

Navigating the Renewable Energy Market in China:

An Overview of Off-Site Options for Corporates



In Part 1 of our series, we take a 'point-in-time' look at what renewable electricity transition mechanisms are currently available and active within the China renewable energy market.

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About us

act renewable is an independent advisory firm on a mission to help companies achieve their full renewable energy potential.

Combining the expertise of our global team of renewable energy experts with a deep understanding the corporate perspective, we support the transition to renewables for multinational companies around the world.

Together with our sister company, RESET Carbon, based in Hong Kong, Taipei, Shanghai, Shenzhen and Chennai, we offer specialist corporate renewable energy procurement solutions across major global markets including emerging Asian economies.

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For many multinational corporates, China represents one of the largest, and most high-impact markets in terms of energy consumption and associated emissions.

It is also one of the most challenging in the context of transitioning to renewable electricity due to regulatory complexity, availability of renewables across regions and market drivers creating competition for securing contracts.

With the transition to renewable electricity forming a key tool in realizing the decarbonization ambitions of many corporates, we have taken a focused look at the China market, to set out the current position, key considerations corporates should take into account and how new developments are shaping the market.

In our China Renewable Energy Market Series, we consider the various options in more detail and what their implementation means in practice for businesses navigating the renewable electricity transition in China.

The Regulatory Landscape

China consists of 23 provinces, 5 autonomous regions, 4 municipalities and 2 special administrative regions. Most renewable energy-related policies and guidelines are issued by China's **National Development and Reform Commission** and **National Energy Administration**. Provincial governments will then implement the policies accordingly. Given that provincial governments have a certain degree of independency, renewable energy regulations vary considerably from province to province.

Three mechanisms to procure offsite renewable electricity are currently in play:

01 Purchasing Unbundled Certificates (EACs)

What? Few types of renewable energy certificates can be found in China. Apart from the global I-REC scheme, the government led Green Electricity Certificates (GECs) exist.

How? The GEC government led scheme allows off-taker to procure GECs 'online' through a designated e-platform.

Key Considerations

I-REC was the 'go-to' for countries that don't have their own established issuing body. They are still in circulation as GECs have only recently been introduced as the China-specific certificate for renewable energy.

The infancy of GECs means that there is some uncertainty around potential double-counting and validation of their credibility. On the other hand, there is a tendency within China to question the accounting principles of I-RECs now a China-specific scheme is in place.

EAC Scheme	GEC	I-REC
Organization	National Renewable Energy Center	I-REC Standard
Geographic Coverage	Mainland China	Global
Price range as of April 2022	8-95* USD/MWh	0.7-1.5 USD/MWh
Aligned with GHG Protocol Scope 2 Quality Criteria	X	✓
Recognized by external standards (e.g. CDP, SBTi)	✓ if conditions are met	✓
Additional remarks	Subsidy will be revoked if power plant issues EACs	

*Average transaction price for GEC differs significantly between subsidized and non-subsidized projects.

02

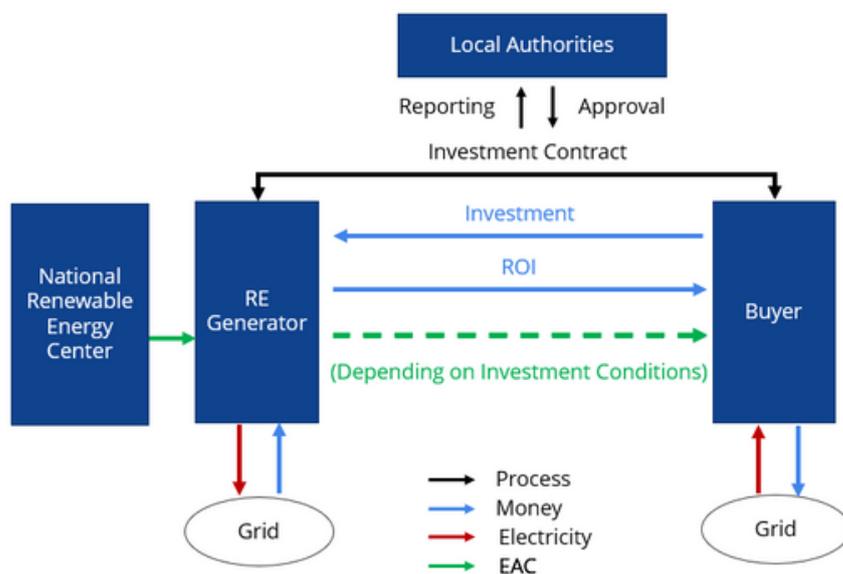
Direct Investment

What? The corporate invests in, owns, and potentially operates the renewable electricity system. Similar to solar rooftop projects and PPAs that we see in US or Europe. Projects are CAPEX driven and require an upfront investment.

How? In most cases we see are huge corporates with strong financial leverage (like apple and google) or corporates that act as a share investor and collaborate with national entities to deliver the projects. For example, Apple announced CAPEX investments in China, partnering with suppliers to install more than 1.3 GW of renewable energy.

Projects must go through a lengthy approval process involving multiple authorities, including....

1. Provincial Development and Reform Commission
2. Provincial Land Department
3. Provincial Forestry Department
4. Provincial Environmental Protection Department
5. Municipal Power Supply Department



Key Considerations

Depending on the province’s initiative to promote renewable energy, approval process vary in complexity from province to province. This option is also **resource heavy**. Not only from a financial perspective, in requiring a large upfront investment, but also from a technical perspective. The corporate owns and might be required to operate the plant themselves, therefore expertise and knowledge are needed to maintain the power plant either from in-house or outsourced capacity.

