Asia Green Fund

2024 GREEN IMPACT REPORT

Invest·Greenergize China·Impact Asia

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MESSAGE FROM THE CHAIRMAN

Bo Bai
Chairman & Founder

“Maintain core principles in times of change and drive progress from a stable foundation.”

Amid the tides of our era, “change” stands as a constant theme. The turbulence in the macro environment and the intricate evolution of geopolitics are exerting a profound impact on the global economic landscape and the trajectory of development. Meanwhile, green development has moved beyond the realm of concept to practice action, technological innovation is driving industrial transformation - fueling the vigorous growth of emerging industries while propelling the accelerated transformation of traditional industries—such that the ecological landscape of China's private equity market is thus being redefined.

Amid such sweeping shifts of our era, Asia Green Fund (AGF) has remained steadfast in its focus on the core of long-term value investing. Guided by the unwavering conviction and strategy of “standing firm amid change to navigate uncertainty”, it forges ahead steadily amid the currents of the times.

2024

One constant is our original mission and sense of purpose.
Since its establishment in 2016, AGF has remained true to our original aspiration and mission: “Invest · Greenergize China · Impact Asia”. We focus on investment opportunities for industrial upgrading and green transformation, all deriven by technological innovation. Our team brings together interdisciplinary professionals with expertise in “technology + industry + finance” backed by profound investment experience and extensive industry resources - enabling the deep integration of industrial insights and capital operations.
Proactively identifying high-potential green projects with technological innovation capabilities and entrepreneurs who embody outstanding entrepreneurial spirit, we have invested in over 30 companies to date. These investment span sectors including green chemicals, clean energy, advanced manufacturing, and transportation and logistics, leveraging the power of capital to accelerate the development of green new productive forces.

Another constant is our investment philosophy and strategy.
In terms of investment philosophy, we have always upheld the principle of dual commitment to financial returns and green impact. We embed this philosophy into the fund’ s DNA. This philosophy is deeply integrated throughout the full investment cycle—from fundraising and deployment to portfolio management and exit.
For its investment focus, we center on the “two ends”—namely early-stage and late-stage enterprises. Leveraging our strengths in resources and experience, the fund provides targeted support tailored to the needs of enterprises at different development stages. Furthermore, through years of practice and refinement, we have developed a set of distinctive and effective investment methodology, along with a matching investment decision-making process.

A Third constant is our responsibility and commitment to LPs.
We firmly believe that the trust and support of limited partners (LPs) are the cornerstone of the fund’ s long-term development. To fulfill our commitment to delivering financial returns to LPs, we uphold a high standard of professionalism and prudence throughout the investment process. Through rigorous project screening, scientific investment decision-making, and robust post-investment management, we are committed to enhancing fund performance.
Furthermore, we attach great importance to the timeliness and transparency of information disclosure. We provide LPs with regular and comprehensive updates on fund investment and operations, ensuring LPs stay informed of the fund’ s performance in a timely and accurate manner.

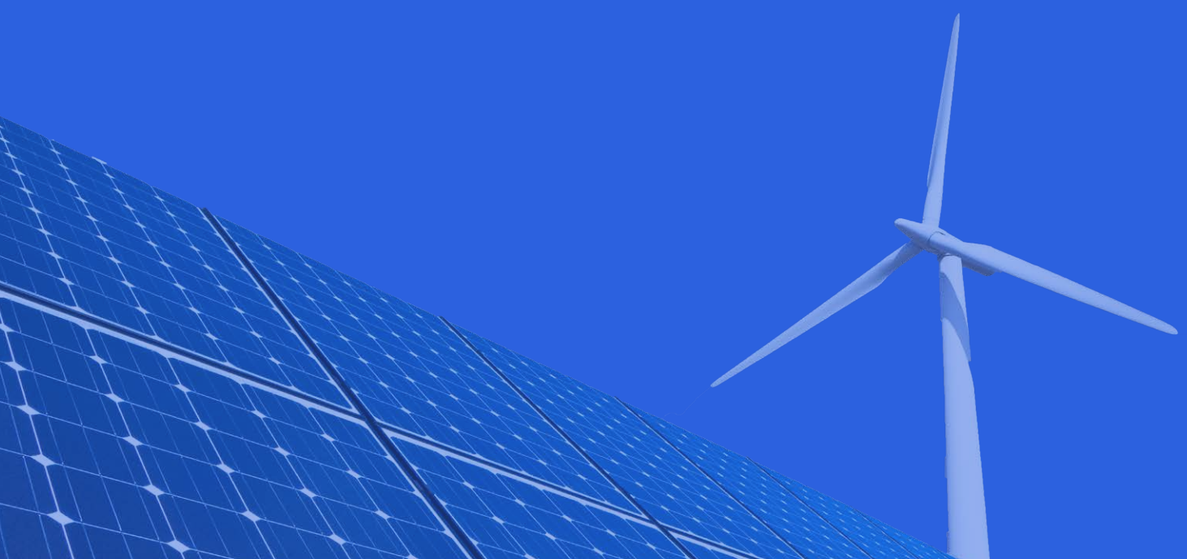
Standing at the crossroads of a rapidly changing era, AGF embraces change with a more open mindset, continuing to force ahead in the field of green impact investment. We will gain insights into the evolving trends of the macroenvironment and private equity industry from an industrial perspective, proactively seizing new opportunities amid the wave of technological advancement. Meanwhile, we look forward to collaborating with more partners—with capital as the driver and innovation as the guide—to jointly explore new growth engines and inject stronger momentum into global sustainable development.

About Asia Green Fund

To Become a Global Benchmark for Green Impact Private Equity Fund

Founded in 2016, Asia Green Fund (AGF) focuses on green impact investment. Guided by the mission of "Invest, Greenergize China, Impact Asia", and upholding the investment philosophy of "pursuing both financial returns and environmental benefits", AGF focuses on SDRI (Specialized, Refinement, Differential and Innovation) enterprises –with a key focus on technology-driven investment opportunities for industrial upgrading and green transformation.
AGF is one of the earliest private equity investment institutions in China to conduct systematic quantitative evaluation and authoritative certification of green impact investment. Leveraging its strong investment performance and market influence, it has repeatedly gained industry recognition and been honored with awards such as "Best Investment Institution in the Carbon Neutrality Industry", "ESG Special Contribution Institution", and "Outstanding Investment Institution in the New Materials Industry".

$550MN	$1.8BN	$490MN	44%	47%
Asset Under Management of Directly Managed Funds	Asset Under Management of Co-managed Funds	Asset Under Management of Overseas M&A Fund	Ratio of SDRI Enterprises	Ratio of Portfolios refinancing



FUND FEATURES & POSITIONING

Asia Green Fund integrates the professional capabilities and deep industry expertise leading global private equity firms, positioning itself as the most locally attuned Multi-CVC service platform in China.

To better practice the concept of green impact investing, AGF continuously explores new positioning that aligns with the evolving demands of the times and the industry. AGF strives to leverage its professional strength to drive the in-depth development of green investment and achieve a win-win situation between economic and environmental benefits.

As one of the earliest domestic private equity institutions focused on green impact investing, AGF draws on the professional foundation and resource network of an**"Renowned international PE"** to gain deep insights into global industrial transformation trends and accumulate cutting-edge investment experience in the sector. Meanwhile, the fund adheres to a pragmatic **"Localization"** philosophy: AGF roots itself deeply in the domestic market, accurately grasps industrial characteristics and policy orientations, and develops an investment strategy that combines international perspective with local adaptability. Adopting the **"Multi-CVC"** model, AGF links diverse industrial resources at home and abroad, builds an innovative ecosystem of in-depth "capital + industry" synergy, and continues to focus on strategic emerging sectors such as new materials, new energy, and high-end manufacturing.

Renowned international PE	A disciplined "regular army" with global best practices, combining rigorous investment frameworks and cross-border transaction experience. Scientific due diligence processes rooted in technical evaluation and commercial viability analysis. Proven capability to navigate cross-border M&A, restructuring, and multi-stakeholder negotiations.	Investment team with deep academic backgrounds and >15 years of experience at global top-tier PE firms, specializing in tech assessment and green commercialization. Successfully led cross-border M&A deals, value creation, disposal of non-performing asset, bankruptcy restructuring: DuPont Clean Technologies, Restructuring of Chongqing Steel and etc.
Localization	Strong, longstanding ties with state-owned enterprises (SOEs) and government authorities. Sharp insights into government policies and regulatory trends. Innovative approaches to exit strategies.	One of the few market-oriented firms to secure investment from Three Gorges Capital. Anticipated industry trends early, prioritizing "Carbon Neutrality" and "Advanced Materials" as core investment themes.
Multi-CVC	Tailored solution for corporate investors. Unlocking value through ecosystem integration. Collaborative approach to investment & innovation. Generating strategic growth opportunities.	Leverage a diverse domestic and international resource network to identify high-potential early-stage and M&A investment opportunities. Deep industry expertise enables the uncovering of "underwater" projects, unlocking access to unique opportunities with high growth potential.

ASIA GREEN FUND

ESG PRACTICE

MESSAGE FROM THE FOUNDING PARTNER

Jin Zhang
Founding Partner

Asia Green Fund was established in 2016. At the time, ESG was still an “obscure concept” that only a handful of people paid attention to. With its rapid development in China over recent years, it has become a focal point of the industry. We have always firmly believed that ESG is an inevitable choice for long-termism, and have integrated ESG into the core of the company’ s investment philosophy and strategy. However, the practice of ESG has never been something that can be accomplished overnight or this concept to take root and deliver tangible results, a solid support system is essential. As we move forward steadily on our journey of sustainable development, the key to our progress lies in the backing of three core elements.

First, we institutionalize ESG principles into the system and mechanisms that form the foundation of our organization.
At the governance structure level, we have developed a comprehensive ESG management system, established a robust ESG governance framework, and continuously optimized it to ensure effective execution. At the operational level, we integrate ESG principles throughout the entire investment lifecycle—fundraising, investment, portfolio management, and exit, building a green investment system with distinct institutional characteristics. This approach ensures ESG is not merely a superficial slogan, but penetrates every key link of fund operations—laying a solid organizational foundation for long-term ESG implementation.

Secondly, we independently explore our own evaluation system and methodology to turn green impact into quantifiable value.
In the early stage of ESG development in China, external resources were scarce—there were no mature reference frameworks or off-the-shelf evaluation tools available in the market. As a pioneer, we chose to achieve independent breakthroughs “from scratch”: we established a dedicated Green Technology Research Institute and developed a comprehensive green impact assessment system, known as CNGIAS (China Green Impact Assessment System). This system enables quantitative tracking and evaluation of carbon emissions for both our own operations and our portfolio companies, and has obtained certification from Bureau Veritas, an international authoritative organization. By building a scientific, transparent, and authoritative assessment framework, we aim to present the results of green impact investing and the carbon reduction achievements of our portfolio companies through quantifiable data.

