LONGi Propels Global Green Transition in Solar Manufacturing with Zero Carbon Plant

While the global push for adopting green energy solutions is an essential pursuit, there is a paradox that is sometimes overlooked — that some green energy manufacturers, in their quest to produce eco-friendly products, fall short on maintaining sustainable practices in their production processes. This underscores the complexity of achieving genuine sustainability, highlighting that the transition to renewables must be holistic and comprehensive.

LONGi Green Energy Technology Co., one of the world’s largest pv module makers, has keenly address this aspect. Understanding the need to ensure its operations are as green as its solutions, LONGi launched the “Solar for Solar” sustainability concept. A cornerstone of this plan is the transformation of its key Baoshan manufacturing plant in Yunnan province, southwest China into a pioneering Zero Carbon Plant.

During the plant’s conversion over the past two years, LONGi rigorously followed the directives from the Science Based Targets initiative (SBTi), RE100, EP100, and EV100. The company set forth three pivotal goals for the Baoshan site: Powering the facility’s operations entirely with renewables, technologically overhauling systems to minimize natural gas leakage, and integrating green transport options such as EV charging stations. At the same time, LONGi intends to purchase carbon credits through the China Certified Emission Reductions scheme to offset any unavoidable emissions during the manufacturing process.

Furthermore, by creating an immersive environment in its new Zero Carbon Park, the company has enhanced the eco-consciousness of its workforce.

As of the end of 2022, 99.09% of the Baoshan facility’s operational power was from renewable sources. By using green power, the company prevented 2.43 million tons of greenhouse gas emissions and conserving 607 million kWh of electricity and 9.59 million tons of water through improved energy management systems.
By the end of 2030, LONGi promises a 60% reduction in the factory’s total greenhouse gas emissions compared with 2020 levels, alongside a 20% reduction in carbon emission intensity for each silicon material ton, cell watt, and glass ton.

Given the Baoshan site’s prominence in LONGi’s upstream photovoltaic production chain, its successful, scalable transformation could set a template for broader adoption. LONGi, which operates manufacturing bases across other cities in China and globally in countries such as Vietnam, Malaysia and branches in the U.S., Japan, Germany, India, Australia, the UAE and Thailand, aspires to transition its plants towards sustainability and green production as part of the solar giant’s commitment to its net-zero plans, as well as for the broader green transition of the solar industry worldwide.
Feihe Achieves Breakthrough in Circular Economy Solution in Cold Climate Livestock Farming

In regions between the 40° and 50° north latitudes, agriculture and livestock farming are undergoing rapid expansion to help meet food security goals. However, this rapid development has led to rising methane emissions produced from animal waste, the combustion of crop residue and the prevalent use of conventional fuels for energy consumption. The difficulty of tackling these major sources of pollutants in these elevated regions is further exacerbated by sub-zero temperatures experienced during the coldest months. To safeguard natural resources and communities in adjacent and surrounding regions, there is an imperative to develop, adopt and scale innovative technologies for effective manure and crop residue management practices in these areas.

China Feihe Limited, a leading Chinese producer and distributor of infant formula, operates 12 farms spanning nearly 1 million acres across China with more than 90,000 dairy cows and goats.

The company pioneered a technically and economically feasible model that can treat and break down the two major types of agribusiness waste — cow manure and corn straw — through high-concentration anaerobic fermentation while simultaneously recovering biogas and organic fertilizer to serve as additional sources of energy and nutrients. A sustainable, effective circular economy model is then established when the biogas is supplied to power Feihe’s dairy production plants, while the organic nutrients are returned to enrich the fields to help cultivate superior feed that in turn nurtures even higher-quality dairy cows.

