
INDUSTRY OVERVIEW

The information and statistics set out in this section and other sections of this document were extracted from the Frost & Sullivan Report, which was commissioned by the Company, and from various official government publications and available resources from public market research. The Company engaged Frost & Sullivan to prepare the Frost & Sullivan Report in connection with the [REDACTED]. The information from official government sources has not been independently verified by us, the Joint Sponsors, the [REDACTED], the [REDACTED], the [REDACTED], the [REDACTED], the [REDACTED], the [REDACTED], any of their respective directors and advisers, or any other persons or parties involved in the [REDACTED] (other than Frost & Sullivan), and no representation is given as to its accuracy.

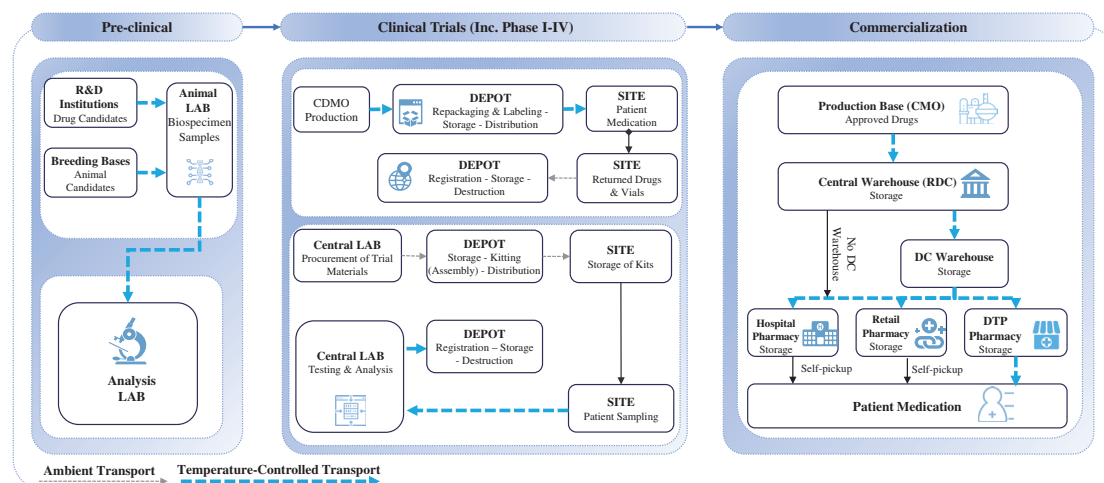
OVERVIEW OF THE PHARMACEUTICAL AND LIFE SCIENCE TEMPERATURE-CONTROL SUPPLY CHAIN SERVICES MARKET

Pharmaceutical and life science temperature-control supply chain services are traceable, integrated logistics and delivery solutions spanning the biopharmaceutical lifecycle from R&D and clinical trials to commercial distribution, supported by validated temperature-control technologies and GxP-compliant processes. They typically cover high-value products such as biologics, vaccines, CGT products, and biospecimens, connecting laboratories, clinical sites, manufacturers, channels, and patients to preserve product quality and stability and to protect clinical-trial data integrity through continuous temperature control and compliance management.

Driven by rising demand for biologics and vaccines and broader adoption of emerging therapies such as bispecific antibodies, cell therapies, and ADCs, the global market increased from US\$20.7 billion in 2020 to US\$31.3 billion in 2025, representing a CAGR of 8.7%, and is projected to reach US\$45.1 billion by 2030, representing a CAGR of 7.3% from 2026 to 2030. In China, the biopharmaceutical sector is shifting from generics-led growth toward innovation-led development, with rising R&D investment, increasing penetration of biologics and innovative drugs, and tighter cold-chain assurance requirements across vaccination and chronic-disease management scenarios, supporting a move from transport-focused services to more systematic quality-assurance and regulatory-compliance capabilities. As a result, China’s market grew from RMB18.8 billion in 2020 to RMB28.0 billion in 2025, representing a CAGR of 8.3%, and is projected to expand to RMB43.4 billion by 2030, representing a CAGR of 8.9% from 2026 to 2030.

