



# Green Energy Certificates in China

## What is the Renewable Energy Certificate system in China and how can it be leveraged by corporates transitioning to renewables?

In part III of our series, we examine the current state of Green Energy Certificates (GECs) in China. The report discusses the different types of Renewable Energy Certificates available in the Chinese market, focusing on GECs, and assesses the credibility claims, compliance requirements, and future outlook for these certificates.

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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 of 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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## An introduction to Green Energy Certificates in China

With many companies making the switch to renewable energy, both for cost reasons and to achieve ambitious ESG targets, the purchase of credible Renewable Energy Certificates is high on the corporate agenda.

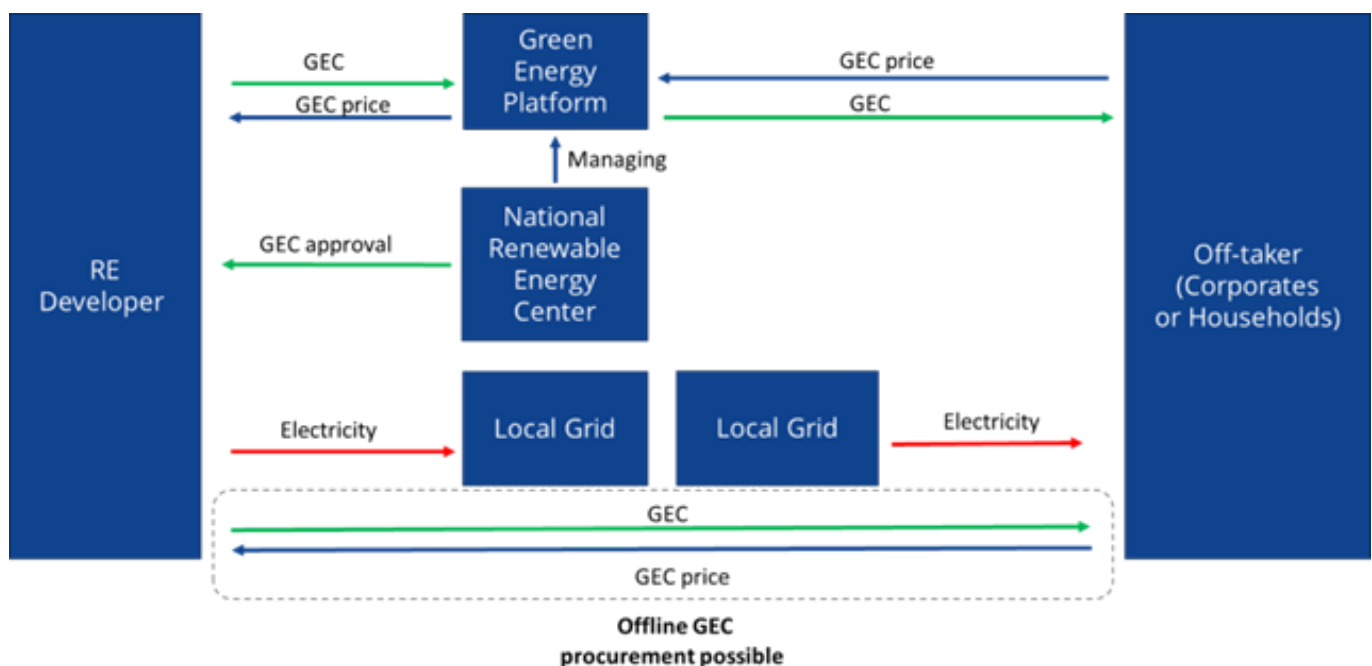
Here we explain the different types of Renewable Energy Certificates available in China, focusing on the rise of Green Energy Certificates (GECs). We will assess credibility claims, compliance requirements, and provide a brief outlook for the future of these certificates in the Chinese market.

**A Renewable Energy Certificate (REC)** is a type of Energy Attribute Certificate (EAC) that represents the environmental attributes of the generation of a one-megawatt hour (MWh) of energy produced by renewable sources.[1] RECs track individual units of renewable energy as they enter the power grid, and different schemes operate in different regions. For example, the US uses RECs, while Europe uses Guarantees of Origin (GO or GoO). China has only recently developed its own proprietary system for EAC certificates. There are now two types of EAC certificates in the market: GEC (Green Energy Certificate, which is issued by the national government) and I-REC (International Renewable Energy Certificate)

[1] Definition: i-REC

### What is a GEC?

The Green Electricity Certificate (GEC) is an REC system that launched in 2017 in China. Similar to other renewable certificates, such as I-REC, REC, and TIGR, one GEC is equivalent to 1 MWh of RE consumption. Certificates are approved and issued by the National Renewable Energy Center, a national entity that also manages the Green Energy Platform. Users can trade and procure certificates through this platform.



