

A Study on the Policy Support System for the Development of the Intelligent Sanitary Ware Industry in Chaozhou

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Abstract: With the rapid advancement of China's sanitary ware industry, particularly marked by the establishment of the "Shenzhen-Chaozhou Intelligent Sanitary Ware Industry Collaborative Development Alliance", the intelligent sanitary ware sector in Chaozhou has demonstrated remarkable growth momentum. However, to systematically propel the industry towards higher-end manufacturing, enhanced intelligence, and sustainable green development, Chaozhou must construct a comprehensive policy support framework. This framework should encompass five fundamental dimensions: innovation in industrial support policies, the establishment of a synergistic industry-academia-research collaborative innovation mechanism, targeted talent recruitment and development programs, the creation of industrial public service platforms, and robust regional brand promotion strategies. Through these concerted efforts, Chaozhou can fully realize the vision of an industrial ecosystem embodying the ethos of "Shenzhen Standards — Chaozhou Innovation — Global Market".

Keywords: Chaozhou; Intelligent Sanitary Ware Industry; Policy System Construction; Intelligentization

1. Current Status of the Intelligent Sanitary Ware Industry in Chaozhou: Global and Chinese Perspectives

The global ceramic sanitary ware industry is undergoing a phase marked by steady growth and structural transformation. According to the China Sanitary Ware Market Research Report, the global sanitary ware market is anticipated to reach a valuation of \$150.6 billion by 2025, representing an increase of over 49% from 2018. Within this market, intelligent sanitary ware products are emerging as a pivotal growth engine, with projections indicating that their market size will reach \$15.76 billion by 2030.

China has established itself as the foremost manufacturer and consumer of intelligent sanitary ware worldwide, demonstrating consistent advancements in production capacity, export volume, and domestic sales. In particular, Chaozhou, as a key production hub for intelligent sanitary ware in China, is expected to attain an output value of 58 billion RMB in 2024. Additionally, the penetration rate of intelligent production lines in the region has exceeded 65%, facilitating an extensive export network encompassing over 130 countries and regions. By 2025, the applications of intelligent sanitary ware are forecasted to expand into fifteen different sectors, including construction, advanced manufacturing, and new energy. Despite these promising developments, the intelligent sanitary ware industry in Chaozhou has yet to fully establish a regional competitive advantage. This situation highlights the pressing need for a robust policy support system to ensure sustained growth and foster a thriving industrial environment[1].

2. Constructing a Policy Support System for the Development of the Intelligent Sanitary Ware Industry in Chaozhou

2.1 Innovation in Industry Support Policies

2.1.1 Fiscal and tax policies

As a pivotal sector driving the intelligent, green, and new consumer landscape of the manufacturing industry, the Chaozhou intelligent sanitary ware sector requires fiscal policies that emphasize both direct financial support and tax incentives. In terms of direct financial support, the focus should be on providing substantial subsidies for technological research and development, as well as the successful translation of innovations into marketable products, complemented by special grants and one-time bonuses. Regarding tax incentives, efforts should be concentrated on "reducing burdens and lowering costs", including increasing the deductible proportion

of research and development expenses for intelligent sanitary ware enterprises, permitting accelerated depreciation for fixed assets and equipment, and expanding the scope of one-time tax deductions to alleviate the short-term tax burden on businesses.

2.1.2 Financial policies

The development of Chaozhou's intelligent sanitary ware industry is hindered by insufficient consumer demand, slow market

penetration, and notable instability in the supply chain due to international conditions. This, along with high cost constraints and rapid technological iterations, and significant upfront capital outlays by enterprises, often leaves enterprises facing substantial financial pressures. Thus, the establishment of a cohesive financing system encompassing six key components for the Chaozhou intelligent sanitary ware industry is imperative (see Table 1).

Table 1. Financing System for the Chaozhou Intelligent Sanitary Ware Industry

No.	Policy Focus	Policy Content
1	Fiscal Investment	The government will spearhead the establishment of the “Chaozhou Intelligent Sanitary Ware Industry Development Foundation” in collaboration with local, domestic, and international enterprises and other social capital, prioritizing investments in local companies' technological upgrades, intelligent product development, and brand-building initiatives.
2	Tax Preferences	A comprehensive approach utilizing fiscal and tax levers will be adopted to implement reasonable tax incentives, including high-rate subsidies for enterprises investing in intelligent technology research.
3	Industrial Capital Collaboration	Efforts will be made to attract strategic investors from the Internet of Things sector, utilizing networks provided by overseas and domestic Chaozhou business associations to secure funding while integrating technology and channel resources.
4	Public Service Platforms	Government or industry associations will establish shared laboratories and technological innovation centers to reduce preliminary R&D costs, thereby indirectly diminishing funding requirements for enterprises.
5	Specialized Banks	Local banks will be encouraged to develop specialized loan products such as “Intelligent Sanitary Ware Loans,” aligned with national and Guangdong provincial policies regarding manufacturing transformation and special debt incentives.
6	Intellectual Property Pledge	Intelligent sanitary ware enterprises will be encouraged to pledge relevant patents and intellectual property rights to secure loans from banks.