Finally, we continuously deepen our post-investment value creation to build bridges and pave the way for portfolio companies.
We deeply integrate ESG principles into our post-investment empowerment framework, with the goal of organically aligning ESG with the strategic planning of our portfolio companies and help them identify development paths that best suit their unique needs. As ESG gains mainstream traction in China and external resources become more abundant, we aspire to act as a “connector” to co-build ESG capabilities with enterprises—focusing on resource integration from “1 to N”. Beyond imparting mature ESG concepts to enterprises, we also connect them with high-quality resources and establish industry exchange platforms. This way, ESG truly becomes a value-added factor for enterprises, helping them enhance their core competitiveness.

Throughout our journey in green impact investing, we deeply recognize that implementing ESG is a difficult but right endeavor. We are extremely grateful to our Limited Partners (LPs), portfolio companies, and partners for their high recognition of our green impact investment philosophy and their strong support—this has made the “difficult” journey warm and meaningful, and strengthened our resolve to stay on the “right” path.

ASIA GREEN FUND

ESG Milestones

2016

AGF was established, pioneering the practice of green impact investing in China.

2018

Formulated the Green Impact Investment Principles, requiring a green impact assessment for every investment project submitted to the Investment Committee.

2020

Became a signatory to the UN PRI and joined the GIIN. Released the first ESG Policy.

2021

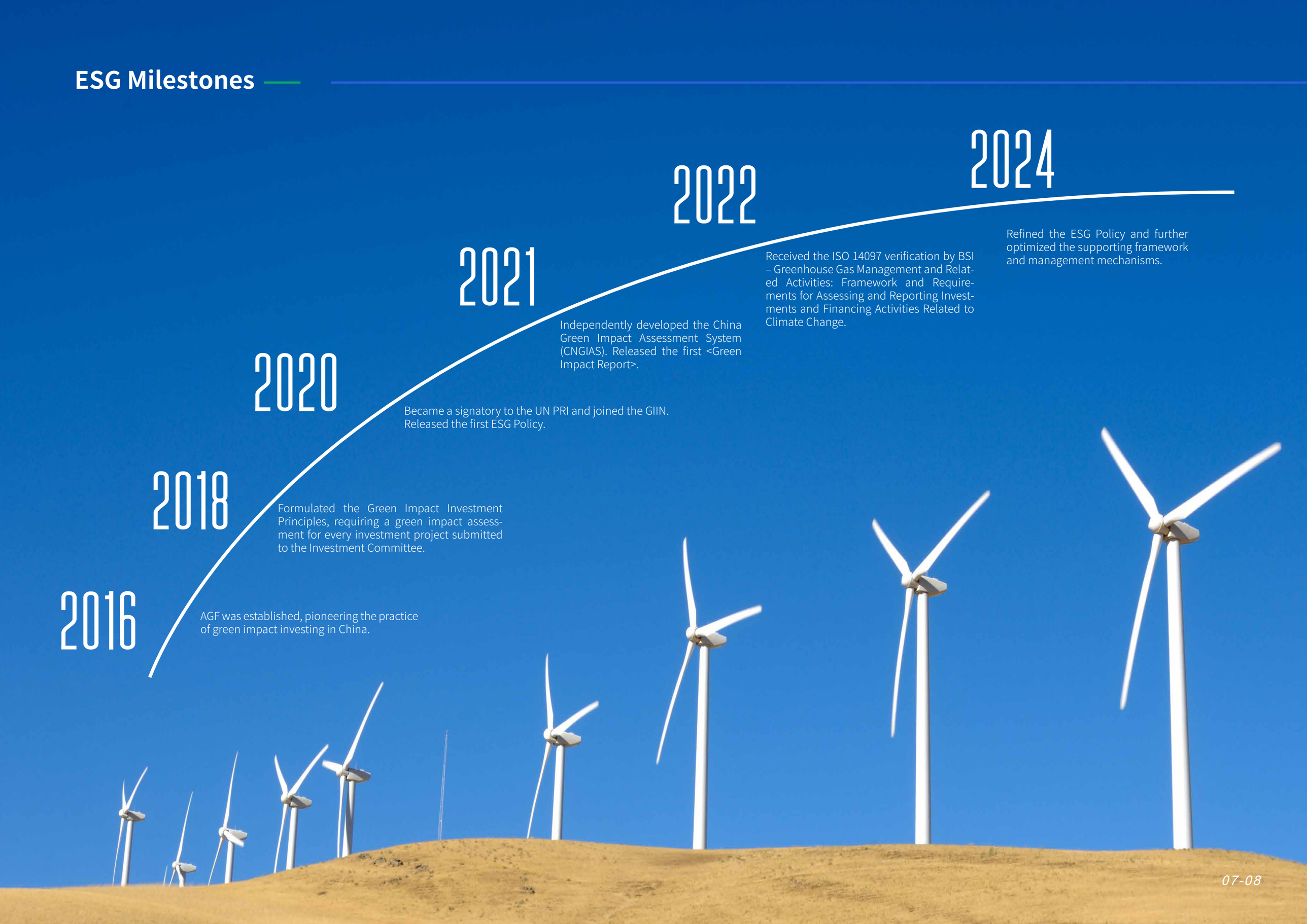
Independently developed the China Green Impact Assessment System (CNGIAS). Released the first <Green Impact Report>.

2022

Received the ISO 14097 verification by BSI – Greenhouse Gas Management and Related Activities: Framework and Requirements for Assessing and Reporting Investments and Financing Activities Related to Climate Change.

2024

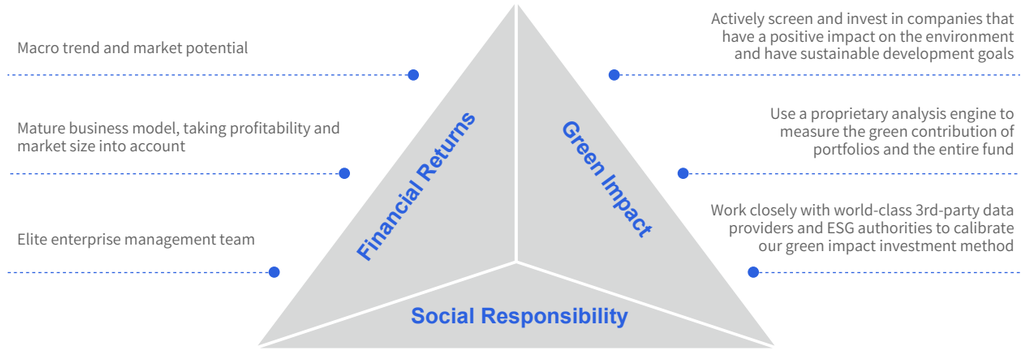
Refined the ESG Policy and further optimized the supporting framework and management mechanisms.



GREEN IMPACT INVESTMENT PHILOSOPHY

Asia Green Fund has upheld the investment philosophy of pursuing both financial returns and green impact. With a firm commitment to long termism, we have deeply embedded ESG principles into our investment decision-making and post-investment management processes. By leveraging the power of patient capital, we aim to help portfolio companies create long-term value and advance the sustainable transformation of industries.

Adhere to the Philosophy with "Financial Returns" and "Green Impact" as the Core



AWARDS

Asia Green Fund's sustainable investment practices have been consistently recognized by the industry for their excellence and leadership.

China's Top30 Best Investment Institution in Carbon Neutrality Industry

CV INFO

Excellent Investment Institution in Carbon Neutrality of Golden Bull

China Securities Journal

Best ESG Practice VC Institution

CYZONE

GREEN IMPACT INVESTMENT COMMITMENT

We adhere to our mission of "Invest · Greenergize China · Impact Asia", investing in strategic emerging industries through market-oriented approaches, driving rapid industrial development with the power of capital, and amplifying the green impact of enterprises.

Embedding ESG standards throughout the entire investment lifecycle, with particular emphasis on quantifiable indicators of enterprises' green benefits (E) in investment decisions, to ensure that every investment contributes positively to environmental sustainability and social progress.

We provide full-lifecycle empowerment to portfolio companies, promoting and influencing them to embrace ESG principles, assisting in formulating ESG strategies, and endowing them with sustainable development value with enhanced competitiveness.

Proactively building a "Green Investment Ecosystem", engaging in extensive collaboration with investors, portfolio companies, industry associations, research institutions, third-party authoritative certification/assessment bodies, and carbon trading platforms. This facilitates efficient resource alignment, expanding the scale and social impact of ESG investments.

Adhering to the principles of information disclosure and transparency, regularly releasing <Green Impact Reports> to investors, portfolio companies, the public, and international impact investment organizations, and proactively subjecting ourselves to public oversight.

GREEN IMPACT INVESTMENT ECOSYSTEM

Guided by the principles of responsible investment, Asia Green Fund deliberately and systematically connects stakeholders—including investors, portfolio companies, authoritative institutions, data institutions, the public, and international organizations—closely through investment activities. It builds a Green Impact Investment Ecosystem to drive the development of green impact.

Horen and Siemens:
A Joint Effort to Advance Green Manufacturing

Asia Green Fund has always regarded post-investment empowerment as core strategy. By building a robust “Green Investment Ecosystem”, AGF systematically connects multi-stakeholder resources, tap deeply into the value of the industrial chain's upstream and downstream sectors, and precisely links its portfolio companies to key industry resources—forming a virtuous cycle of “investment-empowerment-collaboration”.

In 2019, AGF invested in Horen-a leading enterprise in China’s digital low-carbon packaging industry. Beyond providing capital support, AGF used ESG strategic development empowerment as a bridge to facilitate in-depth cooperation between Horen and Siemens, a world-leading technology enterprise.

As early as 2023, leveraging its full-industry-chain capabilities in technological R&D and digital circular operations, Horen has successively partnered with multiple supplier partners of Siemens China to provide solutions covering circular packaging technical consulting, R&D design, and operation & warehouse setup—laying a solid foundation for future partnership.

In June 2024, at the first Siemens Sustainability Forum, Horen was recognized as a “Green Technology Innovation Partner” and joined the first cohort of strategic collaborators in the Siemens Net Zero Pioneer Program, alongside DHL, Deloitte, SUNWODA, the China ESG Alliance, and other enterprises and institutions.

In November of the same year, Horen and Siemens officially signed a strategic memorandum of understanding at the 7th China International Import Expo, pledging to deepen collaboration in the field of green logistics and returnable packaging. As a world-leading provider of industrial automation and digital solutions, Siemens has been proactively leveraging digital technology innovation to co-create a green ecosystem with partners from all sectors. Through this cooperation, Siemens will leverage its technological expertise and global resources to provide Horen with multidimensional support, accelerating the green transition of logistics and packaging enterprises.

