
3,732 MW

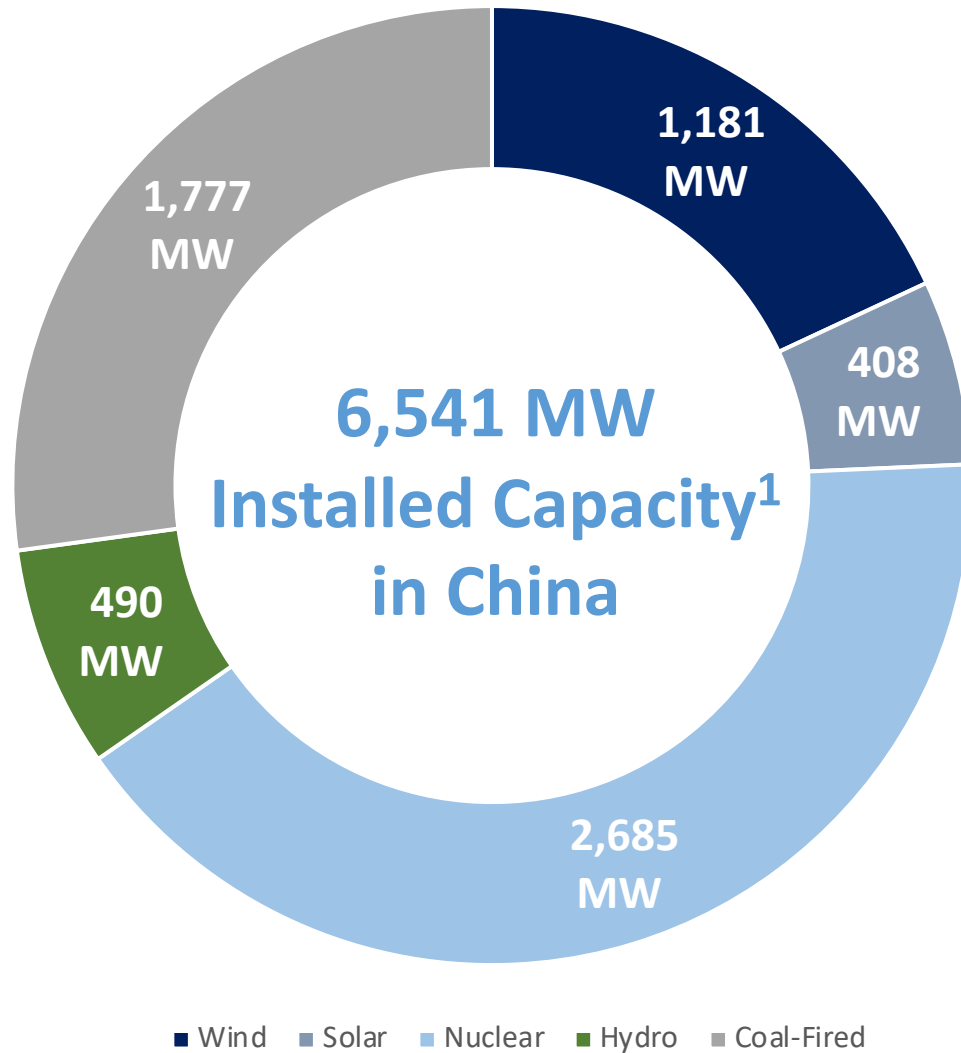
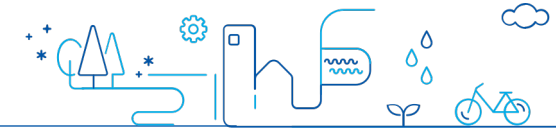
Present in key markets across
Asia-Pacific

Part of various global sustainability indexes
DJSI Asia Pacific,
FTSE 4 Good,
MSCI ESG Leader,
HKCSI

