ASIA CLEAN ENERGY FORUM 2025

Empowering the Future: Clean Energy Innovations, Regional Cooperation and Integration, and Financing Solutions

2–6 June | ADB Headquarters, Manila

ADB

Crossing Borders: Integrated Solutions for Net Zero-Carbon Development

5 June 2025 | 14:00–17:35 (GMT+8)

In cooperation with

ENERGY FOUNDATION 能源基金会

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Overview of the Zero-carbon Transition of Industrial Parks in China

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Featured Speaker

Industrial Parks:

Key Engines for Economic Growth

Frontlines of the Carbon Neutrality Transition

15,000
Industrial Parks Nationwide

35%
of Total Energy Consumption

+ 50%
of Industrial Output

2543
National/provincial Parks

31%
of Carbon Emission

Industrial Parks:

Evolution of China's Industrial Parks: Three Development Stages

Development Phase (1980–2000)

Background:
- China launched Special Economic Zones (SEZs) and Economic & Technological Development Zones to attract FDI and promote exports
- Pilot zones established in coastal areas

Features:
- Focused on export processing and manufacturing with strong policy incentives
- Basic infrastructure in place
- Local governments led investment attraction

Policy Support:
- National policies supporting ETDZs, High-Tech Zones, and Bonded Zones

Notable Examples:
- Shenzhen SEZ
- Shanghai Pudong New Area
- Suzhou Industrial Park (China–Singapore Cooperation)

Upgrading Phase (2000–2025)

Background:
- Emphasis on optimizing industrial structure and promoting regional balance
- Policies on circular economy and energy efficiency emerged

Features:
- Shift from quantity to quality in park development
- Expansion into central and western China; multi-level park system established
- Focus on industrial integration, environmental performance, and low-carbon development

Policy Support:
- Industrial Green Development Plan
- National Green Park Evaluation System
- Air Quality and Emission Reduction Policies
- Regional development strategies (e.g. Central and Western Expansion)

Notable Examples:
- Circular Economy Pilot Parks
- Green Industrial Park Initiatives

Transformation Phase (2025–Future)

Background:
- Driven by carbon peaking and neutrality goals
- Global supply chain shifts and digital economy rise
- High-quality development as core strategy