In terms of technological and digital innovation, the two parties jointly launched the “Heavy-Duty Loop”—a circular packaging solution tailored for new energy vehicle (NEV) motor logistics—based on Siemens’ X-Carbon Footprint platform. This solution is specifically developed for high-precision, heavy-duty components of electric vehicle motors, such as motor stators and shafts Compared to traditional disposable non-recyclable packaging materials, Heavy-Duty Loop can reduce carbon emissions by approximately 80% throughout the product lifecycle, which will significantly advance carbon emissions reduction in the automotive components sector. Meanwhile, through Siemens' trusted precision digital technology, the two parties will accurately quantify the carbon footprint of logistics packaging across the entire supply chain. Based on an end-to-end data foundation, they will drive green transformation across the entire value chain to jointly serve the goal of industrial decarbonization. This approach ensures that green value is accurately measurable, reliable, and certifiable, strongly facilitating the implementation of enterprises’ ESG strategies.

On the front of business expansion and overseas empowerment, Horen has leveraged Siemens’ digital business platform Xcelerator to conduct diverse innovative practices. It provides customized circular packaging solutions for multiple component suppliers of Siemens China, while scaling up the promotion of benchmark cases and their large-scale adoption.

Furthermore, Siemens will leverage its strong technological advantages and global resources to offer end-to-end empowerment for Horen across multiple dimensions—including product capabilities, overseas layout, brand building, and financial support. This support will help Horen accelerate its overseas market expansion and build world-class competitiveness in the global marketplace.

The ongoing in-depth collaboration between Horen and Siemens exemplifies Asia Green Fund’s robust resource integration and post-investment empowerment capabilities. AGF will continue to leverage its professional strength in the field of green impact investing, constantly enriching and refining its “Green Investment Ecosystem”. By identifying and supporting more high-potential green enterprises, AGF aims to foster synergistic innovation across the value chain, deepen industrial collaboration, and remain committed to long-term, full-spectrum empowerment of its portfolio companies. Through these efforts, AGF strives to help more businesses achieve high-quality growth on the path toward green and low-carbon transformation.

ESG GOVERNANCE STRUCTURE

Asia Green Fund has established a comprehensive ESG governance structure and continues to refine its management system. The Board of Directors serves as the highest decision-making body, under which the ESG Committee is responsible for overseeing the overall sustainability strategy and guiding the ESG Execution Team in executing specific ESG practices.

Members of the ESG Committee are elected from the company's board of directors and senior management team, reporting to and accountable to the Board of Directors. Members of the ESG Execution Team include all employees from the investment team, fundraising team, risk management, and support team, as well as external expert advisors.

Board of Directors

Responsible for major ESG-related decisions and supervision of daily ESG affairs.

ESG Committee

Research and formulate the company' s ESG development strategy, key objectives, major issues, and governance framework.

Identify and manage ESG-related operational risks.

Guide the ESG Execution Team in implementing ESG strategies for sustainable development.

Report to the Board of Directors.

ESG Execution Team

Responsible for the concrete implementation of ESG tasks, Drive on-the-ground realization of ESG goals, Regularly report to the ESG Committee and provide recommendations.

ESG INTEGRATED THROUGHOUT THE FULL OPERATIONAL LIFECYCLE

Since becoming a signatory of the United Nations Principles for Responsible Investment (UN PRI) in 2020, Asia Green Fund has integrating ESG factors into the entire investment lifecycle—from fundraising, investment decision-making, portfolio management to exit, thereby establishing a green investment system with distinctive institutional features.

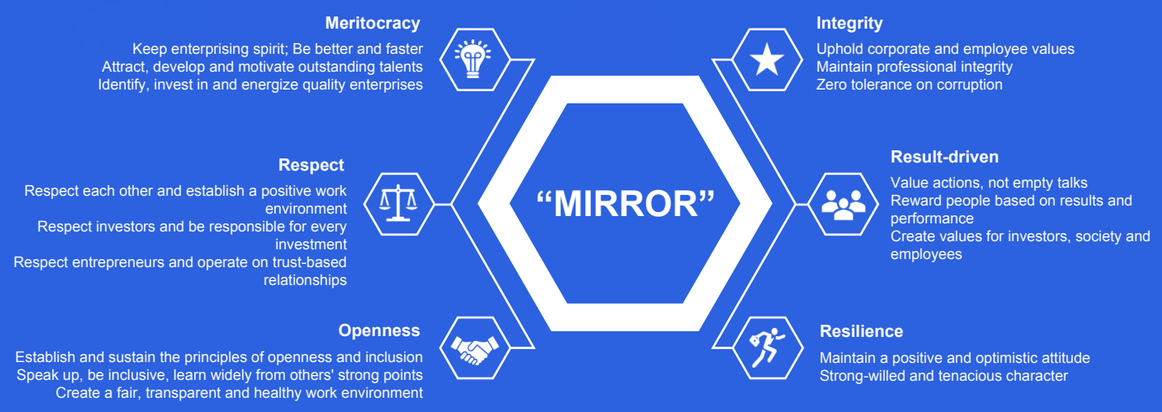
FUNDRAISING	**Clearly define the dual objectives of "pursuing financial returns and green impact" to attract investors who recognize the concept of sustainable development.** **Regularly report to LPs on the green impact of assets under management and future green development strategies, disclosing ESG performance of portfolio companies.**	Establish carbon neutrality and new materials-themed funds, and special M&A funds for green industries.
INVESTING	**Fully consider ESG factors during project screening and due diligence, and assess their overall ESG performance.** **Rely on the self-developed "Green Impact Assessment System" to positively screen enterprises that meet ESG investment standards.**	Initial project screening stage: select key industry enterprises aligned with ESG direction according to investment strategy. Due diligence stage: each project submits a green impact assessment to the Investment Committee. Risk control stage: evaluate enterprise risks and returns based on due diligence results.
PORTFOLIO MANAGEMENT	**Establish a regular ESG supervision mechanism, fully leverage the influence of shareholders and the board of directors to guide and influence enterprises' ESG awareness and acceptance.** **Assist enterprises in formulating ESG strategies to integrate ESG concepts with corporate strategy and encourage regular ESG information disclosure.** **Leverage resource integration advantages to build platforms for resource expansion, promoting ESG practice development in enterprises.**	The "Green Investment Ecosystem" systematically connects LPs, portfolio companies, industry associations, research institutions, and third-party certification agencies to empower and link resources post-investment, guided by actual enterprise development needs.
EXIT	**Good ESG practices help enterprises enhance market competitiveness and broaden exit channels.**	Exit stage: build a process management system of "strategy formulation–deal execution–risk control" deeply integrating ESG factors to avoid risks, balance stakeholder interests, and ensure the exit process is efficient, compliant, and value-maximizing.

CORPORATE CULTURE

Upholding Our Foundational Cultural Values

Corporate culture is the soul and foundation of an enterprise's development. Asia Green Fund has deeply embedded the "MIRROR" cultural philosophy into the organization—turning it into a set of values upheld and practiced by all employees. This has fostered a positive team culture and a solid trust mechanism, laying a fundamental foundation for the long-term implementation of the green impact philosophy within the organization.

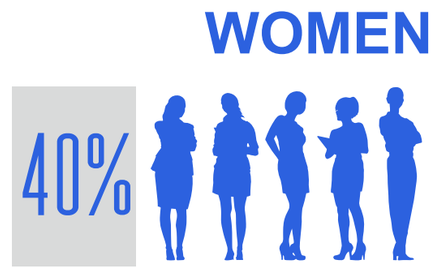
Furthermore, AGF adheres to the philosophy of open communication, providing employees with diverse and transparent channels to express their opinions and suggestions.



Diversity, Equity and Inclusion

Guided by the DEI (Diversity, Equity, Inclusion) principles, Asia Green Fund advocates for respecting and embracing employees of different backgrounds, genders, ages, ethnicities, religions, and sexual orientations in the workplace. AGF ensures everyone has equal access to opportunities and resources for, aiming to build a comprehensive and inclusive workplace.

In terms of talent diversity in particular, the company places great emphasis on the rights and interests of women and focuses on the development of female employees. In 2024, female employees accounted for 52% of the total workforce, while **women in management positions made up 40%.**



Employee Well-being and Development

Asia Green Fund adheres to a people-oriented philosophy and is committed to supporting employee growth. AGF continuously refines the performance evaluation system and enhance talent development through diversified training programs and incentive mechanisms, fostering mutual growth between the firm and its employees.

In terms of employee well-being, AGF has established a comprehensive care system to improve overall happiness and job satisfaction. A variety of cultural and wellness initiatives—such as health seminars, outings, company anniversary celebrations, and sports activities, are organized to strengthen employees' sense of belonging, engagement, and team cohesion.

INFORMATION DISCLOSURE

Asia Green Fund continuously enhances and implements its information disclosure mechanisms. Through both online and offline channels, AGF proactively engages in regular communication with LPs, regulatory bodies, partners, media, and the public, by conducting regular communications to share its long-term strategic roadmap and periodic achievements.

ASIA GREEN FUND

Huamei Green Foundation

Huamei Green Foundation was jointly initiated by Zhangjiakou Industrial Investment Holding Group and Asia Green Fund. Since its establishment, the foundation has actively explored and supported public welfare initiatives that promote environmental protection and green development. In addition, it has participated in rural revitalization efforts, with its philanthropic activities gaining wide recognition across society.

Huamei
Green
Foundation

ASIA GREEN FUND

Environmental Education Program for Schools

In line with its mission of “environmental protection” and “zero waste” the foundation has developed a series of engaging and highly participatory environmental education courses tailored for school settings. These programs aim to address the current lack of environmental knowledge in China’ s primary education system, guiding and nurturing students to build awareness around low-carbon and sustainable living from an early age.

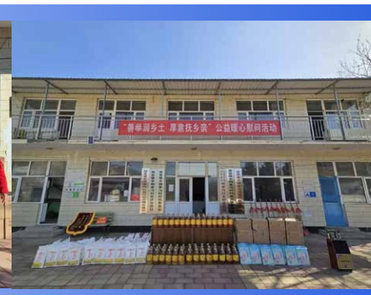
Through consistent efforts, the foundation has successfully delivered more than 100 sessions of its green education curriculum, reaching over 10,000 participants to date.

Rural Revitalization

In response to the call of the Hebei Provincial Department of Civil Affairs, the foundation actively participates in rural revitalization initiatives. It has carried out targeted support programs across multiple regions including Zhangjiakou, Xingtai, and Chicheng counties. Contributions have been made to local elderly care centers, student aid foundations, rural primary schools, and special education institutions.

