2026 Best Practices of Carbon Neutral Cities in East Asia

Chengdu: Science-Driven Citizen Solution to Near-Zero Carbon Goal in Xinqiao Community



1. Background

Near-Zero Carbon Zones are specific geographic areas designed to reduce greenhouse gas emissions (GHG) to as close to zero as possible, as a paradigm shift toward the Net-Zero commitment. Since 2022, Chengdu has launched pilot projects to build Near-Zero Carbon Zones as experiments in feasible low-carbon urban transformation, particularly in industrial parks, companies, public institutions, communities, and touristic areas. The projects have received policy support and guided by technical standards that encourage multi-stakeholder participation in local, context-specific solutions. In particular, large-scale infrastructure development or extensive retrofitting is avoided in favor of pilot experiments which foster replicable, efficient, and low-cost sustainable transformation.

At the community level, low-carbon, sustainable urban lifestyles are becoming mainstream. Located in northern Chengdu and once the logistics hub for the construction material industry until 2012, Xinqiao Community has become a green space with five public



Fu River near the Xinqiao Community
Source : ICLEI East Asia



Xinqiao Community Map
Source : ICLEI East Asia

parks, two greenways, and a river running through it. However, home to roughly 22,000 residents across residential compounds, condominiums, businesses, and schools, the community cannot rely solely on carbon sequestration from green space to offset its total emissions. To reach net-zero, grassroots behavior change is inevitable.

2. Key Components

Xinqiao has established a community-driven practice, integrating infrastructure renovation, social innovation, diversified financing, and resident participation. It highlights evidence-informed decision-making through a tailored GHG inventory and action plan to translate climate awareness into behavioral change and collective action.

Evidence-based Decision Making: Community-Tailored GHG Inventory and Action Plan

A quantifiable GHG inventory is essential for setting the survey scope and accounting boundary, understanding where and how GHGs are produced across the cycles of community life, and identifying the entry point for effective action and achievable goals. In collaboration with technical partners, the community has developed a community-level GHG inventory to measure emissions in community life. In particular, the inventory considers scopes from: **(1) Direct GHG emissions** from sources owned or managed by the community or its residents, from the combustion of petroleum products, natural gas (as the primary cooking fuel), landfills and waste incineration facilities, as well as fugitive emissions from air conditioners, refrigerators, CO2 fire extinguishers and septic tanks. **(2) Indirect GHG emissions** associated with the consumption of electricity supplied from outside of the Xinqiao Community boundary, primarily during the operation of lighting systems, power outlets, electrical appliances, and building facilities and equipment. **(3) Carbon sequestration by urban green spaces**, including carbon sinks provided by five parks within the community boundary.



Study on Xinqiao Community GHG Inventory and Emission Reduction Potential and Near-Zero-Carbon Community Development Plan for Xinqiao Community
Source : Jinniu Community Development Foundation

To explore a locally tailored pathway towards low-carbon development, the Near-Zero-Carbon Community Development Plan for Xinqiao Community aims to guide climate action during 2025–2027. This publicly available action plan demonstrates the community's commitment to advancing long-term near-zero-carbon initiatives.

Diversified Funding for Self-sustaining Initiatives

Stable funding is key and often remains challenging for community initiatives. In Xinqiao Community, an innovative and diversified funding mechanism, consisting of a government-supported Community Incentive Fund, social foundations, and community-led funds, sustains the activities.

Since 2022, Xinqiao's Community Incentive Fund has allocated RMB 60,000 annually to procure services from social organizations and enterprises. The Community Incentive Fund is a dedicated funding for urban and rural communities to support local initiatives and livelihood projects. In Xinqiao, the funding supports initiatives such as volunteer capacity-building, themed workshops, community events, and public space retrofitting. In addition to RMB 180,000 over the three years through the Community Incentive Fund, the community received district fiscal support for over RMB 520,000.

Working with Chengdu Jinniu Community Development Foundation (hereafter Jinniu Foundation), one of Chengdu's youngest public fundraising foundations, the community launched Xinqiao Community Yuan Fund, a platform to mobilize grants and donations from private companies, residents and other stakeholders. As a kick-start, Jinniu Foundation's initial support of RMB 250,000 has funded the GHG inventory report and action plan, the establishment of the Zero-Carbon Center, and a series of low-carbon and biodiversity workshops and community markets.

Through various events, residents are also encouraged to contribute to the Yuan Fund via event entry fees and charitable purchases, serving as a micro-crowdfunding pool to support community-led projects and initiatives.