The technical advancements achieved by Feihe and its partners including the Qingdao Institute of Bioenergy and Bioprocess Technology at the Chinese Academy of Sciences have rendered the model fully functional and highly effective in the country’s cold climate terrains in the northeast region. By establishing a sustainable, closed-loop industry chain, Feihe’s model has contributed to a reduction of carbon emissions and to the country’s goal of ensuring food security in these regions.
As the largest scale of its kind in China’s northern region, Feihe’s circular economy model is operational at four locations. Each facility can annually process and convert 100,000 tons of cow manure and 40,000 tons of corn straw into approximately 7 million cubic meters of biogas and 50,000 tons of organic fertilizer respectively. When used in fields, the fertilizer can elevate the organic matter content by 1% across 2,306 acres of black soil, concurrently enhancing the soil’s thickness and texture. As a result, each project contributes to a reduction of nearly 95,000 tons of carbon emissions annually, akin to planting over 6 million trees.

While using anaerobic fermentation to treat cow manure is a widely employed practice in livestock management, Feihe’s unique contribution lies in its solution for fermenting dried crop residues in cold climate areas and the pre-treatment of livestock waste.

In China, due to priorities on grain supply sufficiency, fermentation can only be carried out on straw that’s been left to air-dry after corn harvesting. However, breaking down air-dried straw is challenging due to its desiccated state and toughened structure. Foreign machinery, often designed to handle ensiled straw with higher water content, often underperforms and renders the procedure inefficient. Additionally, long, cold winters in the country’s northeast regions are not conducive to machinery operation and the fermentation process.

To this end, Feihe’s team developed a set of specialized equipment and machinery to treat air-dried straw using a unique combination of mixer blades. And contrary to conventional biogas setups where water must be emptied from the fermentation tank for repairs, Feihe’s innovative system permits maintenance without the need to halt operations, a crucial advancement that conserves water and boosts operational efficiency.

In livestock waste pre-treatment, Feihe’s team was able to achieve a higher fermentation concentration in the raw material by employing a low-polluting, water-saving manure separation process. This contrasts with the more typical flush flume system that relies heavily on fast flowing water for manure transfer. At the same time, the team’s refined anaerobic fermentation reactor technology can generate more biogas per tank volume. Ultimately, due to the high concentration of raw materials, the entire process reduces heating needs by 50% to 75%, making the operation more energy efficient.

Feihe’s success in tailoring machinery and techniques to local conditions earned it a spotlight in the inaugural ESG Textbook published by the prestigious Chinese Academy of Social Sciences in late 2021. Additionally, in June this year, it was recognized as one of the top 100 ESG pioneers among Chinese companies listed in the mainland and Hong Kong. Feihe further distinguished itself from other dairy producers in China when it secured an ‘A’ MSCI ESG rating this year. The company aspires to see its circular economy model adopted across the global livestock farming sector.
ANTA Sports Builds Sustainable Clothing Industry Chain through Holistic Supplier Lifecycle Management

Consumer-facing companies wield significant influence over various stakeholders at every stage of their production process — from sourcing raw materials and manufacturing to logistics and distribution — before reaching their end-customers. Given their ripple effect throughout the entire value chain, their decarbonizing actions and strategies are ever more important. However, these companies often grapple with the challenges of a diverse and fragmented supplier landscape, particularly when established emission practices are already deeply embedded in the supply chain.

ANTA Sports Products Limited is telling the ESG story through products with tremendous impact. The company sells approximately 100 million pairs of shoes and 200 million pieces of apparel annually, influencing over 200 million consumers to engage in sports.

The company, with over 500 suppliers, has created a comprehensive supplier management system. This system includes best practices, trainings, compliance standards on cutting emissions that are not only expansive, but are also pragmatic and achievable for its suppliers. The system also oversees the entirety suppliers’ admission, review, rectification and exit process. Besides, the company published the “Code of Conduct for ANTA Group Suppliers” and the “Supplier Sustainability Management Handbook” together, as directive to suppliers and their subcontractors on sustainability management which cover 31 areas including labore management, health and safety, environment responsibility and other sustainabilitly management system. The company also overhauled suppliers’ operational practices by conducting thorough social responsibility audits on over 100 suppliers. Of these, more than 50 underwent third-party reviews on programs.

