

The Asian Winter Games Empowers the Economy of Heilongjiang Province: Facilitating the Rise of the Ice and Snow Industry and the Diverse Development of the Economy

ZHU Xiao-dan

Heilongjiang Development Planning Research Institute, Harbin 150030, China

This article focuses on the economic dividends of Heilongjiang Province hosting the 9th Asian Winter Games (2025), centered on the ice and snow economy's high-quality development. Leveraging unique ice and snow resources, Heilongjiang built a "sports events + full industrial chain" model, driving ice and snow tourism upgrading, equipment technology breakthroughs, and cultural brand internationalization. The event optimized the industrial structure by upgrading traditional industries, fostering emerging sectors, and advancing modern services. It also spurred infrastructure leapfrogs (transportation, smart cities, ecology), improved livelihoods (employment, income, public services), and boosted innovation (technology R&D, digital integration, opening-up). Looking ahead, Heilongjiang will use the event's long-term effects to build a ice and snow-led modern industrial system for high-quality development.

Keywords: Heilongjiang, Asian Winter Games, ice and snow economy, industrial structure optimization, high-quality development, economic transformation

Against global economic restructuring and China's high-quality development drive, Heilongjiang—a key region in Northeast Revitalization—hosted the 9th Asian Winter Games in 2025. This event showcased its ice and snow charm globally and marked a turning point in converting "cold resources" to "hot economy". As China's top ice and snow resource province and winter sports powerhouse, Heilongjiang accelerated its shift from an "ice and snow-rich" to "ice and snow-strong" province. Per the *2025 Government Work Report of Heilongjiang Province*, the ice and snow economy's added value will account for over 8% of GDP in 2025, becoming a core growth driver. This article analyzes the event's multi-faceted impacts using latest data and practices.

I. The Rise of the Ice and Snow Economy: From Resources to Industrial Prosperity

Heilongjiang's ice and snow resources are unique: 6-month cold seasons, 40-80 cm average snowfall, and stable high-quality ice. The Asian Winter Games activated these resources, promoting integrated industry development and a leap from single tourism to a full industrial chain.

ZHU Xiao-dan, Mater of Electrical Engineer, Associate Researcher, Comprehensive Business Department, Heilongjiang Development Planning Research Institute.

(1) Ice and Snow Tourism Upgrading

Heilongjiang's "sports events + tourism" model boosted tourism appeal. From January to March 2025, the province received 210 million tourists, generating 29.56 billion yuan in revenue—year-on-year growth of 35.2% and 38.7%, outpacing the national average. Harbin became a global hotspot: the 1.2 million-square-meter Harbin Ice and Snow World (with Asian Winter Games-themed ice sculptures) attracted over 5.2 million visitors, a record high.

New tourism formats emerged. Yabuli Ski Resort (upgraded for alpine competitions) hosted 38,000 daily visitors (43% year-on-year growth), driving a 189% surge in surrounding homestay bookings (92% occupancy). Trends like ice and snow adventure tours and intelligent ski experiences gained popularity. The province added 412 ice and snow-themed restaurants (62% revenue growth) and saw 680 million yuan in cultural and creative product sales (45% from licensed products). Overseas social media mentions rose by 210%, foreign tourist proportions increased from 3.2% to 8.7%, solidifying Harbin's status as a high-end international destination (Wu Shaohui et al., 2025).

(2) Ice and Snow Equipment Industry Breakthroughs

The event's technological spillover drove the industry from "assembly" to "independent innovation". By H1 2025, Heilongjiang had 178 ice and snow equipment enterprises, forming a complete "R&D-manufacturing-testing-sales" chain (China's largest scale). Examples include Heilong International's carbon fiber ice skates (15% faster, adopted by 8 national teams) and Harbin Institute of Technology's intelligent snow removal robots (3x more efficient, 75% domestic market share).