The biopharmaceutical value chain spans pre-clinical, clinical trials, and commercialization, each with distinct supply-chain requirements. pre-clinical and clinical-trial logistics typically involve small, frequent, and time-sensitive shipments with stringent temperature control and regulatory compliance, while commercialization is characterized by large-scale, stable distribution that depends more on nationwide network coverage, cost efficiency, and compliant delivery at scale.

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Note: For global MRCT, the DEPOT is divided into Central Depots and Regional/Local Depots

Source: Frost & Sullivan analysis

Biopharmaceutical products feature complex molecular structures and highly sensitive active ingredients, making temperature excursions or chain-of-custody failures potentially irreversible and particularly critical in clinical trials where service objects include IMPs, comparator or reference drugs, and non-reproducible biological samples. As a result, clinical trial temperature-control supply chain services are defined less by transportation capacity and more by an integrated delivery capability that combines validated temperature control, regulatory access, and end-to-end traceability, thereby creating higher entry barriers and stronger customer stickiness than general logistics. These barriers are underpinned by a highly integrated three-layer stack of hardware and materials, software and data, and standardized operating processes, coupled with validation, operational networks, and quality management to ensure delivery stability, compliance, and scalability under complex trial conditions.

Under fragmented service models, pharmaceutical companies often rely on multiple vendors across logistics, storage and packaging, which increases coordination costs, fragments data visibility and blurs accountability. As global R&D activity rises and regulatory requirements tighten, integrated end-to-end providers have increasingly become the preferred model by combining temperature-control execution with unified IT-enabled traceability, thereby reducing compliance blind spots and trial-and-error costs and improving overall operating efficiency.

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OVERVIEW OF GLOBAL CLINICAL TRIAL TEMPERATURE-CONTROL SUPPLY CHAIN SERVICES MARKET

Clinical trial temperature-control supply chain services support pharmaceutical R&D from discovery to global multi-center trials and can be broadly categorized into two segments: (1) Clinical Trials, which are highly regulated and execution-intensive, covering temperature-controlled storage, distribution and reverse logistics for IMPs, comparators and biospecimens, together with selected compliance-critical activities such as packaging and labeling and cross-border handling; increasing adoption of MRCTs is reinforcing demand for cross-border cold-chain capabilities and end-to-end compliant delivery; and (2) Life Science Research, which provides lab-to-lab delivery of reagents and biological samples for universities, research institutes and pharmaceutical R&D centers, with shipments typically small, frequent and time-sensitive and therefore requiring stable temperature integrity to support research continuity and reproducibility.

Distinct from traditional logistics, the clinical trial temperature-control supply chain services market is characterized by high entry barriers, high service value and strong growth potential, reflecting its critical role in the biopharmaceutical value chain. Entry barriers are driven by stringent quality and compliance expectations from trial sponsors and multinational pharmaceutical companies, frequent audits and validation requirements, and the need for substantial investment and long-term capability build-up in self-operated networks, validated temperature-control assets, and end-to-end traceable intelligent IT systems. Service value is underpinned by highly sensitive and often non-reproducible service objects such as clinical samples and customized drugs, where delivery reliability and compliance are directly linked to R&D outcomes and clinical data integrity, resulting in relatively lower price sensitivity and greater willingness to pay for quality and responsiveness. Growth is supported by expanding innovative drug pipelines and continued advances in modalities such as CGT and mRNA, together with accelerating globalization of Chinese pharmaceutical companies, which is increasing demand for high value-added cross-border cold-chain services.

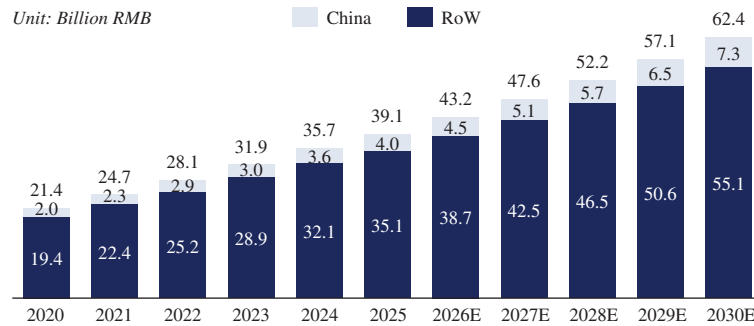
The rapid expansion of global pharmaceutical R&D activities provides a fundamental foundation for the growth of the supply chain services market. Global R&D spending by pharmaceutical companies increased from US\$204.8 billion in 2020 to US\$277.6 billion in 2024, representing a CAGR of 7.9%. This spending is expected to further grow to US\$392.9 billion by 2030, demonstrating a CAGR of 6.0% from 2024 to 2030. In line with the expanding R&D budgets, the proportion allocated to clinical trial-related costs has continued to rise. Among these, clinical trial supply chain services, including GMP-compliant packaging and labeling, temperature-control storage and distribution, and biological sample management, have become a major cost component alongside clinical service fees.