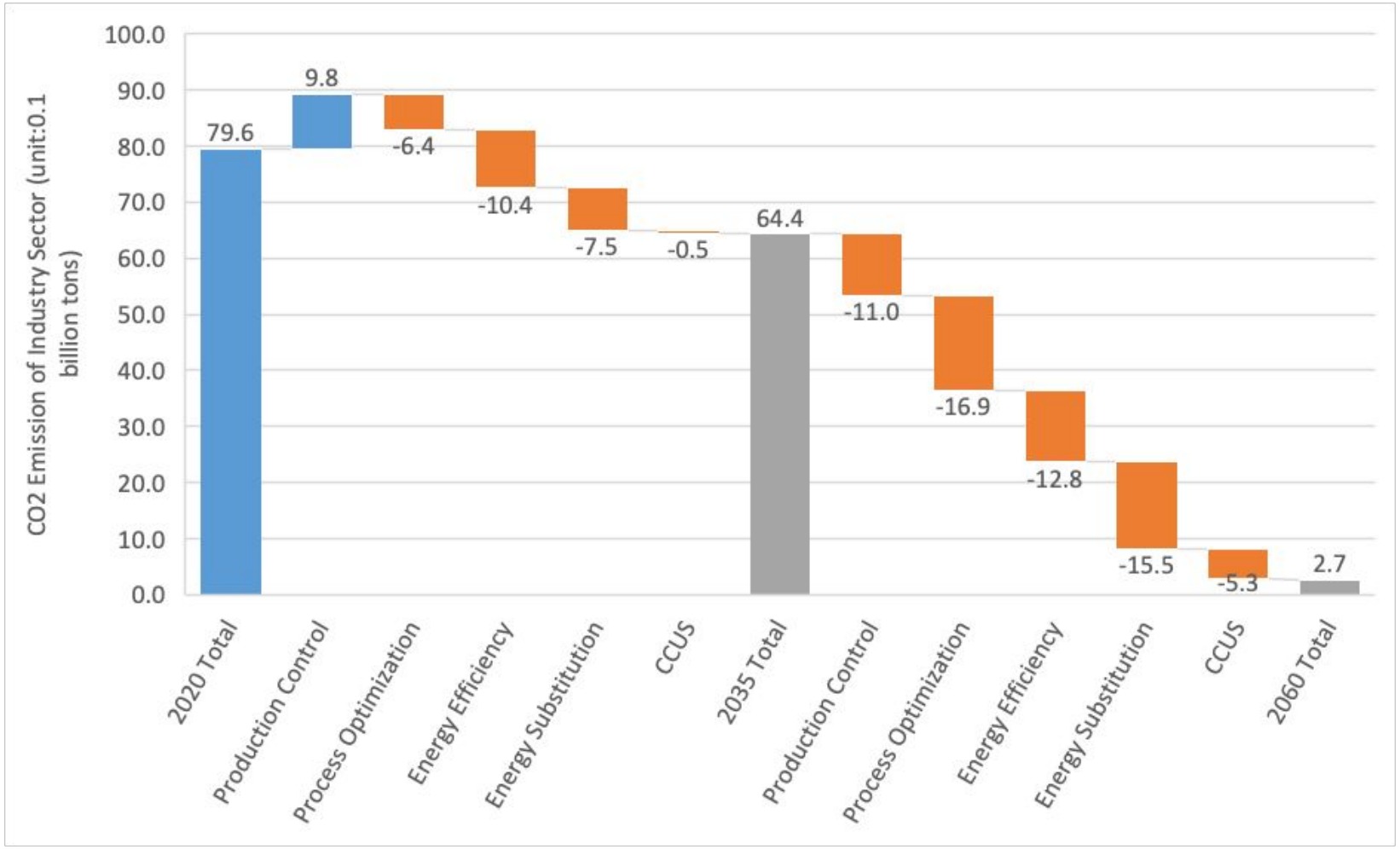
Features:
- Systematic shift to green, digital, and globalized parks
- Deepening green & smart manufacturing, zero-carbon park pilots
- Integration with urban development and multifunctional planning

Potential Policy Focus:
- Sustainable, resilient, and green global industrial chains
- National zero-carbon park standards and pilots
- Carbon footprint and energy management digital platforms

Pilots:
- MIIT Green & Low-Carbon Industrial Parks
- National Zero-Carbon Industrial Park Demonstrations (Implementation Plan will be launched by NDRC soon)

A Test Ground for Major Pathways Towards Carbon Neutrality in China's Industry Sector

- Pilot major pathways: efficiency, energy shift, process innovation, structural change and CCUS — all within park-level systems
- Enable integrated net-zero solutions through independent and controllable park governance
- Drive clean energy transformation by decarbonizing park-level power and heat supply
- Unlock synergies through industrial symbiosis and cross-sector integration within the park



Key Pathways of Net Zero Carbon Industrial Parks

Energy-Carbon Management Platform and Mechanisms

Decarbonize Energy System

- Build a clean, zero-carbon, and multi-energy complementary energy system
- Deploy integrated source-grid-load-storage system, including green microgrids and virtual power plants (VPPs)
- Promote deep electrification across industry, buildings, and transportation sectors

Decarbonize Infrastructure

- Build green and zero-carbon transportation and logistics system
- Deploy shared infrastructure for energy cascading (e.g., industrial heat recovery) and circular resource flows (e.g., waste-to-resource, water reuse)
- Integrate industrial and urban functions through co-location planning and shared service systems

Decarbonize Industrial Layout

- Accelerate enterprise-level upgrades in energy efficiency through process optimization, digitalization, and advanced technologies, while phasing down fossil fuel use
- Transition to high value-added, low-carbon industrial structures (e.g., advanced manufacturing, digital economy)
- Foster industrial symbiosis through by-product exchange, utility sharing, and joint waste/resource management

Local Practices

Suzhou Industrial Park (SIP)
- Exploring innovative energy-carbon management mechanisms

Overview

•Leading role in driving high-tech innovation and high-quality development, particularly in information technology, high-end equipment manufacturing

•Both energy intensity and carbon emission intensity decreased, - 25.6% and - 13.95% respectively for 2025-2021.