Rated **'A'** by S&P
A2 by Moody's



CLP – Over 40 Years in Powering China



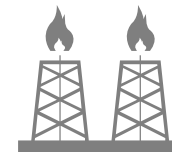
**Largest independent/
non-State-Owned-Enterprise (SOE) Power
Investor in China**



**Entered the China market since 1979 with
assets span across 16 provinces**

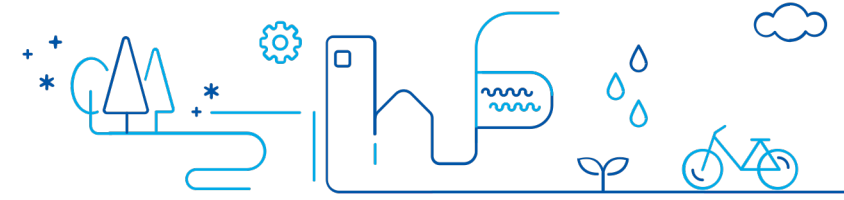


**> RMB 50 billion investment over the years
in developing over 60 power assets**



**CLP Coal-fired portfolio will gradually retire,
in response to the Group's decarbonisation
strategy**

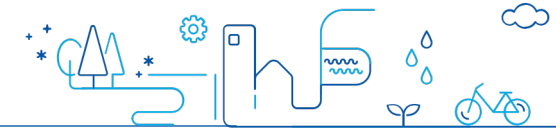
Note: (1) Installed Capacity in equity basis.



2

Introduce the China Power Market

Marketisation in China's power market opening up more opportunities for RE growth



1 GENERATION



Generators have been separated from grid companies since 2002.

Most generators are still state-owned.



2 TRANSMISSION AND DISTRIBUTION



T&D systems are operated by 3 grid companies, namely:

1. State Grid
2. Southern Grid
3. West Inner Mongolia Grid



3 RETAIL

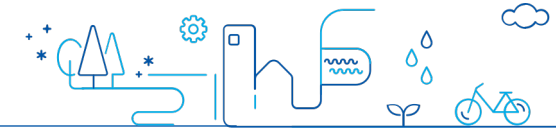


Grid companies serve prioritized users and non-marketised Commercial & Industrial (C&I) users, whom can directly procure power from the market or through retailers

← *Exchange centre operates throughout the supply chain* →

Power exchanges are independent companies, Beijing Power Exchange and Guangdong Power Exchange are in charge of cross-provincial transactions.

Favourable policies and reduced costs for PV panel and financing boost RE Supply in China



324GW

Estimated additional installed capacity of wind and solar in 2024

Source: BNEF, IEA

Buoyed by the following factors, China is expected to reach **1,200 GW** of installed renewables in **2024**, 6 years ahead of the 2030 target:



Favourable Policies

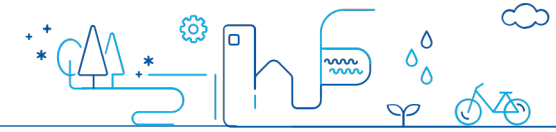
- **The Fourteenth Five-Year Plan:** RE accounts for 39% of non-fossil fuel in electricity generation
- **Annual Renewable Portfolio Standards by province**



Reduced costs for solar PV panel and financing

- **Solar PV:** Improving capabilities in manufacturing
- **Financing:** Reduced costs but it might pick up as the economy recovers

Demand for RE is driven by Renewables Portfolio Standards and voluntary commitment to sustainability bodies



>50 TWh

of Corporate Green power transactions
occurred in 2023

Source: BNEF, China Electricity Council

Demand for RE is mainly driven by annual Renewable Portfolio Standards (RPS) and global carbon targets.