Against this backdrop, the global clinical trial temperature-control supply chain services market has exhibited strong growth with relatively countercyclical characteristics. The chart below illustrates the global clinical trial temperature-control supply chain services market, with China shown as a key component.

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Global and China Clinical Trial Temperature-Control Supply Chain Services Market Size, 2020-2030E

Period	China	RoW	Total
2020-2025	14.9%	12.6%	12.8%
2026E-2030E	12.7%	9.3%	9.7%



Source: Listed companies' public filings, literature research, Frost & Sullivan analysis

Growth Drivers and Development Trends

- Expanding and globalizing clinical development pipelines.** Rising IND activity and MRCT adoption are enlarging the clinical project base and increasing cross-border execution needs. IND acceptances have remained relatively stable at approximately 1,700–2,200 cases per year in the United States since 2020, while China's accepted IND applications increased from 1,548 in 2020 to 3,073 in 2024.
- Technology-driven growth from advanced therapies.** Advanced therapies such as CGTs require stringent temperature control, including 2–8°C cold chain, deep cryogenic conditions and liquid nitrogen vapor-phase solutions, increasing demand for high-technology, high value-added cold-chain and sample management services.
- Rising outsourcing penetration.** To address mounting R&D cost pressures and increasingly stringent regulatory oversight, pharmaceutical companies are progressively divesting non-core logistics and supply chain functions. A growing number of high value-added activities — such as GMP-grade packaging and labeling, and sample retrieval and destruction, are being outsourced to professional service providers with integrated capabilities, driving a sustained increase in the outsourcing ratio of supply chain services.
- End-to-end digital transformation.** Regulators and clients are placing higher demands on data integrity, temperature records, and traceability, accelerating the industry's shift toward end-to-end visibility, real-time monitoring, comprehensive data traceability, and AI-enabled decision-making. Digital platforms and Internet of Things (IoT) capabilities are increasingly becoming critical competitive barriers for clinical trial supply chain service providers.
- Earlier-stage integration and service consolidation.** Leading providers are increasingly involved from protocol design and feasibility assessment, offering one-stop solutions across inventory, routing, temperature-control design, reverse logistics and destruction management.

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Competitive Landscape

The global clinical trial temperature-control supply chain services market is characterized by high entry barriers. As a result, market share is increasingly concentrating among a limited number of leading players. According to Frost & Sullivan, measured by revenue in 2025, we ranked as the ninth-largest clinical trial temperature-control supply chain service provider globally, with a market share of 1.5%. We were also the only China-based participant among the global top ten market players. Collectively, the top ten market participants accounted for approximately 59.2% of total market share, indicating a relatively high level of industry concentration.

The table below sets out the global ranking of clinical trial temperature-control supply chain service providers by revenue in 2025.

Ranking	Company	Revenue (RMB in millions)	Headquarter	Independent third-party player	Market share
1	Company A	5,334.5	United States	No	13.6%
2	Company B	4,605.8	United States	Yes	11.8%
3	Company C	3,798.7	United States	Yes	9.7%
4	Company D	3,087.6	United States	No	7.9%
5	Company E	1,923.1	UK	No	4.9%
6	Company F	1,563.6	United States	No	4.0%
7	Company G	932.7	United States	No	2.4%
8	Company H	781.8	Singapore	Yes	2.0%
9	The Company	597.9	China	Yes	1.5%
10	Company I	546.9	France	Yes	1.4%
Top 10 combined					59.2%

Notes: Independent third-party player refers to a service provider that is not controlled by a pharmaceutical manufacturer, CDMO, or drug distributor, and operates as a neutral service provider without structural conflicts of interest.