• Opportunity:
  - electricity and natural gas accounted for 60.48% and 22.36%.
  - High awareness of green transition and be active in innovation demonstration

Key Interventions

1. **Energy**
- Build distributed photovoltaic (PV) systems
- Pilot on virtual power plants (VPPs) and energy storage

2. **Industry**
- Energy and carbon efficiency index system for enterprises
- Pilot of **"Near-zero Pilot Factory" and "Low-carbon Top Runner Factory"**

3. **Energy-Carbon Management Platform**
- An intelligence carbon management platform, and a carbon budget management mechanism
- Construction of EV charging infrastructure
- Green building certification and labeling
- Energy efficiency retrofits for existing buildings

4. **Enhanced low-carbon awareness and incentive systems in parks**
- Low-carbon community pilot projects
- Implementation of a carbon-inclusive (carbon reward) system

Expected Impact by 2030:

- Green and low-carbon industries contributing to over 50% of the incremental economic growth
- Energy intensity and carbon emission intensity decreasing by 20% and 18% respectively compared to 2020
- Electricity accounting for 75% of final energy consumption.

Local Practices

Hainan Yangpu Industrial Parks

- Enabling the low carbon transition of the chemical industry coupling with off-shore wind power

Overview

- A core hub for petrochemical production, heavy industry, and international logistics
- High energy intensity, fossil dependency, complex emissions.
- Energy use ↑ 289% (2015–2023); 2023 emissions ≈ 17 $MtCO_2$.
- Opportunity: Coastal location with access to offshore wind & Changjiang nuclear power.

Key Interventions

1. Clean Electrification
   - Electrification target: >20% (existing), >30% (new) by 2030
   - Source: Offshore wind + Nuclear integration
2. Green Hydrogen Coupling in Chemical Sectors
   - Phased green hydrogen substitution in the chemical sector; build pipelines; CO_2-to-methanol pilots
3. Energy Efficiency
   - Digital audits; phase out outdated equipment
4. Clean Heat
   - Use nuclear waste heat; hydrogen-mixed gas; heat cascades
5. Green Logistics
   - Zero-emission freight corridors; green shipping fuels
6. Low-Carbon Buildings
   - Electrification + rooftop solar/BIPV retrofits

Expected Impact by 2030

- 50% cut in emissions growth vs BAU
- 11% reduction in carbon intensity
- $2.35 Billion in clean investment

Overcoming Key Bottlenecks to Accelerate the Low-Carbon Transition

1. Strengthen Foundational Data and Standard Systems

- Develop park-level energy and carbon emission data infrastructure
- Establish unified carbon accounting methodologies and indicator systems

2. Unlock Access to Green and Flexible Power

- Expand access to green electricity through direct supply models with favorable pricing and incentives
- Improve grid capacity and flexibility to support on-site renewables and direct supply

3. Deploy Key Enabling Technologies and Infrastructure

- Scale up renewable energy and storage construction in parks
- Advance deployment of virtual power plants with dispatchable and aggregated resources

4. Develop Scalable Business and Investment Models

- Lower transition costs through blended financing and green investment tools
- Create mature business models and revenue mechanisms for services like virtual power plants
- Encourage market-based mechanisms to drive investment in enabling infrastructure

5. Enhance Policy and Incentive Frameworks

- Introduce fiscal and tax policies to support pilot and demonstration projects
- Provide regulatory support for new mechanisms such as green power trading and direct supply