To date, the foundation has provided support to over 400 rural households, benefiting 620 individuals, offered care to 291 elderly residents, and assisted more than 3,600 rural primary and secondary school students.

Social Responsibility



The foundation remains steadfast in fulfilling its social responsibilities, actively participating in a wide range of public welfare initiatives.

During the COVID-19 pandemic, a special free healthcare protection fund was established, benefiting 1,870 medical workers across China. The foundation also responded quickly to deliver urgently needed supplies such as masks and protective suits to frontline workers.

In the summer of 2023, when the Beijing-Tianjin-Hebei region was hit by a once-in-a-century flood, the foundation promptly answered the call of the Hebei Provincial Department of Civil Affairs, extending support to Zhuozhou City, one of the hardest-hit areas. It provided emergency relief supplies and donations, helping affected communities navigate through the crisis.

ASIA GREEN FUND'S INVESTMENT STRATEGY

As a pioneer in green impact investing, Asia Green Fund, leveraging it’ s years of in-depth experience in the green investment sector and keen insight into industrial trends, was among the first to set its precision-focused investment sights on the new materials track back in 2021.As the fundamental cornerstone for the upgrading of various industries, new materials not only undertake the mission of domestic substitution to break through "chokepoint" technological barriers but also help fortify the security of supply chains for the country amid complex international relations.

To date, AGF has invested in a portfolio of innovative enterprises with full-lifecycle low-carbon attributes and high technology barriers, such as SUNWODA EVB, Enpower, MojiaBio, Leadsynbio, Kingwills, Baoying Gases, Gem Chemicals, Novusilicon and etc. The growth of these enterprises not only validates the enormous potential of the new materials track but also lays a solid foundation for Asia Green Fund to expand into niche segments within the sector.

In 2024, building on extensive experience from previous investment layouts, AGF further identified “specialty chemical new materials” as a key focus within vertical segments of the new materials industry—following in-depth analysis of the sector and mapping of the industrial chain.

With the acceleration of domestic substitution and the evolving demand for green manufacturing, specialty chemicals new materials are poised to reshape the traditional landscape of the chemical industry. AGF aims to leverage capital to unlock the value of this “high-potential segment”: while addressing critical pain points in the industry, it seeks to build a greener and more resilient materials ecosystem.

ASIA GREEN FUND

21-22

An Undervalued Blue Ocean for Industrial Upgrading — Specialty Chemical Materials

Specialty chemical materials are high-end materials in the chemical sector with special properties, specific functions, or dedicated applications. They are typically used in high-tech industries and advanced manufacturing, and sectors with stringent material performance requirements. Distinct from traditional basic chemical materials (such as plastics, rubber, or fertilizers), specialty chemicals feature high technological barriers, intensive R&D challenges, high added value, and strong specificity in application scenarios. Meanwhile, their advantage of high environmental value is fully reflected in two dimensions: environmental optimization in their own production processes and green empowerment across downstream industrial chain applications. They serve as a key vehicle for transforming the chemical industry from a “high-carbon tradition” to “green high-end” development.

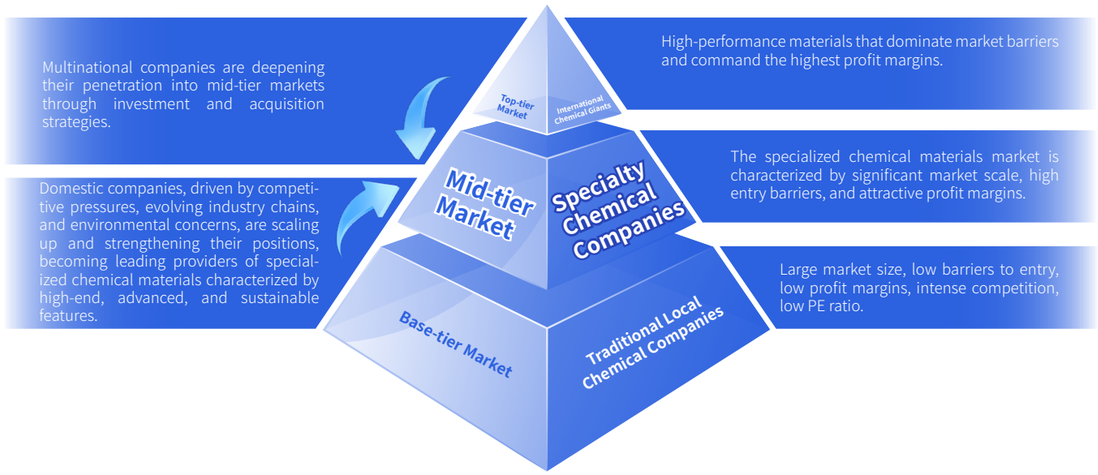
Through years of accumulated experience in new materials investment and extensive research across vertical segments, Asia Green Fund has deeply recognized and uncovered the significance of “specialty chemical material” — a track that has long remained outside the mainstream focus of capital.

Currently, the competitive landscape of China's chemical industry presents a distinct pyramid structure. Chinese material enterprises in the base and lower-middle tiers of this pyramid generally rely on general technologies and standardized technologies to compete in the market, with their competitive strategies highly focused on capital investment and aggressive price wars. This model has not only given rise to significant carbon emissions and environmental issues but also led to severe overcapacity. In search of a path forward, many companies are compelled to export their products overseas, yet they often encounter depressed pricing or even additional tariffs—highlighting the urgent bottlenecks the Chinese chemical industry must overcome.

Meanwhile, multinational material giants at the top of this pyramid have long monopolized China’ s high-end chemical market by leveraging their technological advantages, enjoying the dividends of high gross margins. However, they also face growth bottlenecks: despite they secure stable profits in the Chinese market, they find it difficult to further scale their business and are now urgently seeking new avenues for expansion.

Against this industry backdrop, AGF believes the “mid-to-high-end specialty chemical materials” market is a yet-to-be-fully tapped blue ocean. Domestic materials companies, due to their lack of investment in innovation and willingness to invest in early-stage projects, are unable to enter this field. Meanwhile, multinational materials companies, constrained by rigidity of their management models, struggle to commit to deep market cultivation. More notably, three entrepreneurial forces have begun to focus on this blue ocean: (1) scientist-led teams with strong technical breakthroughs, (2) executives from multinational corporations with profound industry resources and management experience, (3) overseas returnees with both international perspective and local implementation capabilities. Collectively targeting the mid-to-high-end specialty chemical new materials market, they aim to produce high-value-added high-end materials through greener technologies and more efficient processes.

Laying out a presence in the specialty chemical materials sector not only aligns with the logic of industrial upgrading but also serves as a key pathway to drive China’ s chemical industry to break free from low-end competition and achieve high-quality development. AGF is aware that only when capital no longer chases homogeneous price wars, but instead empowers technological innovation and green manufacturing, can China’ s chemical industry truly break through bottlenecks and secure a more valuable position in the global industrial chain. This is not only a promising investment but also a reshaping of the industry’ s future.



The Pyramid Structure of Competitive Landscape in China's Chemical Industry

ASIA GREEN FUND

PORTFOLIOS & CASE STUDIES

Enpower:
The pragmatic Forerunner in the Solid-State Battery Sector

Founded in 2012, Enpower is dedicated to the mission of “Smart Energy, Green Home”, and focus on the R&D and manufacturing of solid-state batteries. Enpower’ s self-developed product portfolio covers various series of 3.5–100Ah high specific energy pouch cells and battery packs products, enabling the company to provide numerous customers with advanced solid-state battery solutions. Adhering to the strategy of placing equal emphasis on steady growth and technological innovation, Enpower focuses on the commercial success of semi-solid-state batteries in the short term while deepening its commitment to cutting-edge R&D of all-solid-state batteries in the long run. With over 100 global patents under its belt, the company is advancing into the top tier of the industry.

Since its establishment, Enpower has successfully secured multiple rounds of financing. In December 2024, it closed a Series B round worth hundreds of millions of RMB. Its previous investors include more than a dozen well-known investment institutions, such as CAS Star, Grains Valley Capital, Daxing Investment Group, Welight Capital, Asia Green Fund, Broad Resources Investment, Yuan Capital, HongShan, GAC Capital, Tsinghua-Straits Equity Investment Management, and CITIC Goldstone.

ENPOWER GREENTECH

Capacity Ramping-Up & Enhanced Delivery Capability

Enpower’ s Daxing plant was completed and officially put into operation in November 2023. It took only 120 days from the start of construction to commissioning, and 150 days to reach full production capacity. Since its launch, the plant has delivered over 1 million pouch cells, with its overall first-pass yield (FPY) and product consistency meeting advanced industry standards. In terms of energy conservation and emission reduction, the plant has achieved a 20% reduction in annual energy consumption. Regarding process optimization, it successfully completed the development, introduction and rial production of Category C samples for 9 new products and achieved mass production and delivery. Address customer concerns such as production line utilization rate and changeover time, the Daxing plant has also implemented multiple effective measures: through the standardization of quick changeovers, the line changeover time for new products has been reduced by nearly 30% compared to the previous year.

Furthermore, Empower’ s 10GWh advanced battery manufacturing base–the Enqing Project - officially commenced in Anhui Province on May 9,2024. Phase 1 of the project has a planned capacity of 2 GWh, focusing on producing battery cells for two-wheeled vehicles (e.g., 50Ah, 70Ah), and unmanned aerial vehicles (UAVs, e.g., 35Ah, 22Ah). The products feature high energy density (up to 280–380Wh/kg), long endurance, high-rate capability (unmanned aerial vehicles (UAVs, e.g., 35Ah, 22Ah).), and a wide operating temperature range (-40°C to 70°C).

Adhering to Technology Innovation

To enhance product development efficiency and rapid prototyping capabilities, Enpower Greentech has upgraded its pilot production line. The newly upgraded line was completed and put into operation in May and has since completed a total of 138 R&D projects, developed 13 types of battery cell, and fulfilled the delivery of 2,299 cells from its pilot production line. Furthermore, its semi-solid-state products have broken through the “impossible trinity” (balancing fast charging, high specific energy, and long cycle life) by successfully developing 39Ah cells. These cells boast a volumetric energy density of up to 810Wh/L. In 2024, the Testing Center handled 506 testing requests, covering 2,656 samples—representing a year-on-year increase of 272% and 215% respectively. The company has also collaborated with multiple third-party testing institutions, including the China Automotive Engineering Research Institute (CAERI), Guolian Testing, and Pony Testing.