2.2 Establishing a Collaborative Innovation Mechanism among Industry, Academia, and Research Institutions

The construction of a collaborative innovation mechanism for Chaozhou's intelligent sanitary ware industry should be systematically designed from three dimensions—research and development models, operational mechanisms, and a safeguard system—to forge a practical and sustainable framework for joint innovation.

2.2.1 Research and development model

The intelligent sanitary ware sector in Chaozhou embraces pioneering R&D paradigms. On one hand, it advocates an “order-based R&D” approach, whereby enterprises articulate specific technological demands, and university research teams undertake these R&D tasks under formal agreements that delineate clear standards for

deliverables, thereby establishing a stable technical supply chain. On the other hand, the “Challenge-Driven” model is implemented, wherein common industry-wide technical challenges are openly publicized, inviting capable research teams to competitively bid for the responsibility of addressing them.

2.2.2 Operational mechanism

Relying on intelligent production processes, the Chaozhou intelligent sanitary ware industry must refine mechanisms governing technology transfer and benefit allocation. Intellectual property ownership and profit-sharing ratios should be unequivocally defined to foster transparency. Researchers should be incentivized to participate in industrialization efforts through equity participation and stock-based rewards, aiming to compress the timeline from R&D to mass production, elevate the maturity of technologies, and bolster innovation

enthusiasm. Simultaneously, a collaborative talent cultivation framework must be established to achieve seamless “integration of industry and education”, encouraging university researchers to undertake temporary positions within enterprises while providing material rewards to those yielding meaningful scientific achievements.

2.2.3 Safeguard system

In addition to fiscal and tax assurances, the Chaozhou government should institute dedicated financial support for industry-academia-research cooperative projects. A performance evaluation system grounded in key indicators—such as R&D investment intensity, rates of technology commercialization, and patent output—should be developed. Targeted subsidies ought to be granted based on the degree to which these metrics are fulfilled, thus incentivizing sustained innovation and collaboration.

2.3 Special Plan for Talent Acquisition and Development

2.3.1 Talent acquisition program design

(1) Establishment of the “Chaozhou Intelligent Sanitary Ware Ceramic Scientist” Initiative: This program will globally identify academicians or world-class industrial technology leaders, combining precision with flexibility to focus on attracting core technological leaders, experts in intelligent manufacturing and digital transformation, high-end talents in product innovation and industrial design, as well as professionals in international business and standard-setting. The initiative aims to recruit top domestic and international scientists and their teams to establish branches in Chaozhou to engage in strategic and forward-looking research.

(2) Creation of the “Chaozhou Intelligent Sanitary Ware Ceramic Innovation Award”: This prestigious award will be established on a global scale, featuring substantial monetary prizes and academic recognition, encompassing categories such as “Materials Science”, “Technological Breakthroughs”, and “Design Innovation.” This award aspires to reach the level of a Nobel Prize in the industry. Through award ceremonies and summits, Chaozhou will be positioned as a global nexus for ceramic thought, attracting elite talents to actively engage with and contribute to innovation initiatives in the region, thereby elevating

global focus on Chaozhou[2].

(3) Implementation of the “Offshore R&D Center” Model: This initiative supports leading enterprises in establishing wholly-owned or joint-venture R&D centers in global hubs of materials science such as Aachen, Germany; Nagoya, Japan; and Massachusetts, USA, as well as in domestic innovation centers like Beijing, Shanghai, and Shenzhen. These centers will serve as “talent enclaves”, utilizing top local talents whose research findings will be translated back to Chaozhou. This aims to achieve the concept of “talent abroad, results returned to Chaozhou”.

(4) Launch of “Major Technological Tasks” as Competitive Challenges: The government or industrial alliances will announce the most urgent projects facing the industry as competitive challenges open to global teams. Allocating project funds in the millions or even billions, this approach seeks to attract top talents who can “bring in challenges” and “arrive with their teams”.

2.3.2 Local talent development program design

(1) The “Industry Professor” and “Dual-Appointment Engineer” systems serve to facilitate a bidirectional exchange of knowledge and expertise between core enterprise technologists and university professors. Enterprises establish “Chaozhou Intelligent Sanitary Ware Ceramic Industry Professor” positions within universities, selecting seasoned chief engineers to deliver systematic, theory-enhanced lectures grounded in practical engineering experience. Conversely, universities encourage professors to assume roles as “Chief Scientists” or “Vice Presidents of Technology” within enterprises, with their professional achievements significantly influencing academic promotion and evaluation. This initiative aims to realize a dynamic “revolving door” flow of talent across industry, academia, and research institutes.

(2) The “Industry-Academia-Research-Application” consortium deepens collaboration with universities to establish tangible research institutes or graduate school branches dedicated to jointly cultivating high-level applied talents such as master’s and doctoral candidates. Partnerships with internationally accredited organizations provide continuous, systematic advanced training for in-service engineers, conferring globally recognized professional certifications.

(3) The establishment of the “Chaozhou Intelligent Sanitary Ware Industry Academy” provides a continuing education platform featuring modularized courses intimately connected to various facets of intelligent sanitary ware ceramics production and design. This industrial university model delivers targeted, regular, and systematic training for pivotal talents, issuing nationally recognized certificates to implement localized training for core personnel.