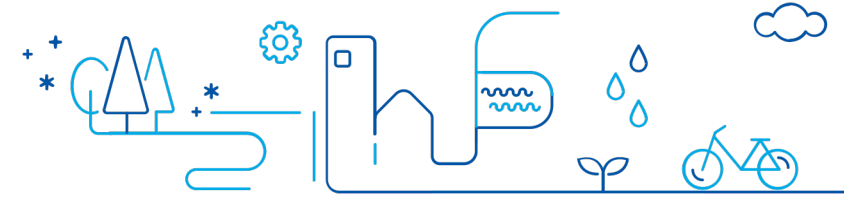
Policy Driven

- Renewables Portfolio Standards
- Regional Emission Trading System (ETS)
- The EU Carbon Border Adjustment Mechanism (CBAM)
- Green Power Trading mechanism started in 2021



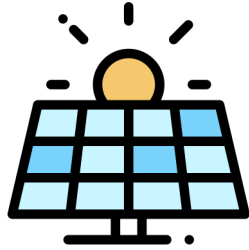
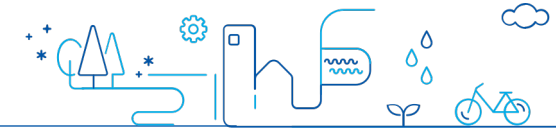
Market Driven

- Voluntary commitment to sustainability bodies, e.g. RE100, SBTi, GRESB
- Sustainability-related financing to lowering financing costs
- Inter-provincial GECs trading for RPS



3

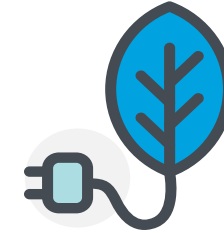
Deep Dive into RE Procurement Options



Onsite/ Offsite Bundled PPA

(a.k.a. Corporate PPA or Green Power Trading)

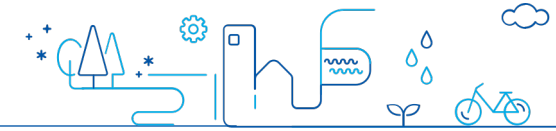
- A multi-year bilateral agreement between RE generator and corporate to offtake power and green attributes altogether.
- Often considered as stronger ESG commitment but restrained by interprovincial trading in many cases.
- Success Case:
 - CLP-Shui On Xintiandi's executed a 10-year PPA in Jiangsu Province, supplying RE from 80MW Solar to enable Shui On Nanjing IFCX reaching 100% RE



Unbundled PPA

(a.k.a. GEC-only Procurement)

- Green Energy Certificate (GEC) is an environmental attribute to certify that the electricity is originated from a RE source.
- No geographical limitation between provinces but risks of double-counting.
- Success Cases:
 - CLP executed unbundled PPAs for 100MW Qian'an III wind farm and 150MW Bobai I wind farm with a global tech giant



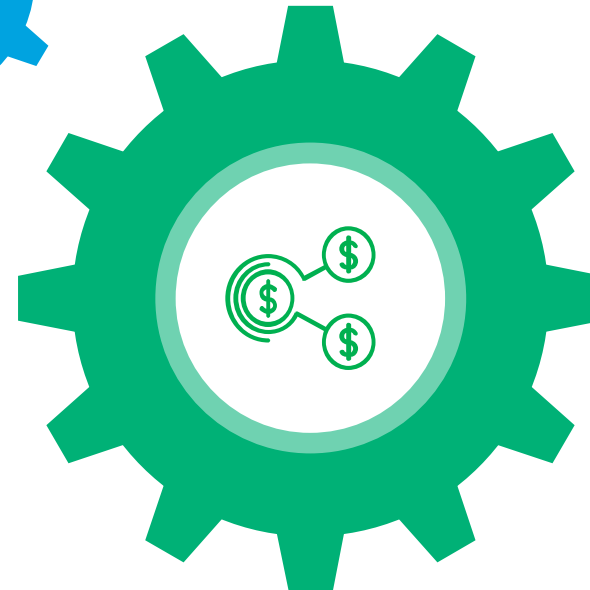
2 Demand for 24/7 Hourly Matching Feature

An advanced hourly-matching between RE generation and consumption, through a combination of wind, solar and battery storage.