The **Renewable Portfolio Standard target** (RPS) mechanism in China was launched in 2018, setting renewable electricity consumption targets for both the electricity seller (i.e., grids and utilities) and electricity consumers (those owning power plants or procuring directly from a power plant). Corporates who opt for the direct investment option will be therefore be subject to a renewable portfolio standards (RPS) target. We will focus on RPS in future publications.

03

Green Electricity Trading (Intra-Provincial)

What? Relatively new to the Chinese market, the green electricity trading scheme allows corporates to procure renewable electricity from generators (only for large consumers (thresholds defined by each province) or utilities (small/retail consumers) through an open market and is China's OPEX model to acquiring renewable electricity. It operates intra-provincially and is only available in some provinces.

How? Companies opt to enter the green electricity trading scheme as an 'off-taker'. Off-takers are categorized into large consumers and small/retail consumers, thresholds and requirements vary across provinces.

A large off-taker can enter a direct contract with renewable energy developer, termed a 'tri-party agreement' that involves the grid, whereas retail off-takers have to procure through utilities. In this case, utilities will be the entity contracting with the developer.

The corporate signs a contract, in most cases for one month, multiple months, but generally for maximum of 1 year. Guidelines issued in Q3 2021 mentioned that trading contracts will be encouraged to extend to 5-10 years in the future.

Key Considerations

Availability: While some provinces are members of the scheme, they may not be actively trading. Figure 1 indicates where transactions have been made and where the scheme is likely launching in provinces.

Terms: Template contracts are published by the National Development and Reform Commission, and there is little to no flexibility on costs and clauses. Since three parties are involved in the contract, progression to signature is likely to be a lengthy process.

Penalty: If the actual consumption of the off-taker is significantly lower than the agreed volume, a penalty might be charged by the grid to account for the risks in causing grid instability.

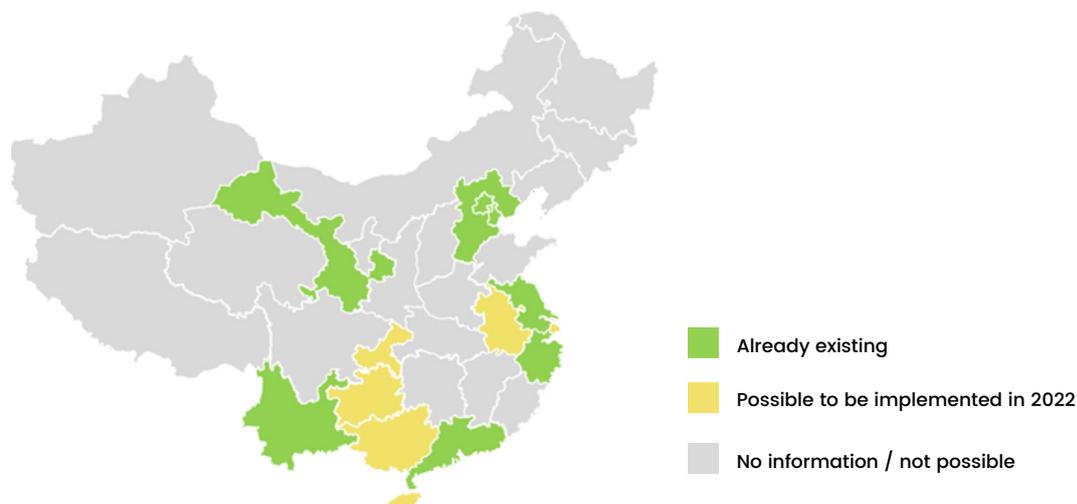


Figure 1: Geographical indication of where 'Green electricity trading' transactions are already taking place and are on-going. Also, where the scheme is potentially launching in 2022, indicated by a drafting of the initiative from the provincial government.

A new potential... Inter-Provincial Trading

What? This bundled procurement option involves the physical delivery of renewable electricity from province to province. A large-scale pilot across 17 provinces was held in Sept 2021 and since then contracts are executed/approved on an ad-hoc basis. Since then it has been carried out irregularly.

How? This option generally only been seen to be implemented via aggregation. In February 2022, a national-owned utility in Zhejiang aggregated few corporates (incl. Shenzhou, Yili), and procured 15 GWh renewable electricity for February to March from the national-owned utility in the province of Gansu.

Key Considerations

Due to the physical delivery requirement, inter-provincial trading can only happen between provinces with ultra-high voltage (UHV) infrastructure, to support long-distance renewable electricity transmission. However, this option may soon open up as the target year is 2025 to enable inter-provincial nationwide trading, as stated by the National Development and Reform Commission.

Understanding the mechanisms for acquiring renewable electricity is the first step to building a strategic roadmap for transitioning in China.

Contact us to understand how we can support you on your journey
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Darren is a Grade I certified constructor of mechanical and electrical engineering and has over 8 years of experience in distributed photovoltaic (PV) engineering design and project management in China. He has been involved in development and management of large distributed PV projects, as well as the design and construction distributed residential PV projects.

Darren is currently focusing on green electricity policy and renewable energy assessment in mainland China.

Sources:

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 Guangzhou Power Exchange Center 广州电力交易中心
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 State Grid Corporation of China 国家电网有限公司



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As an established member of our PPA team, Chelsea supports our international PPA implementation projects, overseeing the developer contracting process, including PPA financial analysis and market assessments.

Chelsea heads up our China renewable energy steering group, managed in collaboration with RESET Carbon to drive our capabilities in the rapidly evolving Chinese renewable energy sector.

China Southern Power Grid 中国南方电网
 National Development and Reform Commission 国家发展改革委
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