Given that China has significant existing hydro infrastructure, the GEC is designed to drive non-hydro RE generation. This is why GEC is only issued to grid-connected onshore wind and solar photovoltaic (PV) plants (excluding distributed power plants).

Since the platform launched, a total of 660,000 wind and 1.3M solar GECs have been sold. Most of the wind GECs sold to date have been produced in Jilin and Hebei, whereas Anhui, Liaoning, and Heilongjiang are the top three provinces for the sale of solar GECs.

## GEC Pricing

Prices of GECs vary depending on whether the project is subsidized or not. As of April 2022, the average price of non-subsidized GECs is reported to be approximately 50 RMB [JD1] [EF2] [CL3] (equivalent to 7-8 USD). On the contrary, the average price for subsidized solar projects is at 750 RMB (equivalent to 90 USD) and 200 RMB [JD4] [EF5] [CL6] (equivalent 30 USD) for wind projects. Given the substantial price difference, GEC transaction of subsidized projects is very low.

The low transaction volume of subsidized projects can be traced back to the original motives for the GEC program's launch: the program is intended to fade out government subsidies on renewable energy projects. Rights to issue certificates are given to developers to fund new projects, however, the scheme was implemented abruptly, causing some projects that were in construction to lose their guaranteed government subsidies. Consequently, prices for subsidized-project GECs are currently much higher than non-subsidized projects because developers are now using certificate revenue to fill the subsidy gap.

**The key takeaway is this: the substantial price differences in subsidized and non-subsidized projects are not linked to the credibility of the certificates.**

## What is an I-REC in China?

- Similar to GEC, I-REC is an accounting instrument that certifies the production of an MWh of electricity comes from renewable energy sources
- Every I-REC counts for 1 MWh produced electricity from a specific renewable energy system.
- Generally, I-RECs are used in countries that do not have an own tracking system. They can also be used in countries with national tracking system as a voluntary alternative, i.e. China.
- Acknowledged by the major reporting frameworks (GHG Protocol, CDP, RE100, The Climate Group) as the appropriate tracking instrument within emerging markets.



## Outlook

- We see incentives from the Chinese government to establish their own certificate system.
- Continuous effort by National Energy Administration (NEA) to refine the framework around GECs and push it to the market.
- I.e. with the QR code on the certificate, buyer can scan it to get access to all related info, incl. Buyer entity, seller entity, project location, technology, RE volume and production date (month)
- The government also recognizes in order to make GEC credible and be accepted by internal reporting organizations, they need to improve the tracking system to mitigate risk of double counting.
- Currently they are investigating technology that can help with the tracking, i.e. blockchain technology.
- We are expecting that when the GEC framework is clearer, more regulated and recognized internationally, GEC will become the sole green certificate system in China. I-REC will eventually fade out from the market.



## Compliance

When corporates procure RECs, they must meet multiple criteria to ensure credible procurement. One of the key attributes defined by CDP and RE100 is Making Unique Claims:

***“RE100 defines renewable electricity consumption as the ability to make unique claims on the use of renewable electricity generation and its attributes. Markets and environmental reporting standards (including the GHG Protocol Scope 2 Guidance) set requirements and criteria for making these claims, including that the company retires or retains energy attribute certificates issued by the energy generation facility from which it wants to claim consumption. In countries where no tracking systems are in place, claims shall be made by transfer of attributes via contracts or any other means that ensure claims are unique and there is no double counting.”***

Sr. No.	Criteria	Alignment
1.	Credible generation data;	Meets the requirements
2.	Attribute aggregation;	Meets the requirements, with a condition (table 2)
3.	Exclusive ownership (no double counting) of attributes;	Meets the requirements
4.	Exclusive claims (no double claiming) on attributes;	Meets the requirements, with a condition (table 2)
5.	Geographic market limitations of claims; and	Meets the requirements
6.	Vintage limitations of claims.	Meets the requirement, but have a recommendation