- (1) Company A was founded in 1974 and is headquartered in the United States. It provides integrated services across drug development, manufacturing, packaging and lifecycle management.
- (2) Company B was founded in 1980 and is headquartered in the United States. It specializes in clinical trial logistics and support services, including storage, distribution, route validation and temperature-controlled logistics solutions.
- (3) Company C was established in 1969 with its headquarters in the United States. It provides temperature-controlled transportation, storage, distribution, packaging and end-to-end supply chain management for clinical trial materials.

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- (4) Company D was founded in 2007 and is headquartered in the United States. It provides advanced drug delivery technologies and integrated development-to-commercialization solutions for pharmaceuticals, biologics and consumer health products.
- (5) Company E was established in 1968 with its headquarters in the United Kingdom. It offers precision medicine and drug development services, including clinical trial supply management, clinical technical services, commercial manufacturing and packaging.
- (6) Company F was founded in 1971 and is headquartered in the United States. It provides end-to-end drug development, manufacturing, packaging and logistics services from early-stage development to commercialization.
- (7) Company G was founded in 1982 and is headquartered in the United States. As a CRO, it provides clinical research solutions from drug discovery to post-marketing services.
- (8) Company H was established in 1922 and is headquartered in Singapore. It provides healthcare solutions covering pharmaceutical and medical device distribution, commercialization services, clinical trial support and digital healthcare.
- (9) Company I was founded in 1999 and is headquartered in France. It provides temperature-controlled logistics solutions for life sciences and healthcare, including cryogenic transportation for biological samples, pharmaceuticals and medical devices.

Source: Listed companies’ public filings, literature research, Frost & Sullivan analysis

The China clinical trial temperature-control supply chain services market remains relatively fragmented. According to Frost & Sullivan, measured by revenue in 2025, we ranked as the largest clinical trial temperature-control supply chain service provider in China, with revenue of RMB580.4 million and a market share of 14.4%.

The table below sets out the ranking of the leading clinical trial temperature-control supply chain service providers in China in 2025, measured by revenue.

Ranking	Company	Revenue (RMB in millions)	Market share
1	The Company	580.4	14.4%
2	Company A	483.5	12.0%
3	Company D	291.7	7.3%
4	Company J	241.3	6.0%
5	Company H	95.3	2.4%
	Top 5 combined		42.1%

Note:

- (1) Company J: Established in 2011 and headquartered in Beijing, mainly engaged in pharmaceutical cold-chain logistics services, integrating warehousing and transportation management, with a focus on biopharmaceuticals, life sciences, drug R&D, clinical research, and testing-related temperature-controlled logistics services.

Source: Listed companies’ public filings, literature research, Frost & Sullivan analysis

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Key Success Factors

- ***Deep industry expertise and client trust.*** Clinical trial supply chain service providers must execute end-to-end clinical drug and sample flows across Phase I–IV with strict process control; lengthy validation and audits mean once embedded, projects can be reused across MRCT and DTP/DFP expansion, resulting in high switching costs and strong stickiness.
- ***Comprehensive GxP compliance and international quality systems.*** Market players must run GxP-aligned quality systems meeting multinational audit standards including CAPA, change control and data integrity, and support cross-border QP audits and multi-jurisdiction validation of packaging, transport and storage temperature zones.
- ***Highly covered and controlled self-operated networks.*** With MRCTs becoming more common, service providers need both domestic last-mile delivery capabilities and stable overseas nodes in key regions such as North America, Europe, and Asia-Pacific. These networks must support compliant customs clearance, cold chain validation, international route management, and contingency response. Providers relying heavily on outsourced overseas agents often face challenges in meeting strict timeliness, temperature control, and audit requirements.
- ***Vertical integration of technology and services.*** Providers must integrate temperature-control technologies, material R&D, and equipment manufacturing. As sensitive therapies (e.g., CGTs, ADCs) proliferate, standardized third-party packaging becomes insufficient. In-house VIP and PCM capabilities optimize costs, control risks, and significantly elevate entry barriers.
- ***GxP-compliant integrated intelligent IT platforms.*** Clinical supply chains demand end-to-end visibility and auditability. Providers require integrated systems (OMS, WMS, TMS, IoT) meeting strict GxP data integrity standards. These digital capabilities are essential for supporting decentralized trials, cross-border collaborations, and overall service scalability.
- ***Full-lifecycle R&D-to-commercialization flywheel.*** Clinical-stage quality systems, route validations, and SOPs are highly reusable post-approval. Early integration into clients’ clinical pipelines secures long-term commercial contracts, generating durable competitive advantages and path dependence that deter new entrants.

