Renewable Energy Transition Initiative

Introduction

The Renewable Energy Transition Initiative (RETI) is key to helping large-scale traditional printing and dyeing facilities integrate renewable energy technologies with existing energy systems.

These facilities have significant energy demands, and while equipment upgrades can reduce some energy consumption, they fall short of fully meeting brands' carbon reduction goals. Recognizing this challenge, Aii, in collaboration with two key brand partners, initiated the pilot phase of RETI in 2022, targeting eight key supply chain facilities located in the Yangtze and Pearl River Deltas in Mainland China.

Partnering with Beijing Jingneng Power, RETI seeks to help manufacturers identify and implement renewable energy solutions such as onsite solar PV, heat pumps, and biomass boilers. After comprehensive data collection, the program evaluates 14 renewable energy technologies based on policy maturity, technology readiness, and factory conditions. From this, the most suitable renewable energy technologies are recommended, with a focus on clean electricity generation and clean thermal energy solutions. Throughout the implementation process, facilities participate in on-site assessments to track progress, ensuring that renewable energy technologies, policies, and business models are seamlessly integrated to support the apparel industry's green transformation and carbon reduction efforts.

Learnings

During our RETI pilots, we discovered that Solar PV generation showed significant potential for carbon reduction. Half of the facilities participating in RETI chose to implement distributed solar PV systems (small-scale solar photovoltaic systems installed on-site in areas like rooftops, parking lots, and buildings), resulting in a reduction of 4,557 tCO_2eq, approximately 4.23% of the overall carbon reduction for the pilot cohort program. Despite this being an onsite system for the factory, we discovered that there are unclear divisions regarding the ownership of carbon reduction rights for PV power generation.

Current practices often leave facilities unable to claim their rightful carbon reduction benefits. This is particularly common when third-party investments support the solar PV installation. We also noted double counting when facilities self-invest in PV systems. In this paper, we aim to establish that clear and fair guidelines are crucial to enabling facilities to claim their reductions, ensuring accurate attribution of carbon reduction efforts, helping facilities effectively achieve their carbon reduction targets, and communicating those successes to their customers.

For facilities using third-party investment in PV power generation, contracts assign carbon reduction rights to the PV installer, leaving facilities without the corresponding carbon reduction and keeping them from meeting brands' carbon reduction goals.

Facilities that self-invest in solar PV implementation face the concern of double counting. According to China's current renewable energy policies, the carbon reduction benefits of national subsidy-priced renewable energy generation are generally attributed to the government. This means that the corresponding carbon reduction cannot be individually claimed or benefited from by the power-generating enterprises. It is important to determine whether the installing facility benefits from subsidized electricity prices to avoid double counting.

With this in mind, we believe that calculating a factory's carbon reduction based on the actual solar PV power consumed by the facility raises questions about scientific validity and effectiveness.

We have included example results from our RETI-enrolled facilities below.

Examples

Item	Number
Facility Type	Tier 2
Total Roof Top Area	15,000 ㎡
Rooftop Installation Area	2,300 ㎡
Green Electricity Generation/y	358,600 Kwh
Carbon Reduction/y	205 tCo_2 eq.
Specific Contract Items	"The carbon assets generated from the program's electricity production, as well as the revenue from participating in 'green electricity trading,' shall belong to the photovoltaic installers."

Item	Number
Facility Type	Tier 1
Total Roof Top Area	N/A
Rooftop Installation Area	N/A
Green Electricity Generation/y	469,5318 Kwh (for the industrial park, not for the facility)
Carbon Reduction/y	4,681.23 tCo_2 eq.
Notes	The industrial park (as owner) hired a third party to install the PV but didn't inform the tenant facility about the green power implementation. Consequently, the facility was unaware of the electricity being used and couldn't access the related benefits and rights. This communication gap has prevented the facility from fully engaging in and benefiting from emission reduction ownership.

Challenges

The unclear ownership of carbon reduction rights leads to three main issues:

- Duplicate calculation of carbon reduction: When the carbon reduction benefits of self-build solar PV power generation lack clear ownership, the same carbon reduction is being claimed by both the facilities and the government, resulting in an inflated impact.
- Carbon reduction benefits being confined to the installer: If the carbon reduction benefits are primarily claimed by the installer and not effectively transferred to the end users, the overall carbon reduction impact for facilities remains limited, diminishing the intended environmental benefit.
- Ineffective brand carbon reduction efforts: Brands that invest in solar PV for carbon reduction may find that due to unclear ownership of carbon reduction rights, their efforts do not translate into tangible carbon reduction results, keeping them from achieving their sustainability goals and making their investments less effective.

Solution

Through the learnings of this pilot's deployment, Aii has three proposed solutions to ensure the carbon reduction ownership is clear and practical:

- Third-party installation: For programs where a third-party installer is responsible for the construction, the contract should explicitly state the ownership of carbon reduction benefits. This not only helps clarify who holds the rights to the carbon reduction benefits but also ensures that the data presented in carbon reduction reports is accurate, avoiding double counting or overestimations.
- Self-built solar PV: When a factory invests in a project, it's essential to determine whether the power generated is subsidized and, if so, who genuinely owns the carbon reduction benefits. This process ensures the carbon reduction benefits align with the actual investor and user, preventing any disputes or misjudgments regarding ownership.
- Brands are advised to regularly review their facilities' solar PV generation contracts and focus on verifying the ownership of carbon reduction benefits. By implementing a triple-check mechanism, brands can ensure that their carbon reduction goals are genuinely met, avoiding inefficiencies or data inaccuracies caused by unclear ownership.

Conclusion

The RETI program has demonstrated the significant potential of solar PV power generation in reducing carbon emissions for large facilities. However, there are challenges in clearly defining the ownership and allocation of carbon reduction rights. This lack of clarity often leads to issues such as double counting, limiting carbon reduction benefits to installers, and hindering brand efforts toward achieving sustainability goals. Out of the 8 pilot facilities, only 3 have explicitly obtained the carbon reduction rights, because it was explicitly stated in their project contracts.

Moving forward, Aii will formally launch the RETI program beyond the pilot phase to South and Southeast Asia, and expand its scope to include a broader range of renewable energy technologies, not limited to solar. A tripartite audit mechanism involving the brand, Aii, and the facility itself will be implemented to ensure transparency, consistency, and precise evaluation of carbon reductions across all energy sources. This approach will strengthen the program's value and guide future expansion, aligning with Aii's wider low-carbon thermal energy strategy.