

Local Net-Zero Hubs

Rationale for Implementation

Taiwan has established mid-term greenhouse gas (GHG) reduction targets of $32\pm2\%$ by 2032 and $38\pm2\%$ by 2035. These targets serve as key policy milestones for aligning with international decarbonization pathways and advancing the nation's net-zero transition, while also strengthening industrial competitiveness and actively responding to global climate governance initiatives.

To achieve these objectives, it remains necessary to further intensify climate actions, deepen public understanding and consensus regarding climate change and the net-zero transition, and promote behavioral change in order to realize net-zero lifestyles.

Net-Zero Zones (Hubs) aim to establish regional paradigms for net-zero transition by integrating mechanisms for technological research and development, real-world demonstration, and industrial implementation. Their core functions encompass three key dimensions: 1. Net-Zero Technology R&D – Promoting cross-field collaboration and technological innovation in key areas such as low-carbon energy, smart grids, circular economy, green manufacturing processes, and carbon management. 2. Demonstration and Verification Park – Serving as platforms for testing and

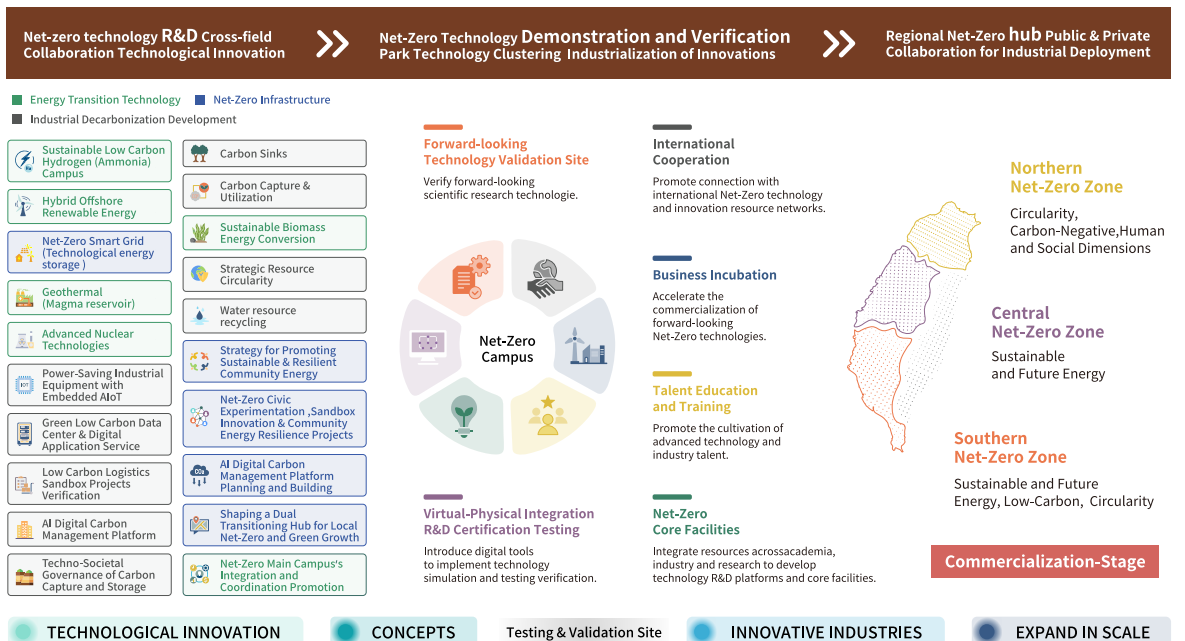


Figure 1 Shaping a Regional Net-Zero Transition Model via Net-Zero Hubs

Source: Taiwan Science and Technology Office for Net-zero Emission (2025)

validating emerging technologies while integrating digital simulation, international collaboration, business incubation, and talent cultivation resources. 3.Regional Net-Zero Zones (Hubs) – Advancing commercial-scale applications through public-private partnerships (PPP), linking local industrial clusters to establish green supply chains and market demand systems.