The Product Portfolio is Diverse and Continuously Evolving

FLEET Series
Enpower’ s FLEET Series is designed to meet the demand for battery cells with an energy density of over 400Wh/kg, with its own products reaching up to 520Wh/kg. It boasts advantages such as high energy density, excellent cycle performance, and superior rate capability. Fast charging has long been a key limitation of lithium-metal battery systems. By independently developing key technologies—including electrolyte system optimization, modified lithium-metal interfaces, and charging process improvement—Enpower’ s FLEET lithium-metal cells now support continuous fast charging at 1-1.5C, representing an industry-leading standard.

SWIFT Series
In 2024, The SWIFT Series shipped nearly one million units. It has become a top player in the industrial UAV sector and formed strategic partnerships with leading enterprises in China’ s burgeoning low-altitude economy. In overseas markets, the SWIFT and SWIFT Plus products have not only passed tests by leading eVTOL customers but also performed outstandingly in test reports from top international electric vehicle companies. Meanwhile, in the authoritative competitive product test report of the University of Michigan Solar Car project, Enpower’ s products also ranked first.

Sam Dai
Founder & Chairman of Enpower

2030 will mark a critical milestone for all-solid-state battery cells: it will see the realization of large-scale mass production, expanding application scenarios, the initial scaling of the critical material supply chain, and the onset of cost competitiveness. From 2030 to 2035, as performance continues to improve, costs drop significantly, and full-scenario applications upfold, solid-state batteries are expected to experience comprehensive breakthroughs and emerge as one of the mainstream technology routes for lithium-ion batteries.

After decades of rapid development, China has built the world's most comprehensive, cost-effective, and scale-advantaged industrial chain in the traditional lithium-ion batteries sector, leading the globe in both technological capabilities and market share. This has laid an extremely solid foundation for our solid-state batteries' development- we hold unique advantages in every aspect, from the preparation of critical materials and cell design & manufacturing processes to the reserve of engineering and technical talents, as well as the vast market application space.

As a start-up with limited resources, we formulated a distinct market strategy from the very beginning: we must focus on niche areas and compete with industry giants through differentiation. Drawing on over two decades of industry experience, we understand the importance of choosing the right commercial entry points. A misjudged "landing spot" could leave us "stranded" due to insufficient resources. That's why we opted for "uncharted niches"—high-end segmented markets such as unmanned aerial vehicles (UAVs) and electric Vertical Take-Off and Landing (eVTOL) aircraft. There are three key reasons for this choice: First, UAVs have extremely high demand for energy density (and thus endurance)—a core pain point for customers—where Enpower's technology can deliver unique value. Second, batteries account for a relatively small share (around 10%) of the total cost of a UAV, making customers relatively price insensitive. This provides profit margin to support the development of new technology. Third, UAV products have fast iteration cycles and short validation periods (3-6 months), allowing our products to quickly gain real-world application feedback and accelerate the maturation of our technologies and products.

Currently and in the years ahead, the core of our R&D and product iteration will be highly focused on two high-potential emerging strategic sectors: The fast-growing low-altitude economy ecosystem, particularly the rigorous demand from eVTOLs and high-end UAVs for batteries with ultra-high energy density, ultimate safety, and long cycle life; The emerging intelligent robotics industry—including humanoid robots, service robots, and specialized industrial robots—which places unprecedentedly high requirements on batteries in terms of energy density, power performance, form factor flexibility, and safety in complex environments.

Honors & Awards

“SRCI” SMEs in Beijing

2024 Hurun Global Cheetahs

10th Qidian Lithium Battery Golden Tripod —
2024 China Solid-State Battery Annual Influential Brand

GaoGong Lithium Battery —
2024 Solid-State Battery Pioneer Award

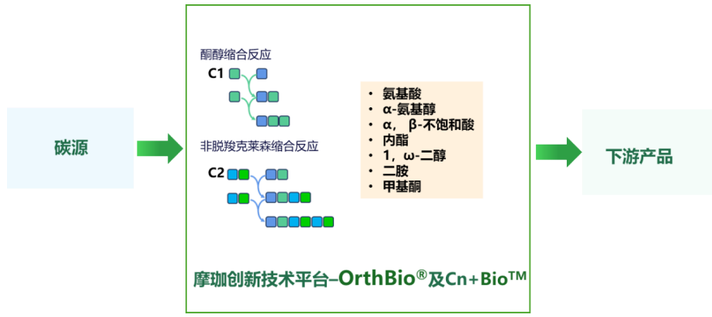
MojiaBio:
Pioneering Next-Generation Biomanufacturing Technology Revolution

MojiaBio is a globally leading innovative enterprise in bio-based green biomanufacturing, focusing on driving revolutionary breakthroughs in the fields of bio-based advanced materials, flavors, food, and agriculture technology. Guided by the core philosophy of “integrated innovation of biology, chemistry and AI”, the company is committed to building a new-generation sustainable manufacturing technology system through the in-depth development of renewable feedstocks, including C1, C2, and biomass resources.

MojiaBio’s innovative development has gained strong recognition from top-tier investment institutions, including Hillhouse Capital, Temasek, Asia Green Fund, and FoodX Capital.

Synergistic Dual-Platform Synergy Drive Product Portfolio Expansion

In early 2023, Dr. Ramon Gonzalez - a world-renowned leading expert in industrial microbiology and innovative metabolic pathways - joined MojiaBio as Chief Scientific Officer (CSO). He refined the parallel architecture of OrthBio® and developed the Cn+Bio™ technology platform, establishing a high-efficiency and sustainable biomanufacturing system. By integrating the strengths of interdisciplinary strengths of biology and chemistry, the platform overcomes the traditional biomanufacturing bottleneck of relying primarily on food-based feedstocks.



The OrthBio® orthogonal technology platform addresses longstanding challenges in the traditional fermentation industry. By simplifying strain design and modular operations, it achieves high tither yields and conversion rates, enabling green, cost-efficient biosynthesis of target compounds and unlocking new sources of productive capacity.
Its core strength lies in its modular design, which optimizes multiple production links simultaneously, include:
Optimal feedstock-product matching: Selecting low-cost, renewable resources (e.g., methanol, ethylene glycol) as feedstock to reduce reliance on petroleum- or food-based resources.
Efficient energy utilization: Enhancing conversion efficiency and reducing energy consumption through metabolic engineering and bioprocess optimization.
Lower fixed capital investment: The architecture enables flexible production adjustments, lowering the high equipment costs associated with traditional chemical manufacturing.

The Cn+Bio™ technology platform focuses on efficient bioconversion of low-carbon compounds such as C1 and C2 compounds (e.g., methanol, formaldehyde).
Key features of the platform include:
Innovative synthetic routes and pathways: It adopts unique biocatalytic mechanisms such as the Formyl-CoA Elongation (FORCE) reaction, enabling carbon chain elongation methods that do not exist in nature.
Utilization of Low-value feedstocks: It produces high-value chemicals (e.g., 1,3-propanediol (PDO), Aliphane® series bio-based polymers) using non-grain-derived low-carbon feedstocks like methanol and formic acid.
High carbon yield: Through optimizing metabolic pathways, it maximizes carbon atom utilization efficiency, reduces byproduct formation, and enhances both economic viability and environmental sustainability.

R&D Collaboration Fuel Commercialization Acceleration

In 2024, MojiaBio actively advanced the deep integration of industry, academia, and research. It forged strategic partnerships with Xianghu Laboratory and Singapore’s Agency for Science, Technology and Research (A*STAR), overcoming key technical bottlenecks in biomanufacturing and effectively shortening the product commercialization cycle.

MojiaBio and Xianghu Laboratory jointly established the “Joint Innovation Center for Synthetic Biology” led by Professor Ramon Gonzalez, leveraging thousands of square meters of lab space at Xianghu Laboratory, the center has joint built a strong R&D team. It focuses on three core areas: animal nutrition additives, biopesticides, biomaterials and integrates AI-driven computational protein design technology, with key efforts dedicated to making breakthroughs in six strategic directions.

Mojiabio and A*STAR have jointly established the Sustainable Biomanufacturing Technology Platform (SBTP). The platform aims to develop high-efficiency bioconversion technologies using renewable resources (e.g., methanol, ethylene glycol) as feedstocks, producing high-value bio-based molecules—such as 1,3-propanediol (PDO) which are applied in the fields of biodegradable plastics, coatings, and fibers. Leveraging MOJIABIO’s proprietary Cn+Bio™ pathway and OrthBio® bioconversion processes and combining them with A*STAR’s strengths in enzyme engineering, metabolic engineering, and industrial scaling, the collaboration accelerates the scaling of technology from laboratory research to commercial application.

MOJIABIO

Kit Lau
Chief Technology Officer of Mojiabio

During the wave of synthetic biology enthusiasm around 2007, most startups relied on sugar-based fermentation technologies, using glucose as the primary feedstock to produce target molecules. While this model had a certain degree of engineering maturity and foundation in biological pathways, it never crossed the threshold of industrial manufacturing in terms of conversion efficiency, energy utilization, feedstock cost, and scalability. Especially, when feedstock costs fluctuated and process pathways were not replicated, commercialization struggled to form a closed loop. Therefore, the challenge of synthetic biology has never been just designing a metabolic pathway, but rather achieving a dynamic balance between cost, efficiency, and scalability.

To build a globally competitive biomanufacturing capability, isolated breakthroughs are not enough to solve systemic challenges. True transformation is not about creating a single “star product”, but about establishing a highly efficient, open, and alterable underlying system—one that allows downstream customers, partners, and ecosystem enterprises to find their own space within it. We don’ t view “moving beyond sugar” as our sole goal; we are committed to “faster, broader, and more flexible molecule development capabilities”. To this end, we have pioneered entirely new metabolic pathways—the Cn+Bio™ technology system—and built a proprietary bioconversion platform, OrthBio®, in a parallel architecture. This dual-platform strategy has dramatically enhanced our R&D efficiency and flexibility, while also enabling a significantly broader product pipeline.

Guided by the demand-driven business principle, all projects start not in the laboratory, but at the end market. We first engage in in-depth communication with companies across different downstream industries to understand their current pain points and future product needs. Only after clarifying market demand and potential buyers does our team evaluate whether our technological platforms can deliver solutions that are more cost-effective, higher-performing, or more environmentally friendly than existing alternatives.

Against the backdrop of the current complex geopolitical landscape, “technological chokeholds” have become a core bottleneck for China’ s high-tech industry. Through innovative bio-manufacturing routes, we have developed bio-based PDI with independent intellectual property rights. This not only provides the market with a high-performance option but more importantly, offers a powerful technical solution for China to break foreign technological blockades in advanced materials and achieve a self-reliant and controllable supply chain. What we provide is not merely substitution, but transcendence: our biomanufacturing processes demonstrate overwhelming advantages over traditional petrochemical routes in terms of environmental friendliness and energy efficiency.