At the same time, the number of suppliers which obtained environmental management certifications, occupational health and safety management certification and bluesign certification have been growing. These credentials have been combined with its regular trainings and seminars on boosting suppliers’ awareness of ESG concepts and goals. The company would prioritize suppliers with notable social responsibility track records in future collaborations, offering tangible business incentives while fostering a culture of sustain-ability across the supply chain.
With a pledge to achieve the target of applying 50% sustainable raw materials by 2030, the company has been progressively procuring traceable raw material such as cotton and leather. It prioritizes partnerships with suppliers certified by the LWG, the GOTS and other relevant international standards. It has also urged leather suppliers to minimize the use of fresh water in the leather tanning process, eliminate the discharge of untreated sewage sludge, and actively carry out water reuse and other maximized emission reduction actions.

Additionally, the company has committed to a greener operation while moving towards thriving development. The company’s greenhouse gas emission intensity on the basis of annual revenue in million RMB has decreased from 5.84 tons in 2015 to 3.33 tons in 2022, over 40% reduction been achieved. Besides, the company optimized the energy structure to accelerate the transformation towards clean energy. In 2015, around 14,800 tons of CO2 equivalent were calculated as scope 1 greenhouse gas emission due to fossil fuel combustion, accounting for nearly 23% GHG emission of the company. This emission figure has been reduced to 4,820 tons in 2022, which represents less than 3% of annual emission. The self-owned operating factories also completely eliminated coal usage since 2018, and its purchased water usage was reduced by 22% since 2015, a notable results of sustainable production.

In 2023, the company joined Science Based Targets initiative to reduce their GHG emission in its own operating facilities as well as its suppliers’ factories, to go hand-in-hand to combat the risk of climate change. Moreover, the company championed the use of renewable energy, not only at its facilities but also at more than 50% strategic supplier locations. By 2030, the core suppliers are required to reduce water consumption by 2.5% and carbon emissions by 5.5% annually. In addition, the company insisted to promote sustainability in the industry by joining UNGC, WEPs, SAC and ZDHC.

The company ’s approach to sustainability transcends isolated actions. As a global leader in the sportswear sector, the company has interwoven ESG principles into every operational facet, especially in creating a long-term, holistic approach in sustainable supply chain management in the upstream and downstream of the ecosystem, while creating maximum value for stakeholders and unlocking business growth.

In 2021, the company made its commitment to achieve net-zero carbon emissions in self-owned operating facilities by 2030, and to achieve carbon neutrality by 2050.
From Pasture to Product,
Erdos Group Champions Sustainable Cashmere Production

As consumers worldwide become more aware, the fashion industry faces mounting pressure to address its significant environmental footprint — which accounts for nearly 10% of annual global greenhouse gas (GHG) emissions — and to create a circular, resilient system that is beneficial to the environment, consumers, and businesses. Specifically, for cashmere production, the fiber’s quality hinges on goats thriving in habitats with rich grasslands, receiving proper nutrition, and adhering to standardized herding practices.

Erdos Group, one of the world’s top quality cashmere producers and one of the most recognizable Chinese fashion brands, has championed sustainability throughout its value chain since its inception in 1980 in Inner Mongolia. This dedication has steered the textile industry towards greener practices.

In 2018, the company outlined its commitment in the “Erdos Way”, a comprehensive blueprint detailing its pledge and action plan for sustainable development in three key areas: supply chain, brand, and employee welfare.

A transparent, sustainable cashmere supply chain is central to Erdos, and the group strives to ensure every aspect of its supply chain is sustainable. In September 2022, the company launched the Erdos Eco Ranch, which extended and integrated the company’s sustainable practices into the very beginning of its supply chain. The Erdos Eco Ranch operates under an all-encompassing model in four domains: Scientific research, cashmere purchasing and storage, community engagement, and cultural development.