Inclusive Partnership with Social Actors

In Xinqiao Community's transformation, social organizations have helped connect residents with climate knowledge, technical expertise, practical experience, and financial resources. Notably, a Zero-Carbon Center was established through a partnership with three social organizations and enterprises, including Chengdu Qingpu (成都青朴), Yuanzhixin (源之心), and Tongzhu Mingtian (童筑明天), which have extensive experience in environmental civic engagement and in senior- and child-friendly community work. The community also invites academic institutions, such as the Sichuan Academy of Specialty Agricultural Plant Sciences and the Sichuan Longqiao Black Bear Rescue Center, to conduct knowledge-sharing sessions and school panel exchanges.

Citizen-level Behavior Change: From Knowledge to Awareness

Xinqiao community fosters citizen participation through year-round activities. The activities further promote knowledge-sharing, raise environmental awareness in action, and catalyze long-term behavior change.

The community activities bring together schools, healthcare institutions, businesses, social organizations, and community groups through recurring low-carbon campaigns, neighborhood initiatives, and collaborative environmental actions. For instance, through local zero-carbon holidays and zero-carbon markets, the community advocates low-carbon lifestyles and encourages broader participation among residents. The community also empowers youth and families through environmental education programs and hands-on learning opportunities on topics such as biodiversity conservation, waste reduction, recycling, and composting to promote sustainable everyday choices.

3. Implementation

In 2022, Xinqiao Community was selected as one of Chengdu's first 10 near-zero-carbon pilot communities. The community developed a baseline GHG inventory, including CO_2, HFCs, Methane, and N_2O emissions, across two key sectors: buildings and waste management. According to the baseline survey, the community's total carbon emissions in 2023 amounted to 1,231.9 t CO_2e, of which direct carbon emissions accounted for 1,058.3 t CO_2e (86%), primarily from natural gas consumption, and indirect carbon emissions accounted for 173.6 t CO_2e (14%). The annual carbon sequestration amount from green spaces was preliminarily estimated at approximately 8.56 t CO_2e per year. The report concludes that direct emissions are the dominant contributor, primarily resulting from fossil fuel combustion. While community parks and green spaces have some capacity for carbon sequestration, their carbon offset potential remains limited relative to total carbon emissions. Energy-efficient building and waste management infrastructure, coupled with citizen action, is recommended as a decarbonization pathway to reduce emissions in residential settings.

Based on the recommendations, low-carbon infrastructure has been installed, with solar-powered street and landscape lighting, rooftop photovoltaic systems, and energy-efficient ventilation equipment. 56 additional charging points were added, bringing the total electric vehicle (EV) charging network to 112 points, which can support 300,000 EV charging sessions annually.

From 2023 onwards, supported by the Community Incentive Fund, social grants, donations, and in-kind contributions, the Zero-Carbon Center has hosted



Solar panels outside the community center
Source : ICLEI East Asia

several Zero-Carbon flagship programs. Families with children are the primary target audience, with thematic workshops on climate change, waste reduction, and sustainable lifestyles that integrate low-carbon concepts into regular community activities. Under the Zero-Carbon Holidays initiative, for instance, Chengdu Qingpu organized biodiversity discovery activities in local parks and wetlands. Bird and frog watching and tree walks engaged children to appreciate urban biodiversity.

In 2025, the community recruited resident volunteers to survey nectar plant communities in local parks under changing climate conditions, document species diversity, conduct biodiversity inventories, and record ecological observations. Along the riverbanks, families with children have been invited to create photographs and videos while exploring how different species coexist within ecosystems, how rivers and wetlands support everyday urban life, and how to better understand Chengdu's water source areas. Citizen actions connect green spaces, river and wetland resources as sources of learning, spaces for reflection, and objectives for protection.

Promotion of sustainable household practices, including household composting and recycling campaigns, has inspired residents to participate in resource conservation and circular economy. In addition, a carbon inclusion mechanism is in place to quantify and incentivize individual low-carbon behaviors.

Eco-actions are further mainstreamed into community events through low-carbon operational practices, including zero-waste catering without disposable tableware and reusing foam board for event promotion. The practice is adopted in regular community meetings, workshops, and children's book clubs.



Promotion material for low-emission action
in the community center
Source : ICLEI East Asia

4. Impacts

According to a press release by Jinniu District, in 2022, the total electricity consumption of Xinqiao Community declined by 3,225,032 kWh compared with the previous year, representing a significantly greater reduction than in the preceding three years. Natural gas consumption also continued to decline, down 100,201 m^3 year-on-year. These reductions contributed to an estimated decrease of 2,550 t CO_2e in GHG emissions. After the infrastructure renovation during 2022-2023, it is estimated that the newly installed solar streetlights, PV panels, and ventilation system will save more than 2,200 kWh of electricity annually, avoiding approximately 230 kg CO_2e emissions each year. Eight recycling and second-hand exchange stations were installed through private-sector investment. As of 2023, 340 tonnes of recyclable materials have been collected, contributing to an estimated 615 t CO_2e in emissions reductions.