University research thrived: Harbin Engineering University's low-temperature ice-making equipment reduced energy consumption by 30% (12 international patents). In Q1 2025, equipment exports reached 1.23 billion yuan (32.6% year-on-year growth), accounting for 47% of China's total. The SCO Ice and Snow Sports Demonstration Zone attracted 23 projects (18.5 billion yuan investment), including Hongji Ropeway's high-end detachable ropeway (filling a domestic gap). The industry shifted from a "manufacturing base" to "innovation hub", with core component localization rising from 42% to 71% (Wang Shippei).

(3) Ice and Snow Cultural Brand Expansion

Heilongjiang deepened ice and snow cultural connotations, integrating sports, art, and digital media. The 40-year-old Harbin International Ice and Snow Festival was upgraded to the "Belt and Road" Ice and Snow Culture Forum, attracting representatives from 52 countries. Ice sculptures of 45 Olympic Council of Asia member landmarks in Harbin Ice and Snow World gained 1.5 billion online impressions.

Digital empowerment succeeded: Asian Winter Games-themed digital collectibles sold 1.8 million copies (320 million yuan in transactions, leading the national market). Overseas content releases on Ctrip rose by 150%, and foreign tourists for ice and snow culture increased by 92%. Heilongjiang led in formulating 5 ISO international standards and 12 national standards for ice and snow equipment, enhancing its global industry voice.

II. Industrial Structure Optimization: Accelerating Kinetic Energy Conversion

The Asian Winter Games triggered a chain reaction in Heilongjiang's industrial structure, promoting traditional industry upgrading, emerging industry growth, and service industry advancement.

(1) Traditional Industry Quality Improvement

As a key grain base, Heilongjiang built 23 “ice and snow + agriculture” demonstration parks, developing cold-region green vegetables and pollution-free livestock. The 2025 grain output is projected at 160 billion jin (21 consecutive harvests), with high-efficiency agricultural output value up 18% year-on-year.

Heavy industry accelerated intelligent transformation: Harbin Electric Corporation's intelligent power generation equipment orders rose by 25% (exported to 12 countries); China First Heavy Industries increased nuclear power equipment localization to 95% (30% efficiency growth). Digital transformation covered 82% of industrial enterprises above designated size. The Asian-leading cold-region vehicle testing base (156 projects) drove 2.87 billion yuan in output value (42% year-on-year growth, 2024).

(2) Emerging Industry Growth

The digital economy boomed: Heilongjiang built China's first national ice and snow industry big data center (monitoring 1,500 venues). In H1 2025, the digital economy's core added value rose by 22% year-on-year (10.5% of GDP, up 1.3 percentage points). The ice and snow metaverse platform had 4.8 million users (1.8 billion yuan in online consumption).

New energy expanded: Daqing Oilfield's wind and solar installed capacity reached 1.5 million kilowatts (18% of total). An 18 billion yuan hydrogen energy project (production-storage-application) is expected to generate 5 billion yuan by 2026. Beidahuang Group's cold-region biological breeding base drove 28% year-on-year growth in biopharmaceutical output value.

(3) Modern Service Industry Upgrading

In 2025, the service sector's added value is projected at 980 billion yuan (48% of GDP, up 2.3 percentage points). Total retail sales of consumer goods will hit 612.5 billion yuan (6.7% year-on-year growth). Harbin New Area's logistics hub opened 12 international air routes, with Q1 cross-border e-commerce transactions exceeding 1.1 billion yuan (49% year-on-year growth).

Financial support included 28 billion yuan in special ice and snow loans (supporting 327 SMEs) and a 10 billion yuan industry fund. Cold-region hot spring health projects saw 52% visitor growth (8 new resorts integrating sports and TCM). The 2025 Ice and Snow Film Festival signed 45 projects (21.8 billion yuan). The ice and snow industry employed 520,000 people (186,000 new jobs from the event).

III. Infrastructure Leap: Laying a Long-Term Foundation

Heilongjiang accelerated infrastructure construction for the event, achieving leapfrogs in transportation, smart cities, and ecology.