1 Scope 3 Decarbonisation

Joint effort in decarbonization, extending the scope from a corporate's own production / consumption (Scope 1 & 2) to the supply chain (Scope 3).



3 Direct/ Co-Investment in RE Assets

Corporates participate through the means of equity investment into a SPV/ Project Company or through an Investment Fund vehicle.

Emerging Trend I: Scope 3 Decarbonisation

Why Decarbonise Scope 3

- Fulfil certain KPIs for sustainability-related financing, and thus lower financing costs
- Demonstrate stronger ESG commitment and improve corporate branding

Channels to Decarbonise Scope 3

- Bundled / Unbundled PPA
- Participate in an investment fund that focus on RE assets development/ operation and receive Green Power/ GEC thereby

Key Consideration Factors

- Develop roadmap including targets, timeline, RE procurement options and priority of allocation/ targets
- Select appropriate procurement model based on their load, location
- Tenure for PPA and its contractual relationship with the Suppliers

Our Observations on the Market

Although calculating Scope 3 emissions can be tricky, many Multi-National Corporates (MNCs) acknowledge the importance of it and have committed to Scope 3 net-zero by 2035.

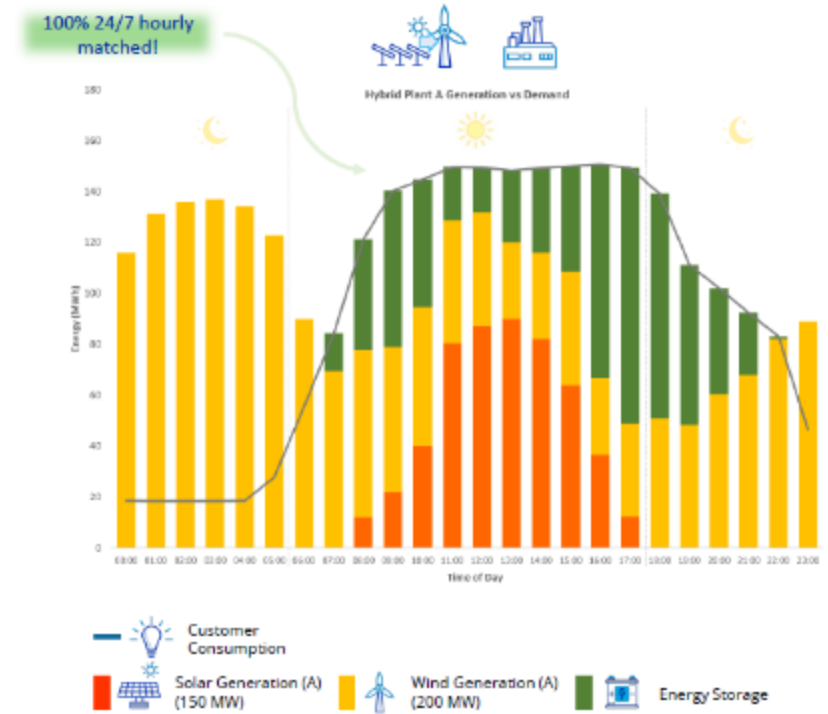
Emerging Trend II: Demand for 24/7 Hourly Matching Feature

What is 24/7 Hourly Matching

- The nature of intermittent supply of wind and solar energy denotes there is a need for non-RE (e.g. coal-fired) during the 'gap' periods.
- Bundled/ Unbundled PPA is unable to provide the level of granularity of whether the RE/ GEC is generated when the actual consumption occurs.
- 24/7 Hourly Matching can address the 'pain-point' by using a digital platform that comprises of a portfolio of wind, solar and battery storage.

Our Observations on the Market

- Rising number of enquiries on 24/7 as corporates are getting more sophisticated with RE options and are keen to explore features in addition to bundled/ unbundled PPA.