Furthermore, the strategic development of diverse

regional net-zero hubs across Northern, Central, and Southern Taiwan—such as hubs focusing on circular economy, sustainable energy, or low-carbon manufacturing—will help facilitate cross-regional resource integration and the diffusion of demonstration effects. Strengthening interregional collaboration will further support Taiwan’s long-term pathway toward the 2050 Net-Zero Emissions goal.

Current Domestic and International Development

According to the World Bank’s Low-Carbon Industrial Parks Development Framework, the development of low-carbon industrial parks requires a comprehensive institutional structure. This framework includes policy support, stakeholder engagement, technical diagnosis and baseline surveys, mitigation target setting, low-carbon project planning and implementation, as well as monitoring, evaluation, and information disclosure. These mechanisms ensure the effective realization of greenhouse gas reduction and industrial transformation goals.

International research further indicates that net-zero hub strategies generally operate at two levels: “Low-Carbon Development”(focusing on improving energy efficiency, expanding renewable energy use, and promoting green transportation);“Deep Net-Zero Transformation” (emphasizing full electrification of energy systems, the establishment of net-zero power grids, and systemic infrastructure transformation.)Through the integration of pathways such as urban spatial planning, sectoral efficiency improvements, industrial symbiosis, carbon sinks, and carbon storage, these strategies can support regions in achieving carbon reductions exceeding 80%.

Although Taiwan has not yet established Net-Zero Zones (Hubs) operating under such international frameworks, several industrial clusters and science parks already possess strong development potential. Examples include:

1. Eco-Science Parks under Development

By linking Shalun Smart Green Energy Science City with the manufacturing capabilities of the Southern Taiwan Science Park (STSP), these developments leverage the semiconductor “S-Corridor” advantage of integrated hardware and software capabilities. This integration accelerates the implementation and application of net-zero technologies.

With the rapid growth of AI computing demand, Southern Taiwan may further develop green computing centers and regional microgrid infrastructure to address

energy-intensive challenges and enhance supply chain resilience. As STSP Phase IV begins development, cross-domain energy and resource circulation systems—including water resources, thermal energy utilization, and recycling mechanisms—should be incorporated during the infrastructure planning stage to ensure harmony between industrial development and urban spatial patterns.

2. Yongkang Technology Industrial Park

This park hosts clusters of metal processing and precision machinery industries and has already implemented carbon inventory and energy management systems. With local government support for low-carbon technology adoption, the park has the potential to further integrate nearby research institutes and renewable energy facilities, becoming an important node for regional net-zero transition.

3. Xinji Industrial Park

As Taiwan’s first zero wastewater discharge industrial park, Xinji Industrial Park demonstrates strong potential for water resource recycling, carbon management, and ESG implementation, supporting the development of green supply chains.

4. Taoyuan Aerotropolis Low-Carbon Zone

Planned for investment promotion in Year 119 of the ROC calendar (2030), this zone provides an opportunity to introduce net-zero regulations at the planning stage and aim for net-zero operation upon commissioning. Baseline data collection and the establishment of digital twin models can support future policy design and governance adjustments.

The project may also facilitate low-carbon transformation of the logistics sector, while introducing AI-driven ESCO models and smart visualization energy management systems for large transportation hubs and residential sectors, thereby creating an integrated net-zero environment across industry, transportation, and

residential-commercial sectors.

These locations can serve as demonstration foundations for future Net-Zero Zones (Hubs) in Taiwan. Through

technology deployment, institutional experimentation, and supply chain integration, they can gradually evolve toward comprehensive governance models and commercial-scale green value chains.

Strategic Framework for Implementation

A Regional Net-Zero Zone (Hub) refers to a dedicated base centered on industrial clusters with robust energy transition foundations and demonstrative potential. By integrating local industries, technological R&D, and market demands, these hubs establish a commercial-scale supply-and-demand ecosystem for green products and develop replicable green value chain models.