MOJIABIO

PDI Products

Applications:
Coatings: Applied in automotive coatings, industrial coatings, construction machinery coatings, marine and heavy-duty anti-corrosion coatings, and polyurea coatings.
Adhesives: Used in woodworking and furniture, footwear, flexible packaging, automotive, and new energy battery applications.

Flavors and Fragrances Products

Applications: Used in food processing, edible flavors, daily-use fragrances, and as cosmetic additives.

CellUranics:
Refining the Bio-based Materials Industry Through a Counter-Consensus Approach

Founded in 2020, CellUranics was established by overseas-educated PhDs from Fortune 500 companies and world-class experts in the purified terephthalic acid (PTA) industry. Its core team members come from renowned industry leaders such as Bp, UOP, Johnson Matthey, and Wacker with R&D bases located in Taixing (Jiangsu), Suzhou, and Chicago, USA.

CellUranics is dedicated to the R&D and industrialization of two key bio-based platform chemicals—glucaric acid (GA) and 2,5-furandicarboxylic acid (FDCA)—as well as their derivatives. The company has successfully developed a non-grain-based synthetic routes, production process, and purification method for the conversion of glucose to GA, and further to FDCA. This technology not only holds independent intellectual property rights but has also ranks among international leaders in technical performance. Its products have been validated by downstream customers in sectors including food and beverage packaging, new energy, 3C electronics, and aerospace, and the company has secured cumulative international orders worth hundreds of millions of RMB from both domestic and overseas clients.

Since its establishment, CellUranics has successfully completed two rounds of financing: an Angel Round backed by Sequoia China Seed Fund and Asia Green Fund, followed by a Pre-A Round with investment from Puhua Capital, Lan Fund, and Jinshan Capital Group.

Key Technological Breakthroughs & a Unique Industrial Chain

CellUranics has built the only interdisciplinary talent team in China that combines top-tier R&D capabilities with deep experience in the large-scale chemical industries. The company independently developed a technological route for producing 2,5-furandicarboxylic acid (FDCA) using non-grain glucose as feedstock, with glucaric acid (GA) as an intermediate. In collaboration with upstream and downstream partners, CellUranics has jointly built a complete industrial value chain: non-grain biomass→glucose→GA→FDCA→polymer materials- accelerating the green transition of the industry.

Since its establishment, CellUranics has consistently focused on glucose as its feedstock—compatible with non-grain carbon sources—-boasting advantages such a low cost, wide availability, stable supply, and no competition with food crops for arable land. With the ultimate goal of commercializing bio-based chemicals on a bulk scale, the company has successfully established a continuous, large-scale industrial production process for FDCA, achieving the world' s lowest production cost. Specifically, the cost of producing 1 ton of FDCA is expected to be controlled at RMB 10,000–15,000 per ton, approximately 50% lower than traditional technological routes. This competitiveness matches that of purified terephthalic acid (PTA), laying a solid foundation for large-scale commercialization. Furthermore, CellUranics' technological route is compatible with existing PTA production facilities: PTA plants can be retrofitted to switch to FDCA production. This not only effectively reduces fixed investment costs and unlocks economies of large-scale mass production of FDCA. By doing so, the company provides an efficient industrial transformation pathway for global decarbonization and supports China' s "30-60" dual carbon goals.

First Pilot Production Line Officially Launched

After four years of exploration and development, CellUranics has basically achieved full-stage breakthroughs - spanning R&D, laboratory-scale trials, pilot-scale production, and industrialization. In 2024, the company' s first independent R&D and designed production line was established and officially put into operation in Taixing, Jiangsu Province. With an annual capacity of 50 tons, this pilot line boasts the advantages of high automation, continuity, intelligence, safety, and integration. Its launch marks a critical milestone in the industrialization of CellUranics' proprietary glucose-based technological route. Currently, the company' s diverse range of high-quality products has been stably supplied to downstream markets, securing hundreds of millions of RMB in orders from leading global customers across sectors including new energy, food and beverage packaging, 3C electronics, and aerospace.

Furthermore, Preparation work for CellUranics' first flagship plant (with an annua capacity of 10,000 tons) has been launched After the plant' s' commissioning, the company plans to roll out patent licensing to accelerate capacity release in the industry and help bio-based materials sectors enter the "mass production era".

Neng Guo
Founder & CEO of CellUranics

Mass production scale and cost challenges have always been pain points in the FDCA (2,5-furandicarboxylic acid) sector. CellUranics' approach to breaking this deadlock is to tackle costs at the most fundamental level: choosing the right chemical route. We have bypassed the 5-hydroxymethylfurfural (5-HMF) route–an area crowded with intellectual property barriers and inherent cost flaws–and opted for a completely new pathway. While technically more challenging, this route offers far greater commercial potential: starting from glucose, we synthesize FDCA via glucaric acid (GA) as an intermediate.

The prerequisite for FDCA to overcome cost barrier and achieve large-scale mass productions in feedstock commoditization. Since our founding, CellUranics has consistently focused on glucose as the core feedstock. As a chemical commodity, glucose not only works with non-grain carbon sources but also offers advantages like lower cost, wide availability, and stable supply. Most importantly, this fundamentally avoids "competition with food crops for arable land" issue, laying a solid foundation for the large-scale production n of FDCA.

Beyond feedstock strategy, our technical route' s ingenuity lies in the commercial flexibility of GA—the intermediate product. As a high-value platform chemical, GA has a massive standalone market worth ten of billions of yuan. It is not just a necessary step towards FDCA; it can also be isolated, purified, and sold as an independent product. This allows CellUranics to flexibly adjust the production ratio of GA and FDCA based on their market demand, prices, and profit margins, maximizing overall profitability.

Drawing on decades of experience at world-class chemical enterprises, our team deeply understands this truth: in the commodity chemical sector – where the profit margins are thin and competition is fierce—only by meticulously controlling costs and maximizing resource utilization at every step of production can a company gain a foothold and win in the long run. That' s why we have integrated large-scale chemical industry experience and mindset into our engineering design: our FDCA production process is compatible with existing PTA (purified terephthalic acid) plants. By acquiring idle PTA facilities (shut down due to market competition or outdated technology) and retrofitting them for FDCA production, CellUranics has transformed an industry "challenge" into a strategic "opportunity" This approach not only significantly lowers the capital barrier to entering the commodity chemicals market but also provides a practical pathway for the green, low-carbon transformation of the traditional PTA industry.

In terms of commercialization and long-term vision, as a startup, CellUranics clearly recognizes that we cannot awaken FDCA—the "sleeping giant"—and reshaping the entire polyester industry alone. Therefore, in the early stage of market entry, we have adopted a precise and efficient strategy: deep collaborations with "innovative packaging solution providers". This allows us to directly reach and serve multiple end-user brands, maximizing the efficiency of market development. Looking ahead, our ultimate vision is to empower the entire industry through a "technology licensing" business model.

CellUranics' ultimate positioning is not to become an integrated producer covering everything from upstream feedstock to downstream polyester. Instead, we aim to be the core monomer manufacturer and technology solution provider for the next generation of bio-based materials.

Awards

2024 New Leaf Award –
The Most Commercial Value Award

2024 SCIP+ Green Chemistry and Chemical Engineering Innovation and Entrepreneurship Contest – Excellence Award (Enterprise Designation Prize – Covestro, Sasol, and Longwater Investment)

Atantares:
Shaping the Future of Deep Integration Between Silicon-based and Carbon-based Systems

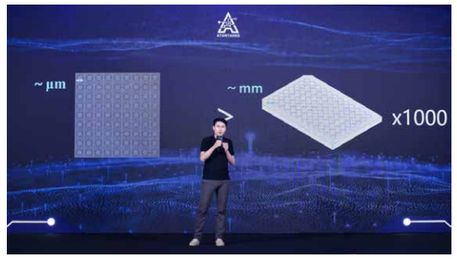
Founded in 2021, Atantares has a vision to empower the biomedical industry through semiconductor technology. Leveraging the attributes of silicon-based chips and microfluidic technology—such as miniaturization and high integration, the company develops underlying tools and equipment with ultra-high throughput and ultra-high sensitivity. These solutions are designed to meet the rapidly growing demands of sectors including healthcare, synthetic biology, and DNA storage.

Since its establishment, Atantares has gained recognition from investment institutions, including Frees Fund, Next Capital, Qiming Venture Partners, Fosun Health Capital (under Fosun Pharma), Alibaba Health, Asia Green Fund, NEUX Capital, and has raised over RMB 100 million in financing.

High-Throughput Chip Synthesis Platform Launched

On September 26, Atantares announced its latest technological achievement —the ECHOS MicroArray synthesis chip and its supporting synthesis system, ECOSYN 3. The launch of this innovative product marks a significant step forward in Atantares' efforts to apply semiconductor technology to empower the life sciences industry.

As Atantares' first mass-produced chip, the ECHOS MicroArray is built on silicon-based integrated circuit technology. Each synthesis unit occupies an area of only 1/10,000th that of traditional well plate systems, while boasting a throughput equivalent to 1,000 pieces of 96-well plates. This not only greatly enhances synthesis throughput but also significantly reduces reagent consumption. Looking ahead, its potential throughput is expected to reach 1,000 times, or even 1,000,000 times, that of traditional systems. ECOSYN 3, a desktop synthesis device, weighs less than half of traditional column-based synthesizer. It integrates multiple functional modules, including a human-computer interaction area, a reagent storage area, a chip loading area, a status indicator area, and external interfaces. Over 99% of its components are domestically produced, and it is expected to achieve 100% domestic production in a relatively short period.



Multiple Technology Verifications Implemented with Breakthrough Innovations

Beyond its high-throughput oligonucleotide synthesis platform, Atantares has successfully completed the technology verification for parallel assembly of multiple genes on a chip. By integrating a high-efficient molecular chip reaction system and precisely controlling reaction conditions, the technology is expected to break through the bottleneck of cost, throughput, and complex operations in traditional methods-ultimately providing faster, more flexible, and cost-effective solutions for research in the life sciences field.

Furthermore, In the field of enzymatic synthesis, Atantares has achieved enzymatic electrochemical DNA synthesis on a chip for the first time, marking a major innovation in the field of gene synthesis. Through the integration of high-efficient enzymatic DNA coupling and array-based reaction control, the technology enables efficient, real-time, and parallel DNA synthesis on a microchip. This not only enhances synthesis accuracy and reduces resource consumption but also realizes automated, high-throughput production in a pure water environment.

Partnering with Industry-Leading Partners to Jointly Drive Innovation in Biopharmaceuticals and Synthetic Biology

In April, Atantares entered a strategic partnership with Yanyin Tech to jointly develop China' s first integrated hardware and software solutions for high-throughput synthesis, creating end-to-end, efficient, and precise research tool.