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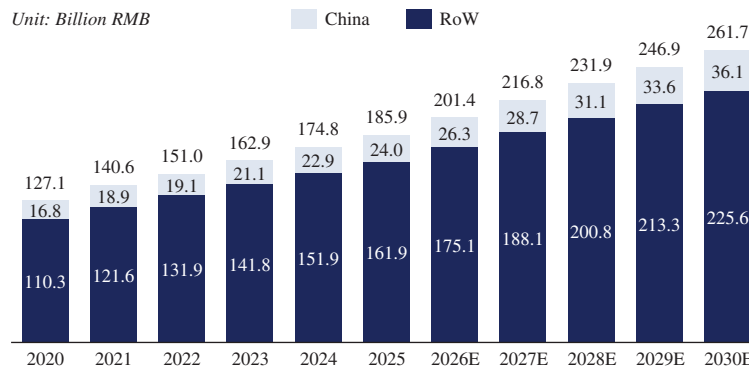
OVERVIEW OF GLOBAL COMMERCIAL MEDICAL PRODUCTS TEMPERATURE-CONTROL SUPPLY CHAIN SERVICE MARKET

Commercial medical products temperature-control supply chain services refer to post-approval solutions supporting nationwide storage, cold-chain transportation and last-mile delivery for pharmaceuticals and medical devices, underpinned by multi-temperature-zone infrastructure and compliance with applicable regulatory requirements. Compared with clinical trial supply chain services, commercialization-stage demand places greater emphasis on scalable coverage, stable fulfillment and cost-efficient operations for large-scale distribution to end patients. Globally, demand is driven by accelerating innovative drug approvals, rising biologics penetration and normalized vaccination demand; in China, growth is further supported by a rising share of cold-chain categories and high value-added innovative drugs, increasing demand for multi-temperature-zone capabilities and standardized, compliance-oriented operations.

The table below sets out the market size of the global and China commercial medical products temperature-control supply chain services market, measured by revenue.

Global and China Commercial Medical Products Temperature-control Supply Chain Services Market Size, 2020-2030E

Period	China	RoW	Total
2020-2025	7.4%	8.0%	7.9%
2026E-2030E	8.3%	6.5%	6.8%



Source: Listed companies' public filings, China Federation of Logistics and Purchasing, Frost & Sullivan analysis

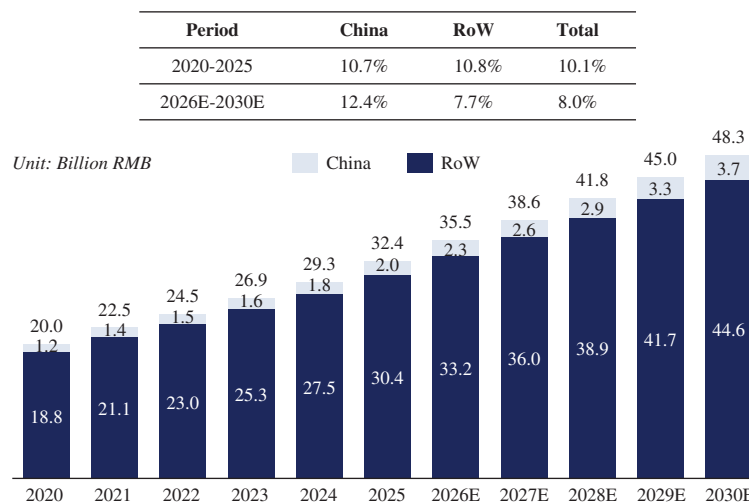
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GLOBAL AND CHINA PROFESSIONAL BIOPHARMACEUTICAL TEMPERATURE-CONTROL EQUIPMENT AND ADVANCED MATERIALS MARKET OVERVIEW