(1) Transportation Network Improvement

Harbin Taiping International Airport's Phase II expansion (operational Jan 24, 2025) became Northeast China's first dual-runway, dual-terminal hub. From Jan to March 2025, it handled 28 million passengers (18.3% year-on-year growth, 120,000 daily peak) and added 15 international routes.

Rail and highway upgrades: Beijing-Harbin High-speed Railway's 16 daily ice and snow special trains transported 1.2 million passengers. Yabuli-Snow Valley Highway's nano anti-icing asphalt reduced icing time by 60%. The Mudanjiang-Harbin-Yichun Ice and Snow Economic Corridor achieved 11.5% GDP growth (3.2 percentage points above provincial average) and 41% tourism income growth. Eighteen branch airport routes boosted regional passenger throughput by 58%, driving remote area tourism.

(2) Smart City Acceleration

Host cities like Harbin advanced smart city development: 5G fully covered venues/scenic spots (72% penetration rate, leading Northeast China). AI passenger flow systems in ski resorts reduced waiting times by 45% (38% peak efficiency growth).

Intelligent technologies included smart ice wall technology (40% construction efficiency growth, 25% energy reduction). The digital yuan pilot covered 1,500 scenarios (2.35 billion yuan in event transactions). An integrated urban management platform integrated 1,800 services (70% approval time cut). Safety was enhanced via a 60,000-square-kilometer Beidou rescue system (52% emergency efficiency growth) and 100% accurate intelligent fire monitoring.

(3) Ecological Environment Optimization

Venues adopted a "zero-carbon" concept: 82% renewable energy, 100% green buildings, and Asia's first 100% green electricity Winter Games. The Songhua River Basin's water quality excellence rate reached 94% (up 2 percentage points), and Harbin's PM2.5 average dropped to 26 $\mu\text{g}/\text{m}^3$.

Carbon reduction measures: electric ice resurfacers cut emissions by 35%; venue waste recycling reached 95%. Post-event, all venues will open to the public. Mohe Arctic Village's tourists surged by 95%, and a Daxing'anling carbon sink pilot increased 120 villages' income by 23 million yuan.

IV. Livelihood Improvement: Sharing Event Dividends

The event delivered tangible benefits to residents, unifying development and livelihood improvement.

(1) Employment and Entrepreneurship Vitality

The event directly created 186,000 jobs, pushing ice and snow industry employment to 520,000 (15% growth in tourism/catering/accommodation). A "training + certification + entrepreneurship" system trained 108,000 people (42,000 new certifications). A college student entrepreneurship competition incubated 112 tech startups (3.2 billion yuan financing). Migrant workers in the ice and snow industry saw 28% income growth (1,100 yuan monthly average).

(2) Steady Income Growth

2025 per capita disposable income is projected to rise by 6.1% (exceeding GDP growth). Ice and snow industry wages rose by 22%, property income by 29%. Rural income growth outpaced urban for five years (urban-rural gap 1.85:1). Ice and snow season retail sales rose by 24%, with upgraded consumption (new energy vehicles, smart homes) accounting for 37%.

(3) Public Service Upgrades

18 new ice and snow sports schools were built (total 176), integrating ice and snow education into K-12 PE (covering 1.2 million students). The Heilongjiang Provincial Hospital's Ice and Snow Sports Trauma Center

achieved county-level telemedicine coverage (3,200 new medical personnel, 12% per capita resource growth). China's first ice and snow-themed library opened in Harbin (200,000 books, 55% more digital resources). Affordable rental housing supply increased by 35%, housing provident fund coverage reached 88%.

V. Innovation Capabilities: Enhancing Transformation Momentum

The event boosted innovation in technology R&D, digital integration, and opening-up.