In May, Atantares signed a strategic cooperation agreement with Synmeta Bio. The two parties will jointly develop high-value bacterial strains and novel biomaterials, aiming to achieve industrial synergy characterized by complementary strengths in technological innovation and market expansion.

In July, Atantares and PRCXI Bioinformatics Co., Ltd, officially launched a series of co-developed automated products. These products cover multiple links in high-throughput synthesis experiments, including fully automated plasmid library construction, petri dish plating, plasmid transformation, and clone selection, successfully establishing an end-to-end automated experimental system.

ATANTARES

Dr. Zhao Xin
Founder of Atantares

Semiconductor chips represent the most large-scale, low-cost, and versatile tools that humans can precisely control. If applied to manipulation of biomolecules, they will unlock unprecedented advantages in high throughput and cost reduction. Since its establishment, Atantares has identified high-throughput DNA synthesis as its breakthrough point, aspiring to develop molecular chip technology and drive the “semiconductorization” of biotechnology. Our goal is to become an enterprise on par with Medtronic and Thermo Fisher Scientific-one that provides underlying hardware and tool platforms for the life sciences field.

Our core innovation lies in condensing the traditional DNA synthesis process, one the relies heavily on manual labor and mechanical operations—into a single custom CMOS chip. This technology, known as the “third generation” DNA synthesis technology, integrates more than a dozen disciplines, including integrated circuits, microelectromechanical systems (MEMS), microfluidics, surface chemistry, electrochemistry, and molecular biology. As a result, it boasts an extremely high technical barrier.

Currently, most biochips on the market are essentially passive microchannel systems. In contrast, our molecular chips are a true integrated circuit fabricated on silicon wafer, containing millions or even hundreds of millions of transistors. From a process perspective, our chip-based method can significantly reduce waste liquids generation and costs. Meanwhile, the built-in sensing and control functions of the chips can significantly improve synthesis accuracy, overcome the long-standing issue of high errors rates when synthesizing complex sequences. From a technological perspective, we have adopted a completely new chip-based automation approach: leveraging the chip’ s ability to manipulate molecules at the microscale, we integrate short-strand synthesis, high-throughput purification, and high-throughput assembly —all onto a single chip. This technology offers two key benefits: First, it eliminates the need for multiple rounds of pipetting and container transfers, drastically reducing DNA fragment loss and increasing long-chain yields; Second, it enables simultaneous assembly of numerous fragments, multiplying synthesis speed.

We are acutely aware that for a brand-new technology with paradigm-shifting potential, merely selling “shovels” (tools) is insufficient. We must also demonstrate firsthand how to “pan for gold” with them (e.g., provide services) to educate the market and set benchmarks. Therefore, unlike the classic business logic in the life sciences tools sector — the “instruments + consumables” model, which relies on the deploying instruments to build a consumables ecosystem that generate sustained revenue —We have adopted a hybrid model that combines “selling equipment” and “providing contract manufacturing services” in parallel.

From a longer-term perspective, DNA synthesis technology is also expected to address the digital storage challenge facing humanity. Within the next three to five years, DNA storage is poised to achieve commercial application in select niche markets. However, the true large-scale market will be what is known as “cold data” storage—data that is infrequently accessed but requires long-term archiving—and this represents a multi-billion-dollar market opportunity.

Industry Certifications and Honors

National High-tech Enterprise (First Batch, 2024)
Suzhou Municipal Enterprise Technology Center (28th Batch)
CYZONE: 2024 Hard-Tech Innovators to Watch — Top 50
Qimingpian “Rising Stars”: 2024 High-tech, High-growth Companies in China’ s Biopharma Industry
Gold Award, Peking University 1898 Innovation Competition — Life & Health Track

Gold Award, “Wuhan Cup” First Peking University Innovation & Entrepreneurship Competition

CMC China: 2024 Outstanding Synthetic Biology Enterprise

Kingwills™:
Driving the Breakthrough in China's High-end Advanced Materials Industry

Kingwills™ is a high-tech innovative enterprise with solid foundation and rapid growth. After years of independent R&D, Kingwills™ has achieved a comprehensive breakthrough in the entire manufacturing process of flash-spun meta-materials, covering everything from microscale principles and spinning control to post-processing. The company launched its proprietary brand, Kunlun™ Hypak™, which reached large-scale mass production in 2022. By 2023, its production capacity exceeded 15,000 tons, and in 2024, it achieved quality breakthroughs and built an outstanding manufacturing system. Its products have been deployed in five major areas—medical packaging, safety protection, building energy efficiency, industrial innovation, and creative living—and applied in nearly 100 segmented scenarios.

青昀新材 Kingwills New Material

Continuous Breakthroughs in Product Performance, Diversified Application Scenarios

Protective Field

Traditional materials struggle to balance "safety" and "comfort", While Kunlun™ Hypak™, leveraging flash-spun nanofiber technology, enables leapfrog improvements in protection level, wear resistance, and wearer comfort. Its ultra-lightweight fabric allows workers to operate with ease in scenarios such as nuclear power dust and industrial painting. Meanwhile, with its bacteria-resistant, waterproof, and breathable properties, it eliminated the "stuffy feeling" associated with conventional protective clothing, achieving both safety protection and comfortable wear. Unlike conventional protective clothing with 1-3year storage life, Kunlun™ Hypak™—made protective clothing maintains a performance retention rate of⩾80% after 5 years under proper storage conditions. This not only meets the long-term stability requirements for national emergency material reserves but also reduces enterprises' protective costs by extending the service life of the clothing.

Packaging Field

With its exceptional durability, outstanding water and stain resistance, excellent wear and tear resistance, and sharp, refined print performance, Kunlun™ Hypak™ not only ensures that bag products maintain their like-new condition during daily use—easily handling the challenges of commuting, business trips, outdoor activities and other scenarios—but also perfectly showcases brand logos and design details. Meanwhile, the material combines eco-friendly recyclability with significant cost-effectiveness advantages, making it an ideal material solution for creating high-quality, high-performance, and cost-effective bag products.

Building Energy Efficiency Field

Kunlun™ Hypak™ waterproof and breathable membrane boasts exceptional waterproof, breathable, moisture - permeable, windproof, and durable properties. As a key waterproof underlayment, it is applied over the outer layer of insulation—effectively preventing outdoor rainwater from seeping into the insulation layer while facilitating the release of any water that has entered the insulation as water vapor into the environment. This maintains the insulation layer' s dryness, solves waterproofing and moisture-proofing issues effectively, and enhances the building' s thermal insulation efficiency. It is widely used in architectural applications such as curtain walls, metal roofs, and nearly zero-energy buildings.

Additionally, Kunlun™ Hypak™ can be applied in home decor. Its unique fiber structure and mechanical properties make it both aesthetic and functional for use as light boxes and room dividers in home decor scenarios.

Medical Packaging Field

Kunlun™ Hypak™ features excellent microbial barrier properties, outstanding performance in strength and clean peelability, and compatibility with all common sterilization methods—including high-temperature steam, ethylene oxide, gamma radiation, and electron beam. It has thus become an ideal choice for sterilization packaging of various medical devices, such as three-side sealed bags, top-sealed bags, sterile roll bags, and blister pack lids, creating a "breathable sterile barrier" for medical devices.

Industrial Innovation Field

Kunlun™ Hypak™ boasts properties including waterproofness, breathability, toughness, smoothness, lint-free performance, and high barrier capability, making it an ideal choice for desiccant packaging materials. Meanwhile, the material is eco-friendly and recyclable for circular use.

Lightweight yet featuring high mechanical strength, it is also waterproof, breathable, tear-resistant, and stretch-resistant. Compatible with various printing methods and delivering excellent print quality, it can be applied to label printing, wristbands, flags, outdoor advertisements, art installations, books, envelopes, bags, and a wide range of cultural and creative products—unleashing the creative inspiration of designers.

Kingwills

Boyi Chen
Founder & CEO of Kingwills™

For entrepreneurs and business leaders, we should keep our eyes on the future—anticipate what will unfold in this land over the next 20years and reflect on how to create value for the coming era. Against the backdrop of “de-globalization”, some key technologies, materials, and equipment have long been constrained by the monopolies and blockades of enterprises from Europe, the United States, and Japan. Particularly after the lesson of chip supply cuts and technological sanctions, China is in urgent need of achieving independent breakthroughs in basic science and technology. However, for private enterprises, their core advantages lie in fast decision-making, high efficiency, and flexible mechanisms—making them best suited for industries where core barriers can be established through rapid iteration and product innovation.

New materials is a typical industry that “starts hard but gets easier later”. The difficulty lies in its extremely high entry barrier. We are aware that R&D in this sector may take five or even ten years to generate initial revenue. Yet it is precisely this long investment cycle and significant early-stage uncertainty that deters most capital and entrepreneurs seeking short-term returns. Once a company builds sufficiently high technical and product barriers through R&D, it can enjoy a relatively healthy competitive environment.

Furthermore, new materials boast extremely broad application scenarios and a highly dispersed customer base - there is no situation where one or two major clients can determine a company’ s survival. This “small and dispersed” customer structure presents a healthier business model. It forces enterprises to focus all their efforts on technology and products themselves rather than relying on managing relationships with a few key clients. After all, only truly outstanding products can be accepted by the broadest market.

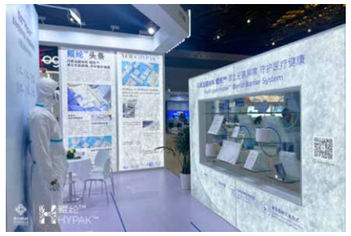
At the application scenario level, we adhere to the business strategy of the Pareto Principle (the 80/20 rule), prioritizing deepening efforts in the 20% most promising areas. The selection criteria are as follows: First, a sufficiently high market ceiling, meaning the application area has a large scale and strong future growth potential. Second, significant value creation—if a product offers little improvement to customers, even low prices will not drive its promotion. Third, scalable replicability of applications—avoiding highly customized special needs that are difficult to produce on a standardized basis.

At the strategic development level, we divide the company’ s growth into three stages: the first stage is “learning” learning from the world’ s top-tier enterprises, attract global talent, break through basic technology bottlenecks, and “bring into existence in China what previously did not exist here”; the second stage is “surpassing” that is, do the same things better than others, deliver products that are more aligned with customer needs and offer higher performance than international giants in various segmented applications; the third stage is to enter the uncharted territory, rely on insights into basic science and imagination to create entirely new things.