(4) The “Chaozhou Intelligent Sanitary Ware Industry Intellectual Share Alliance”, led by the Chaozhou municipal government, assembles key talents from different enterprises to form temporary collaborative R&D teams aimed at jointly resolving complex technological challenges.

(5) The “Digital Craftsman” Elite Training Program encompasses comprehensive joint training initiatives that combine “digital intelligent manufacturing” with sanitary ware ceramic technology for young skilled workers. This program benchmarks training against engineering standards and culminates in certification as “Chaozhou Intelligent Sanitary Ware Digital Craftsmen”.

2.4 Construction of Industrial Public Service Platforms

(1) Product Testing and Quality Certification Service Platform

In response to the multiple technical standards involved in the intelligent sanitary ware industry, it is proposed that the government, leveraging third-party institutions, may establish specialized testing laboratories equipped with devices for evaluating water, electricity, and gas efficiency and safety, as well as materials’ antibacterial properties [3,4]. These professional laboratories should possess qualifications enabling collaboration with international certification bodies and be authorized to issue globally recognized certifications, such as water-saving credentials and eco-friendly product certifications[5].

(2) Intellectual Property Service Platform

This platform is designed to support intelligent sanitary ware enterprises by establishing patent information systems and intellectual property databases that facilitate patent retrieval, analysis, and application. It also aids in the strategic planning and consulting of intellectual property, while providing services related to

patent transfer, intellectual property transactions, and technology licensing, thus fostering the application and transformation of innovative achievements within the industrial chain.

(3) Industrial Design and Product Innovation Service Platform

Focused predominantly on product design and user experience, this platform may be subdivided into a product modeling design center and an industrial design center. It primarily offers enterprises services such as model design and fabrication, structural optimization, aesthetic design, and human-computer interaction design[6]. The objective is to assist small and medium-sized enterprises in advancing product development and enhancing innovation efficiency[7].

(4) Industrial Digitization Service Platform

Offering digital management systems encompassing production and supply chain management alongside data analytics[8], this platform integrates industrial technological information available in the market. It provides insights into market trends and product demand forecasts, thereby supporting enterprises in formulating more scientifically grounded development strategies.

(5) Technical Consultation and Standardization Service Platform

Through this platform, enterprises are enabled to comprehensively understand and interpret various standards, with opportunities to participate in the formulation of technical standards. Real-time access to international standards, industry technical benchmarks, and policy changes promotes the elevation of the overall technological level within the industry.

2.5 Regional Brand Promotion Measures

(1) Establishing a Regional Brand Identity

A unified regional identity should be created, featuring the tagline: “Chaozhou, Capital of Intelligent Sanitary Ware”. This identity will encompass a distinctive visual system, along with slogans and positioning, manifesting in enterprise product packaging, promotional materials, and exhibition promotions to forge a powerful and cohesive brand identity, positioning Chaozhou as a beacon of regional branding excellence.

(2) Organizing Systematic Product Brand Promotion Activities

Promotional efforts for intelligent sanitary ware

brands will adopt a dual approach of “online + offline”. Online initiatives will leverage both traditional and new media continuously, utilizing platforms such as Douyin and various short video channels to engage in thematic reporting, industry documentaries, and live broadcasts that illustrate product applications within lifestyle contexts, enhancing brand visibility and capturing market attention [9,10]. Offline promotion will include periodic exhibitions and trade fairs for intelligent sanitary ware products, inviting domestic and international buyers and designers to participate. Regularly scheduled product launches and technical forums will also be organized to elevate the industry’s recognition both domestically and globally.

(3) Establishing Intelligent Sanitary Ware Product Display and Experience Centers

An immersive experience center for the intelligent sanitary ware industry should be established in Chaozhou, featuring exhibits of products[11] such as smart toilets and intelligent cabinets. These displays will be organized around diverse lifestyle themes, including Smart Home, Urban Elegance, Healthy Living, and Technology Leadership, providing visitors with a striking visual experience that enhances the high-tech and innovative image of Chaozhou's intelligent sanitary ware brands.

(4) Creating a Brand Quality Assurance System

A high-quality certification standard system and consumer evaluation framework for intelligent sanitary ware products should be implemented locally in Chaozhou and across Guangdong Province. This will involve establishing robust quality supervision and evaluation mechanisms. Enterprises meeting certification standards and receiving favorable consumer assessments will be granted the rights to utilize the regional brand identity, thereby gradually cultivating an image of “High-Quality Intelligent Sanitary Ware Products” within the region.

3. Conclusion

The intelligent sanitary ware industry in Chaozhou is currently leveraging the Shenzhen-Chaozhou Intelligent Sanitary Ware Industry Collaborative Development Alliance to forge an industrial ecosystem epitomized by the mantra “Shenzhen Standards — Chaozhou Innovation — Global Market”. To systematically advance the sector’s transformation toward high-end

sophistication, intelligent innovation, and sustainable green development, Chaozhou must establish a comprehensive and multifaceted policy support framework that holistically propels the industry’s evolution.

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