Functionally, the Regional Net-Zero Hub assumes a triple role: as a center for green commodity supply chains, a platform for green industrial clusters, and a base for demonstration and diffusion. Its operational model spans technology development, supply-side support, demand-side pull, and resource matching. Technology Development is responsible for importing

and validating net-zero technologies while establishing technical standards. The Supply Side provides raw materials, equipment, and operational support to ensure commercial-scale production conditions. Simultaneously, the Demand Side leverages market procurement requirements and application criteria to catalyze the large-scale adoption of green products.

Furthermore, the Hub facilitates a mutually reinforcing resource network. It bridges central government resources—including R&D investment, international collaboration, business incubation, and talent cultivation—with local government strengths in investment promotion, infrastructure development, and administrative governance.



Figure 2 Potential Net-Zero Campus, Zone (Hub) Plan
Source: Taiwan Science and Technology Office for Net-zero Emission (2025)

Through these mechanisms, Regional Net-Zero Hubs are expected to foster large-scale, commercial-grade low-carbon supply chains within specific regions and establish transferable green value chain models. This will further enhance the low-carbon competitiveness and

international visibility of regional industries, serving as a vital pillar for the nation's net-zero transition. Based on this positioning, subsequent implementation strategies will focus on the following strategies :

Strategy 1: Development of Net-Zero Hubs and Construction of Green Value Chains

To facilitate the development of dedicated bases with industrial clusters and energy transition potential into Regional Net-Zero Hubs. This involves integrating local industries, R&D, and market demand to establish commercial-scale supply-and-demand systems for low-carbon products, fostering green value chains and industrial clusters, and creating replicable regional governance models.

Strategy 2: Establishment of Investment and Financing Mechanisms

To ensure the financial sustainability of infrastructure development and industrial low-carbon transition, robust investment and financing mechanisms should be established. These include promoting public-private partnerships (PPP) and introducing financial tools such as transition finance, green bonds, and ESCO models. Government policy incentives and initial risk-sharing mechanisms can help strengthen private sector investment confidence, expand the scale of resource mobilization, and enhance linkages with international green capital, thereby supporting the implementation of Net-Zero Zones.

Strategy 3: Integration of Net-Zero Supply Chains and Promotion of Local Green Economies

To construct regional net-zero industrial supply chain platforms and carbon management service mechanisms, while promoting carbon information disclosure, the application of green finance instruments, and the cultivation of ESG-related talent. These efforts will facilitate the large-scale development of green products, services, and governance mechanisms, thereby forming a competitive regional green economic system that supports Taiwan's overall net-zero transition.

Strategy 4: Diffusion of Governance Modules and Institutional Export

To leverage successful demonstration models of zone governance and promote their diffusion to other sub-sites and sectors, such as healthcare institutions, schools, and communities. This includes establishing cross-sector governance mechanisms and compiling the Net-Zero Zone Implementation Guidelines, which can serve as a reference for central policy diffusion, local proposals, and subsidy program design, thereby strengthening institutional implementation capacity.

Expected Benefits and Impact

1. Aggregating Local Green Supply Chains to Catalyze New Economic Momentum:

By bringing together key sectors and technologies—including carbon management, net-zero smart grids, building energy efficiency, low-carbon transportation, sustainable low-carbon hydrogen, and green data centers—the initiative promotes integration across the R&D, demonstration, and application stages of the industrial chain. This will foster localized net-zero supply chains and inject scalable green growth momentum into regional industries.

2. Advancing Net-Zero Resilient Industrial Clusters through Local Circular Models:

By combining scientific research capabilities with regional advantages, cross-regional circular economy mechanisms can be introduced to accelerate industrial green transformation. This will enable the development of internationally competitive net-zero resilient industrial clusters.

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