青昀新材 Kingwills New Material

Showcasing flagship products at international medical summits

MEDICAL FAIR ASIA 2024
Medtec China — International Medical Device Design & Manufacturing Technology Exhibition
MEDICA (Düsseldorf, Germany) — Trade Fair for Medical Technology & Healthcare.



Industry Certifications and Honors


TUV Rheinland (China) Ltd.
Room 301, 3F and Room 1203, 12F, Building 4, No.15, Rong Hua South Road, Beijing Economic-Technological Development Area, Beijing 100176, P. R. China

Scope Certificate Number TRC GRS 220886
Version TRC GRS 220886 [continued]

Scope Certificate

Scope Certificate Number TRC GRS 220886
Scope Certificate Version Number TRC GRS 220886

TUV Rheinland (China) Ltd.
certifies that

Kingwills Advanced Materials Co., Ltd
江苏青昀新材料有限公司
Textile Exchange-ID (TE-ID): TE-00100535
CB-TRC Client Number: 2563729

No.166, Jianghai Road, Development Zone, Nantong City, 226010, Jiangsu Province, China

Global Recycled Standard (GRS) certificate


证 书
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二〇二四年三月

Jiangsu Textile Engineering Society
Science and Technology Award (2023)

LifeLabs:
Leveraging Nanotechnology-Based Materials to Balance Body Thermal Comfort

LifeLabs is an advanced materials technology company founded on technological achievements from Stanford University' s laboratories. Currently, it maintains branches across North America, Europe, and China. The company holds a total of 14 global patents, including two cutting-edge nanotechnology patents in dynamic thermal comfort management (WarmLife® and CoolLife®) originated from Stanford University. These technologies deliver comprehensive solutions for functional apparel to maintain thermal comfort across extreme ambient temperatures (ranges from-65°C to +45°C). Backed by the exceptional nanotechnology performance of WarmLife® and CoolLife®, Lifelabs embodies greater environmental sustainability and on-going innovation value. LifeLabs is positioned to become an innovation pioneer in the upgrading and evolution of the textile industry, while empowering brands worldwide.

LifeLabs®

Human Thermal Comfort Management System

LifeLabs holds two nanotechnology patents—WarmLife® and CoolLife®—and has developed a comprehensive solution system for human thermal comfort management in textiles. This system enables wearers to consistently maintain physical thermal comfort across various temperature ranges, from -65°C to +45°C.

WarmLife® is a patented dynamic thermal insulation technology featuring a nanoprocessed metallic reflective layer, designed to dynamically balance the human body' s thermal comfort. The core of this technology lies in a nanoscale thermal radiation-reflective metallic coating–an innovation that uses an amount of metal no larger than a single paperclip yet effectively reflects the body' s thermal radiation back to the wearer, retaining warmth in cold environment. Simultaneously, after the body warms up during physical activities, it releases excess body heat, thereby effectively maintaining intelligent thermal balance, delivering optimal comfort to the wearer, and preserving the fabric' s inherent excellent breathability. Garments incorporating WarmLife® technology can reduce the amount of insulation filling by approximately 30% while achieving equivalent or even better thermal insulation performance. Furthermore, the technology can be customized to different levels of water resistance based on specific needs, balancing lightweight properties, breathability, and protective functionality.

CoolLife® is a patented nanoprocessed sustained cooling technology under the Human Thermal Comfort Management System - and the world' s first infrared thermally transparent fiber material. It more effectively dissipates heat generated by the human body, delivering a cool skin feel and creating a sustained cooling effect unmatched by any other apparel. As a pioneering technology in yarn innovation, it works continuously to provide a refreshing experience: it is70% cooler than organic cotton fabrics while having only half the environmental impact. Compared to traditional materials, its raw material - polyethylene (PE) - is widely recognized as one of the world' s most sustainable materials. The production process requires less energy and water; meanwhile, it supports solution dyeing and dry extrusion techniques, further conserving water resources.

International Awards and Recognitions

The ISPO Global Design Award (ISPO Award) is an authoritative product recognition program for the global sports industry, widely hailed as "the Oscars of the sports world". It aims to honor innovative, technology-leading products in the sports and outdoor sectors, helping the industry identify sports products that deliver breakthrough performance in areas such as product technology, design, and functionality. In December 2024, LifeLabs Thermal Contriol Technology' s WarmLife® - Sensing Merino Wool Insulated Filling Material won the "Best Product Award" (Fibers & Filing Category) at the ISPO Exhibition. By interacting with body' s infrared heat, WarmLife® dynamically regulates the body' s thermal comfort: while maintaining optimal thermal insulation and comfort, it also offers exceptional breathability. Garments integrated with WarmLife® technology provides 30% higher thermal insulation than competitor' s products. Additionally, compared to garments using virgin or recycled insulating materials, WarmLife®-enhanced products are lighter and thinner, with superior foldability and storage performance. They also feature lightness, breathability, and dynamic thermal balance, achieving an optimal warmth-to-weight ratio.

Additionally, LifeLabs thermal control technology' s CoolLife® full-matte nylon-polyethylene single-mesh interwoven fabric earned a spot in the ISPO base layers category Top 10. Leveraging its globally leading infrared-transparent fibers, CoolLife® enables rapid heat dissipation from the human body: it releases 60% of the body' s heat that is emitted as infrared radiation, providing instant body cooling and lowering perceived thermal comfort by 3°F. Technology conducts heat continuously without retention—ensuring no heat buildup. Fabrics integrated with CoolLife® technology boast unique and highly efficient heat-dissipating properties, delivering long-lasting cooling effects consistently, even after the wearer sweats.

Diversified Application Scenarios

LifeLabs' s two advanced patented nanotechnology-based solution for dynamic human thermal comfort management—WarmLife® and CoolLife®—have undergone and passed testing and validation by numerous international renowned outdoor brands (such as The North Face, Burton, and Nobis) as well as domestic leading outdoor, down jacket, and sports brands. These technologies have gained highly recognition for their innovation, functionality, comfort, and sustainability, with collaboration intentions already established. Several well-known brands have integrated WarmLife® into their ready-to wear garments and finalized the design of related styles. Lifelabs will also support 2025 polar expeditions and environmental initiatives (e.g., the establishment of a glacial change monitoring station in Greenland) with WarmLife® technology, to meet the high-efficiency thermal insulation needs of personnel working in polar environments. Additionally, Lifelabs has established long-term strategic cooperative partnerships with 7 international and domestic factories, laying a solid foundation for the implementation and large-scale production of its products.

LifeLabs®

Sophia Ou
Founder & CEO of LifeLabs

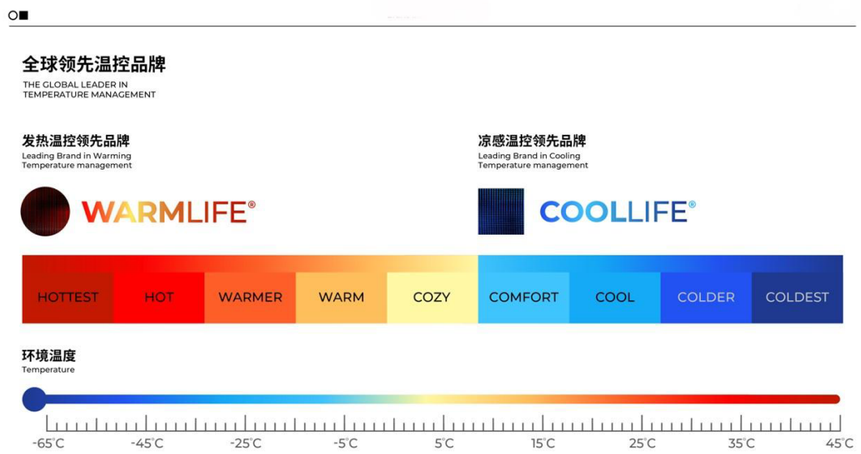
Throughout the development of the apparel industry, style evolution and category innovation have always been the core drivers of market growth. In recent years, however, the “functionality” wave has been reshaping the industry landscape at an unprecedented pace—functional apparel, once confined to niche scenarios such as high-altitude snow-capped mountains, outdoor hiking, and professional sports competitions, is gradually breaking free from scenario boundaries. It has extended from high-performance outdoor apparel to functional sportswear and ultimately is fully penetrating into everyday casual scenarios for the general public.

The transition of functional apparel from specialized segments to everyday use owes much to the impetus of technological innovation. Leveraging the robust cutting-edge technologies of Stanford University’ s laboratories and the profound industry expertise of the Asia-Pacific’ s traditional textile supply chain, LifeLabs emerged as a natural outcome-boasting two patented technology: WarmLife® Dynamic Thermal Insulation Metallic Nanolayer and CoolLife® Sustained Cooling Yarn. Addressing inherent pain points of traditional fabrics, we deliver layered optimization via high-tech means, providing comprehensive solutions for temperature control and thermal comfort management to brands ranging from high-performance outdoor apparel to fashion apparel. F As envisioned when the technology first emerged from the laboratory, our goal remains: “To create clothing that keeps wearers warm in winter and cool in summer—reducing our reliance on HVAC systems and thereby cutting energy consumption.”

From a business strategy perspective, we have taken a starkly different path from traditional apparel startups: a B2B-focusedmaterial brand model. We position ourselves as “the person selling shovel” – a metaphor for providing foundational tools to enable other’ s success. Leveraging our unique advantages in innovative materials, we have centered our core functionality on “human thermal comfort management for textiles” (encompassing thermal insulation materials for autumn/winter and cooling fibers for spring/summer) amid the rapidly growing functional apparel market. Our aspiration is to become a leader in the “textile temperature control sector”. While the pace of B2B promotion is relatively slow—requiring multiple rigorous stages, including material verification, fabric development, brand internal review, and market education—this approach holds long-term value. Once leading brands successfully launch benchmark products using our technology, the technology will build a strong reputation within the industry, ultimately creating a snowball effect.

LifeLabs®

LifeLabs provides functional apparel with temperature regulation solutions across environmental conditions from -65°C to +45°C



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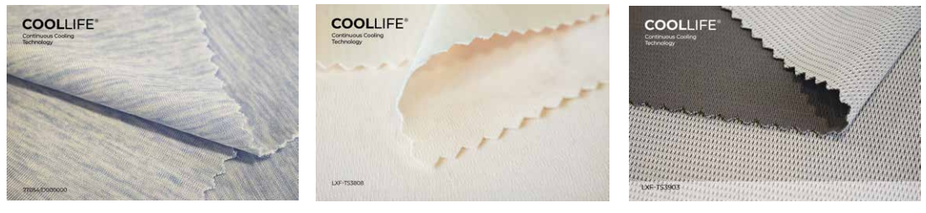
WarmLife® Product Image

CoolLife® Product Image



Asia Green Fund

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2024 GREEN IMPACT REPORT

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