



# THOUGHT LEADERSHIP BRIEF

## Fintech RE in Hong Kong: Opportunities and Challenges for Green Finance and Decentralised Energy

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### KEY POINTS

- ▶ Financial instruments must be designed to attract investors and support renewable energy (RE) systems to sustain micro-scale distributed systems.
- ▶ Fintech RE presents an opportunity to bridge actors in the energy transition, finance, and digital industries, but challenges exist, particularly related to blockchain's contribution to emissions.
- ▶ Fintech RE offers an opportunity to integrate RE generation units and storage in a small-scale distributed system, using peer-to-peer energy trading platforms in the digital environment.
- ▶ Challenges for Fintech RE in Hong Kong include its small market size, existing monopoly situation in the electricity sector, and policymakers' conservative mentality.
- ▶ Using interconnecting markets to boost Hong Kong's Fintech RE in the Guangdong-Hong Kong-Macao Greater Bay Area could accelerate the regional energy transition and create new opportunities for start-ups, jobs, and large-scale decarbonisation impacts.



## ISSUE

Hong Kong is committed to contributing to the global decarbonisation agenda and achieving the Sustainable Development Goals by attaining carbon neutrality by 2050. To this end, the city plans to reduce carbon emissions by 50 per cent compared to 2005 levels by 2035 and achieve net-zero electricity generation by mid-century by increasing the share of renewable energy and phasing out coal. Also, Hong Kong aims to become a green finance hub and promote complementary strategies such as energy savings, greening buildings and transport, and reducing waste.

Fintech renewable energy (RE) presents an opportunity to bridge actors in the energy transition, finance, and digital industries, but challenges exist. Given Hong Kong's status as an international finance centre, its vision to become a hub for green finance, and its potential for generating local renewable energy, Fintech RE offers opportunities for the city and its residents. Fintech RE could bring several benefits in making energy systems more efficient and resilient due to their distributed nature and promise as an investment tool. However, Fintech RE also presents new challenges related to blockchain's contribution to emissions. This Brief increases our understanding of these impacts as they pertain to Hong Kong and as perceived by the city's key stakeholders.

The financialisation of decarbonisation activities is crucial for driving and accelerating the energy transition, especially with the proliferation of distributed RE generation at the micro-scale. To sustain these systems, financial instruments need to be designed to attract investors and support RE systems. Fintech RE offers an opportunity to integrate RE generation units and

storage in a small-scale distributed system, using peer-to-peer energy trading platforms in the digital environment. Blockchain technologies enable secure and trustworthy energy trading platforms, which can also assist in managing energy distribution across more extensive networks and reducing grid peak load. Blockchain could also provide a reliable system for carbon tracking for the net-zero economy and create energy production source certificates in carbon markets.

Fintech RE has been piloted in several countries at different network sizes, offering an opportunity to accelerate energy transitions while meeting Sustainable Development Goals. As more distributed RE systems join the larger network, excess supply would require investments in small-scale RE production equipment. Fintech RE offers an alternative for prosumers to trade their excess RE generation with their neighbour-consumers. However, blockchain-related pollution could counter the benefits of energy transition, as transaction verifications require substantial amounts of energy and increase emissions, especially when using carbon-based power plants.

## ASSESSMENT

Hong Kong is a global financial hub with a significant financial service sector, a large stock market, and substantial assets under management. The city aims to become a regional, Asian, and international hub for green finance and support the global energy transition agenda. Fintech RE could appeal to Hong Kong as it aligns with the city's vision to become carbon neutral by 2050. However, Hong Kong's unique electricity system, which is highly regulated and controlled by the government, could challenge the scaled deployment of Fintech RE innovation in the city.



Fintech RE has the potential to attract more investments to Hong Kong and establish the city as a green finance hub, promoting sustainable investing and managing financial risks due to climate change. This aligns with the goals of countries aiming to achieve carbon neutrality. Additionally, Fintech RE could empower individuals with their energy choices and open opportunities for public participation in energy transactions. Using blockchain-based RE trading platforms, the public could choose their energy generation company and evaluate different providers. Fintech RE could create new investment opportunities and lower barriers to entry for the public to participate in energy transactions and indirectly invest in RE. This innovation could also lead to new job creation and the development of new start-ups, transforming how people view energy and its application in their lives.

However, one challenge for Fintech RE in Hong Kong is its small market size and the existing monopoly situation in the electricity sector. Policymakers' perceived conservative mentality could also hinder its adoption. Another challenge is educating the public on Fintech RE and its supposedly lower economic profitability than other investment opportunities. Fintech RE may not be attractive to investors seeking high short-term returns, as it may not offer significant investment value compared to other options, such as bonds. Therefore, the full support of the Hong Kong government and the establishment of market rules are crucial for Fintech RE to thrive in the future.

## **IMPLICATIONS**

Fintech RE presents new investment opportunities and sustainability innovation in Hong Kong. Opportunities exist to merge the energy transition and finance sectors through Fintech RE. Still, these linkages must be approached cautiously, especially

regarding its effectiveness due to Hong Kong's regulated electricity sector. This opportunity could be pictured regarding small-scale RE systems in housing estates connected to Fintech via the Internet of Things, which could better serve on-site energy demand.

Fintech RE also offers the public a chance to diversify their investment portfolios. Introducing Fintech RE to Hong Kong also creates opportunities for entrepreneurship but requires education and skills simultaneously. Broadly, Fintech RE will enable the public to participate indirectly in climate action. However, liberalising Hong Kong's electricity market and innovating RE trading arrangements will be necessary for Fintech RE to thrive. Therefore, educating investment houses and the public on Fintech RE will be crucial for its success.

There is also an opportunity to explore the potential for a regional peer-to-peer digital Fintech RE trade protocol in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA). Scaling Hong Kong's future Fintech RE ecosystem in the GBA by interconnecting regional markets could accelerate the energy transition in the GBA while creating new opportunities for start-ups, new jobs, and large-scale decarbonisation impacts. This potential aligns with the Hong Kong Climate Action Plan 2050, which aims to strengthen regional cooperation for renewable energy import-export within the GBA. However, China's current prohibition of PoW blockchain constrains this prospect.

While Fintech RE allows for direct participation in energy transition and decarbonisation, its climate cost cannot be ignored. We still need further research to understand this impact, particularly in terms of designing climate and energy policies that consider the carbon pollution impact of Fintech RE on international finance centres like Hong Kong. Ensuring energy justice by fairly sharing the costs and benefits of decarbonisation activities, including

Fintech RE, is also crucial. Emissions from crypto work in verifying RE trades, which could result in a zero-sum game, thereby invalidating Fintech RE's promised decarbonisation benefits, must also be properly understood.

Overall, Fintech RE has the potential to support the expansion of distributed renewable energy generation in Hong Kong and democratise energy while making an economic case for it. However, its adoption at scale is not guaranteed, and the existing feed-in tariff scheme may not make it attractive. While Fintech RE could create new jobs and investment opportunities for the public to participate in low-carbon development, the existing institutional arrangements in Hong Kong's electricity sector, regulated by Schemes of Control, must be rethought to accommodate multiple RE generators. This institutional shift requires new energy governance, which becomes more complex with Fintech RE. The central government's prohibition of PoW authentication methods in validating blockchain transactions could also hinder Fintech RE's decarbonisation potential. Therefore, efficient and low-carbon crypto mining work or using energy strictly from 100 per cent RE sources is crucial for Fintech RE to meet the decarbonisation, digitalisation, and decentralisation goals of Hong Kong's energy system.



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