(1) Ice and Snow Technology Breakthroughs

Heilongjiang's "Ice and Snow Technology Research Plan" broke through 31 core technologies (12 internationally leading). Harbin Institute of Technology's smart ice production equipment (45% efficiency growth) was exported to 8 countries; Harbin Engineering University's underwater ice robots solved cold-region maintenance issues. The national ice and snow equipment inspection center (international certification) enabled 15-country result mutual recognition. 156 technology transformation projects drove 32% industrial added value growth, with equipment localization rising from 35% to 68% (low-temperature material R&D in global top 8).

(2) Digital Economy Integration

A "digital + ice and snow" system integrated with ice and snow, manufacturing, and service industries. The industrial Internet's secondary node connected 620 enterprises (1.3 billion registrations, leading Northeast China). The ice and snow big data center supported decision-making (2,300 enterprises, 1,500 venues). Digital twin technology shortened equipment R&D cycles by 35% (99.1% qualification rate); blockchain traceability covered 75% of tourism products. A cross-border e-commerce platform handled over 1.1 billion yuan in H1 2025 transactions.

(3) Opening-Up and Cooperation Achievements

Heilongjiang signed 23 agreements with international organizations (IOC, OCA), introducing 8 Winter Olympic technical teams and 15 technologies. The 2025 International Ice and Snow Equipment Exhibition attracted 386 enterprises from 27 countries (5.2 billion yuan on-site transactions). China-Russia ice and snow tourism trains (12 monthly pairs) transported 320,000 Q1 tourists (78% year-on-year growth). The Sino-Russian ice and snow economic cooperation zone saw 8.6 billion yuan in trade (42% year-on-year growth). The Asian Winter Games' brand value was evaluated at 9.8 billion yuan (top three global winter sports events).

VI. Future Prospects: Building a High-Quality Development Pattern

Heilongjiang will leverage the event's long-term effects, focusing on the ice and snow economy to deepen reform and innovation.

- **Event Effect Release:** Establish a long-term resource utilization mechanism, expand ice and snow tourism (integrating border/red/ecological tourism), and build a world-class ice and snow equipment base.
- **Industrial Integration:** Promote "ice and snow +" integration with agriculture/manufacturing/digital economy, upgrade traditional industries, and cultivate emerging industry clusters.
- **Opening-Up Cooperation:** Deepen Sino-Russian cooperation (build a demonstration zone), participate in "Belt and Road" ice and snow exchanges, and strengthen domestic inter-provincial cooperation.

- **People-Centered Development:** Expand employment/income channels, upgrade public services, and strengthen ecological protection to build a beautiful Heilongjiang.

Conclusion

The 9th Asian Winter Games was a milestone for Heilongjiang, driving the ice and snow industry's rise and positive changes in industrial structure, infrastructure, livelihoods, and innovation. With sustained event effects, Heilongjiang will accelerate its shift to an "ice and snow-strong province", contributing to Northeast Revitalization and China's development.

References

- Asia Data Group. (2022). *Report on the development of China's ice and snow industry*.
- General Office of the State Council. (2024). *Several opinions on stimulating the vitality of the ice and snow economy through the high-quality development of ice and snow sports*. 2024-11.
- People's Government of Heilongjiang Province. (2025). *2025 Government Work Report of Heilongjiang Province*.
- Wang, S. P. (2025). Heilongjiang's ice and snow equipment industry is "Burning" with momentum. *China Tourism News Network*, 2025-03-25.
- Wu, S. H. et al. (2025). Unlimited "heat" of ice and snow economy—Research on Heilongjiang's ice and snow economy. *Xinhua News Network*, 2025-02-06.
- Xinhua News Agency. (2025). Asian Winter Games | Ice and Snow Sports Lead Ice and Snow Economy to Become a New Growth Point. *Taiwan Strait Net*, 2025-02-04.
- Yang, S. Q., Wang, B. K., & Wang, F. (2025). White mountains and black rivers, spring tide surging—Ice and snow economy boosts high-quality development in Northeast China. *Xinhua News Agency*, 2025-03-22.