Emerging Trend III: Direct/ Co-Investment with bundled or unbundled PPA

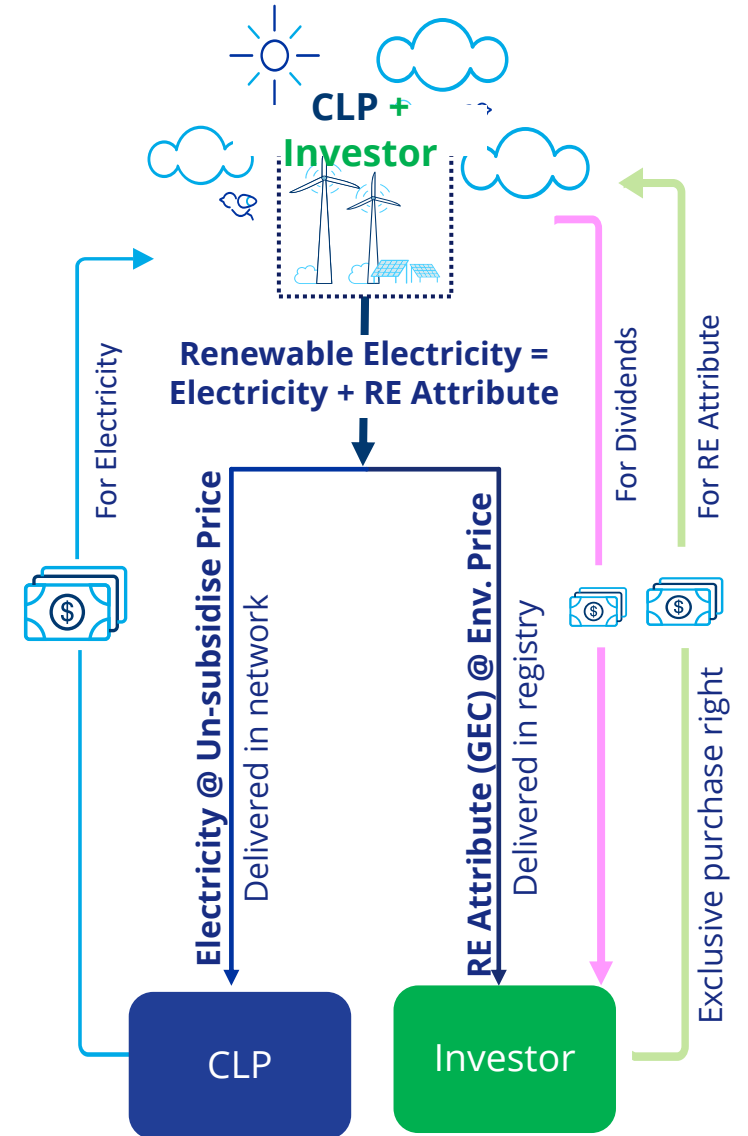
1. Co-investment through Equity Participation

- An opportunity for corporate to partner up with a generator to produce Renewable Energy / Green Energy Certificate (GEC)
- Corporate inject capital in exchange of a certain amount of equity of the Project Company/ Special Purpose Vehicle (SPV) upon project completion, and receive a stable return of dividend / GECs in return

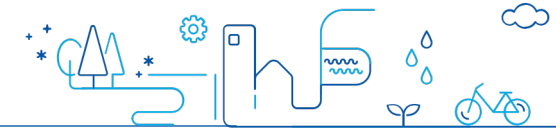
2. Investment Fund

- Setting up a Clean Energy Fund that comprise with General Partner (often the Utility) and Limited Partners (more than 1 corporate)
- Investment Fund provides capital in exchange of Right of First Refusal for certain equity portion of the selected RE projects

The two arrangements may come with bundled / unbundled PPA throughout project lifecycle.



To Conclude: Exciting Opportunities Ahead Despite Some Headwinds



Procurement options are rapidly evolving amidst market participants pushing to go GREEN.

Despite there might be headwinds ahead, it also comes with exciting opportunities and trends!



Thank you

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