Professional biopharmaceutical temperature-control equipment and advanced materials refer to specialized packaging, containment equipment, and functional materials designed to meet stringent temperature-control and regulatory compliance requirements across the R&D, clinical trial, and commercialization stages. As downstream temperature-control supply chain services become more specialized and integrated, these products are evolving from general consumables into critical components embedded in end-to-end service offerings, with demand increasingly driven by higher performance requirements for temperature precision, validation, and pharmaceutical-grade suitability. In China, adoption of high-performance passive packaging solutions such as VIP and PCM is rising, alongside a shift toward localized procurement and scenario-based validation and customization, supporting the strengthening participation of Chinese manufacturers in the broader global value chain.

The table below sets out the market size of the global and China professional biopharmaceutical temperature-control equipment and advanced materials market, measured by revenue.

Global and China Professional Biopharmaceutical Temperature-Control Equipment and Advanced Materials Market Size, 2020-2030E



Source: Listed companies' public filings, China Federation of Logistics and Purchasing, Frost & Sullivan analysis

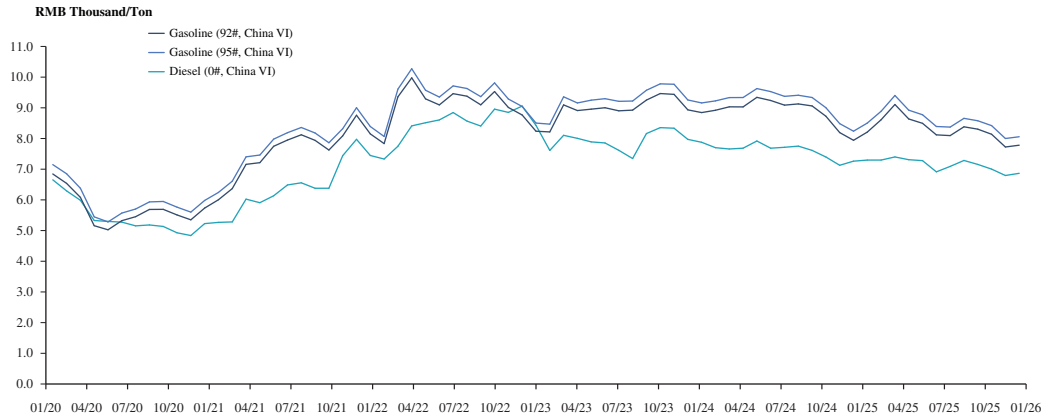
Cost Analysis

For biopharmaceutical temperature-control supply chain service providers, transportation is a major cost component, and fuel is typically the most material and volatile variable cost within transportation. Fuel-price fluctuations affect cost per kilometer, overall operating costs, and pricing flexibility, thereby influencing profitability and the degree and timing of cost pass-through.

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The chart below sets out the monthly price trends of gasoline and diesel in China from January 2020 to December 2025.

Monthly Price Trends of Gasoline and Diesel in China, 2020-2025



Source: National Bureau of Statistics of China, Frost & Sullivan analysis

SOURCE OF INFORMATION

This section contains information extracted from the Frost & Sullivan Report prepared by Frost & Sullivan independently, which is commissioned by us in connection with the [REDACTED]. We expect to pay Frost & Sullivan a total of RMB680,000 for the Frost & Sullivan Report and our use of the report. Frost & Sullivan is a consulting company which provides industry consulting services, commercial due diligence and strategic consulting services for a variety of industries. We are of the view that the payment of such fee does not impair the fairness of the conclusions drawn in the Frost & Sullivan Report. We have extracted certain information from the Frost & Sullivan Report in this section, as well as in the sections headed “Summary,” “Risk Factors,” “Business,” “Financial Information” and elsewhere in this document to provide our potential [REDACTED] with a more comprehensive presentation of the industry in which we operate. Frost & Sullivan conducted (i) primary research, which involved discussing the status of the industry with certain leading industry participants, and interviews with industry experts on a best-effort basis to collect information in aiding in-depth analysis; and (ii) secondary research, which involved reviewing government statistics, industry association publication, company reports, independent research reports and data based on its own research database.