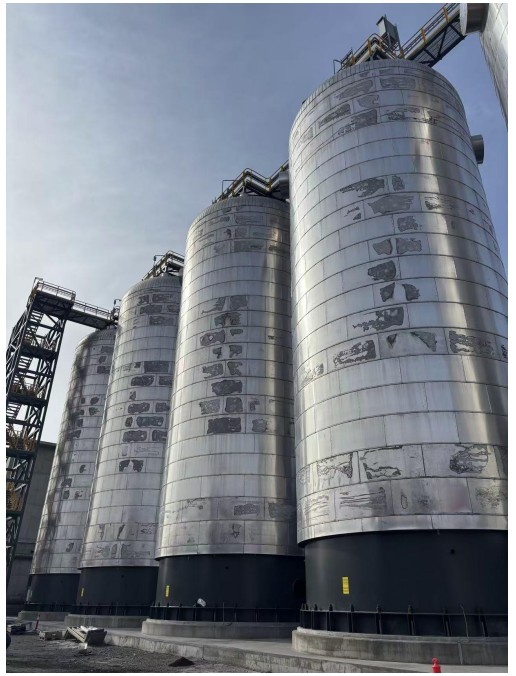
6. Promote Integrated Planning and Industrial Collaboration

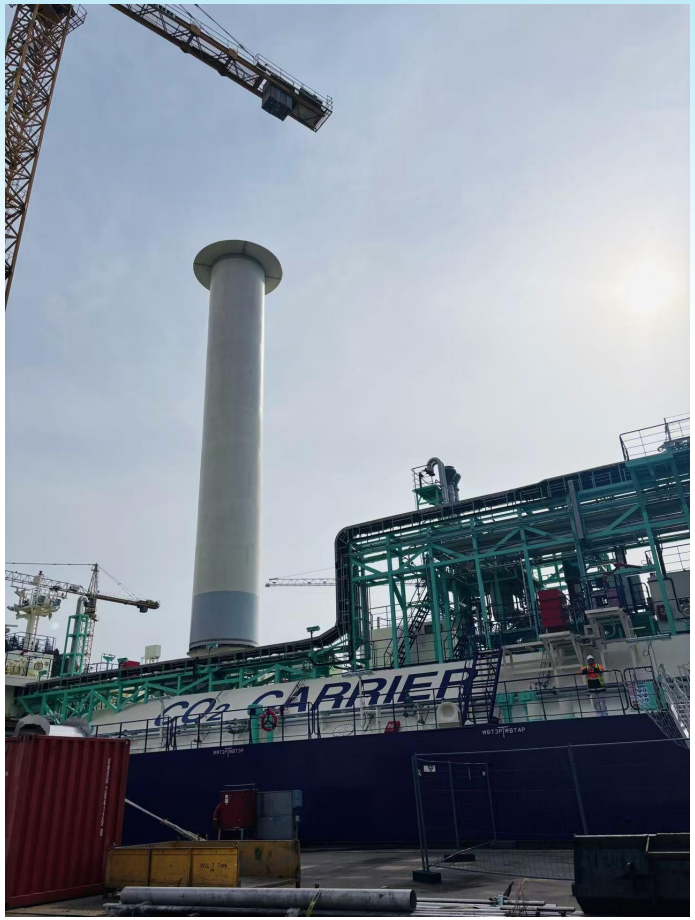
- Improve system-level infrastructure planning for energy cascading and circular resource use
- Strengthen enterprise coordination to foster industrial symbiosis and value-chain collaboration

Moving Forward

Unlocking Net-Zero Industrial Transformation

- Explore New Models for Economic Growth
- Deploy the application of emerging clean energy technologies
- Scale Up Investment Opportunities Across the Value Chain
- Advance with Ambitious and Enabling Policies
- Drive Change Through Collective Action and Partnerships





Powered by Norway's clean hydropower-dominated grid and equipped with full-scale carbon capture, the Brevik cement plant exemplifies low-carbon industrial transformation in hard-to-abate sectors

About us

Energy Foundation China is an independent grantmaking charitable organization that provides funding for research and capacity building related to climate change and China. Over the past 25 years, in support of our mission, we have funded over 4,000 projects, with total funding over $500M.

Our vision *is to achieve prosperity and a safe climate through sustainable energy.*

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Thank you!