In 2023, Xinqiao Community was officially recognized by the Chengdu Municipal Government as a near-zero-carbon community following a relevant assessment. It is further reported that in 2024, the solar panels on the community center's rooftop continued to reduce electricity costs by approximately RMB 8,000.

While behavior-change outcomes are difficult to quantify, incremental changes can still occur at the local level. Mainstreaming eco-friendly and sustainable solutions in community social work and linking resources to the ground could cultivate further innovation and strengthen low-carbon awareness.

5. Conclusions

Community actions encourage residents to reflect on how urban lifestyles impact climate change and biodiversity. Xinqiao Community demonstrates an effective model for building partnerships with social organizations, enterprises, foundations, and most importantly, citizens to mobilize resources and establish long-term, self-sustaining local initiatives applicable to communities with similar conditions.

Evidence-based decision-making is essential for scientific planning. A GHG study provides an opportunity to identify the accounting boundary, key sources, and the scope of actions, while consistent monitoring can objectively evaluate long-term carbon-reduction outcomes. As a pioneer in community GHG surveys, Xinqiao further developed the Near-Zero-Carbon Community Development Plan for Xinqiao Community (2025–2027) based on key emission sources identified in the inventory and through consultations with social organizations and residents. This practice provides a reference for other communities to design evidence-based and tailor-made climate action strategy and plans.

Multi-stakeholder participation brings resources and ideas onto the ground. Communities should consider expanding funding sources by engaging government, social organizations, foundations, academia, businesses, and citizens. Xinqiao's experience demonstrates that diversified funding mechanisms can bring both sustained funding and well-developed project management practices into the community.

Locally incubated, self-sustaining community actions will foster long-term community capacity. Xinqiao's



Xinqiao zero-carbon map
Source : ICLEI East Asia

case has shown that knowledge-sharing events can promote public awareness and education on climate action, and a locally developed volunteer network can increase residents' proactiveness.

As of the end of 2025, Chengdu has launched four batches of 89 near-zero-carbon projects, achieving full coverage across all 23 districts and counties. Further, Chengdu will develop a technical catalog of near-zero-carbon solutions and expand the range of application scenarios, including near-zero-carbon construction sites.

References

- Chengdu Municipal Bureau of Ecology and Environment. (2022). *Work plan for further deepening the development of near-zero-carbon emission scenarios in Chengdu (trial implementation)* [《进一步深化成都市近零碳排放区场景建设工作方案（试行）》].
- Jinniu Community Development Foundation, Residents' Committee of Xinqiao Community, Shaheyuan Subdistrict, Jinniu District, Chengdu, & Chengdu Qingpu Social Work Service Center. (2025). *Greenhouse gas emission accounting and emission reduction potential assessment report of Xinqiao Community.*
- Jinniu Community Development Foundation, Residents' Committee of Xinqiao Community, Shaheyuan Subdistrict, Jinniu District, Chengdu, & Chengdu Qingpu Social Work Service Center. (2025). *Near-zero-carbon community development plan of Xinqiao Community.*
- Jinniu E-Community. (2023, September 4). Exploring carbon: *Xinqiao Community integrates green and low-carbon practices into community life, with near-zero-carbon development supporting sustainable prosperity.* WeChat Official Account. https://mp.weixin.qq.com/s/5z8QdMnF7ooVUOGCAOBVNw
- Jinhui Xinqiao Park Community. (2022, June 16 – 2025, December 29). Xinqiao Community WeChat Official Account post series on near-zero-carbon community building, biodiversity protection, and public engagement. WeChat Official Account. [WeChat Official Account updates]. WeChat. https://mp.weixin.qq.com/
- People's Daily Online. (2022, July 14). *Chengdu announces the first batch of near-zero-carbon emission pilot zones.* People's Daily Online. http://sc.people.com.cn/BIG5/n2/2022/0714/c345167-40038108.html
- Sichuan Online. (2025, January 19). *After two years of the near-zero-carbon community pilot, greenhouse gas emissions show a declining trend in this community.* Sichuan Online. https://sichuan.scol.com.cn/ggxw/202501/82885448.html
- Xinhua News. (2025, January 23). *Xinqiao Community in Chengdu's Jinniu District releases greenhouse gas emission accounting report and near-zero-carbon community development plan.* Xinhua News. https://sc.news.cn/20250123/7db62804e2e1441a972bd84bebe5d406/c.html

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