**Figure 2: RE100 criteria and alignment of Energy Attribute Certificates (EACs)**

Criteria	Requirements/ Recommendation to enable credible RE usage claims
Attribute aggregation, Exclusive claims	<p><b>Requirement:</b> The RE generators participating in GEC system are able to issue multiple environmental market instruments such as energy attribute certificate and GHG offsets for the same generation.</p> <p>Making a credible RE usage claim requires ownership of <b>all environmental attributes</b> associated with the generation that can be owned, and that <b>none of these attributes have been sold off, transferred, or claimed elsewhere.</b></p> <p>If separate instruments have already been created for different attributes of power generation (e.g. carbon attributes), attribute aggregation can be achieved by bringing these instruments together – by demonstrating ownership and retirement of all instruments that make up a RE usage claim.</p> <p>To meet the RE100 criteria, <b>GEC users are required to redeem all instruments e.g. GHG offset and any other certificate (if issued to the same RE generation).</b></p>
Vintage limitations of claims	<p><b>Recommendation:</b> GECs will convey the date of generation (but no expiry date of the certificate). To make a credible RE claim, users of GEC should check the vintage of the certificates which should be reasonably close to the reporting year of the electricity consumption to which it is applied.</p> <p>For reference, companies can consider Green-e Framework for Renewable Energy Certification. Green-e® Energy Certified sales that are made in a given calendar year must be generated within the 12 months of that calendar year, the six months before the calendar year began, or the three months after the calendar year has ended. This creates a 21-month window of eligible generation dates from which renewable energy generation can be used toward Green-e® Energy Certified sales in any given calendar year. Please check more information here: <a href="https://www.green-e.org/fag">https://www.green-e.org/fag</a></p>

**Figure 3: Further requirements and recommendations for GECs.**

Depending on their strategy, some corporates only accept I-REC, believing it is more recognized globally, as the GEC is still in pilot phase. On the other hand, some only accept GEC, believing that it is the way forward, and will eventually be the established RE certificate system in China.

## The problem of double counting

Double counting remains one of the biggest challenges for corporates who want to procure RE for their sustainability targets. There are currently no policies implemented to oversee the double counting problem, which leaves the possibility that energy output from the RE project could be sold through multiple platforms, such as GEC, I-REC, ETS, and green electricity trading. One example is RE project developers selling RE to the grid at prices equivalent to conventional electricity; meanwhile, projects can apply for GECs and sell them through an e-platform. This poses the risk of multiple claims, where two buyers – the GEC buyer, and the buyer who purchases RE through their utility – purchase the same certificate.

The southern grid has announced that GEC will substitute RE consumption certificates in green electricity trading going forward – a move that we see as a measure of the government attempting to solve the problem of double counting and increase the credibility of GECs.

## Solutions

### **There are several ways to help mitigate the risk of double counting:**

- 1- Ensure the contract includes clauses that guarantee that the buyer has the unique claim to the RE.
- 2- Have management sign a contract guaranteeing RE output is not sold or claimed by any other entity.
- 3- Due diligence: make sure the RE from the project is not sold on other platforms. Possible instruments of RE include:
  - Renewable energy certificate (GEC, I-REC, TIGR)
  - Green electricity trading
  - Emissions Trading Scheme (ETS)
- 4- Redeem all other instruments, which implies a much higher cost if users must purchase all instruments that are related to the RE production.

## Case study: Shenzhen

Shenzhen is one of the largest vertically integrated knitwear manufacturers in China, based out of Ningbo and supplier to leading brands such as Nike, adidas, Uniqlo and PUMA. Carbon reduction has become a key strategic objective of Shenzhen, and it investigated an investment in a local windfarm under development to offtake the renewable energy produced. With credibility of claims being key to the major supplier, we supported Shenzhen to evaluate regulations on double counting in connection to the potential wind farm investment, leveraging our relationship with CDP and Shenzhen's client brands. Understanding the certificate accounting mechanisms enabled Shenzhen to make a fully informed decision on whether to proceed with the investment, in line with its requirement for credible renewable energy procurement.

EAC procurement in China is a complex landscape, if you are a corporate looking for advice on how to engage with renewable energy procurement in China, reach out to our team.

**Contact our advisory team today for inquiries!**

## About the Authors



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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.



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## References

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[I-REC Standard - The International REC Standard Foundation \(irecstandard.org\)](http://irecstandard.org)

Notice on Distribution of the "Southern Regional Green Electricity Trading Framework (Pilot)" 关于印发《南方区域绿色电力交易规则（试行）》的通知

[RE100/CDP Technical Assessment Report Green Electricity Certificate \(GECs\) of China](#)