Erdos Group is now actively advancing its exploration of a sustainable model that both protects and develops high-quality cashmere resources and preserves grasslands. In collaboration with China Agricultural University, Inner Mongolia University and Inner Mongolia Agricultural University, the group conducts research at the ranch’s four labs, with topics ranging from natural resource conservation and cashmere quality enhancement to animal breeding and nutrition.
The group is also studying and developing a more scientific approach to goat rearing. In partnership with Inner Mongolia University, Erdos has established a comprehensive set of breeding and ranch management standards.

These set clear protocols in 17 critical areas including animal welfare, sustainable breeding and rearing, grassland conservation, water and habitat management, cautious cashmere collection and storage, and individual goat traceability. Implementing these standardized ranch operating protocols can yield even higher quality cashmere with an even longer lifespan, ultimately propelling the entire industry towards more sustainable development.

Furthermore, the group conducts research on environmental protection, such as analyzing nutrients in grassland soil and grass, and monitoring daily GHG emissions from goats and ranch operations. This data and analysis provide a theoretical foundation for the reduction of GHG emissions at the raw material phase of the cashmere supply chain, the rational utilization of grassland resources, and the development of sustainable grazing policies.

To date, Erdos has achieved a number of notable R&D milestones, resulting in two patent applications and three research papers focusing on goat stem cells. These studies offer valuable insights into improved breeding, animal health, and cashmere production methods.

Such insights and research results have paved the way for more credible goat breeding and rearing methods. These methods are then shared and promoted within the local community, assisting herders in transitioning from traditional breeding to more efficient and scientific practices.

The company was also the first enterprise in China to secure The Good Cashmere Standard Certification. Its operations also adhere to the stringent SFA x ICCAW Cashmere Goat Welfare Code of Practice. Erdos Eco Ranch is also aiding herders in adapting to these certification requirements through its community engagement activities.

Last but not least, the company is promoting sustainability culture and grassland preservation awareness through on-site artists and cultural initiatives, with the goal of helping the wider public understand the true ethical and sustainability values inherent in the creation of each plush, cozy cashmere sweater.
Bloomage Biotechnology Advocates For Cultural Heritage Conservation through Social Responsibility Campaign

Extending beyond scientific advancements and product innovation and development, a company also has a crucial and multidimensional role in society. By committing to social responsibility initiatives, they can foster stronger ties with local communities and drive holistic growth in society — growth that is sustainable, inclusive, and beneficial for both stakeholders and the wider public.

For Bloomage Biotechnology, a major global biotechnology and biomaterial company specializing in hyaluronic acid products, its pursuits extend beyond commercial aspirations. In 2011, the company launched the “In Cloud” campaign, which encompasses a series of public welfare projects to promote the preservation and propagation of rich and diverse yet rapidly fading intangible cultural heritage across China.

The idea was conceived by Bloomage Biotechnology founder and chairperson Zhao Yan in the aftermath of the devastating 2008 Sichuan earthquake. The disaster accentuated the vulnerabilities of communities and elevated the urgency of cultural heritage conservation.

Over a span of 12 years, the In Cloud campaign has extensively engaged with 286 cultural entities from 350 cities stretching across provinces and autonomous regions including Xinjiang, Inner Mongolia, Tibet, Yunnan, and Guizhou.

Through collaboration with these groups, the In Cloud campaign has provided them with showcase opportunities on both national and international platforms. From interactive experiences, music and dance performances, and culinary showcases — each project allowed them to engage with the public while highlighting the beauty and essence of China’s diverse ethnic cultures.

More importantly, beyond the celebration and preservation of culture, the In Cloud campaign emphasized on nurturing sustainable communities and cities. By helping ethnic cultures reach a wider audience, the initiative
hopes to foster a deeper appreciation and recognition. This, in turn, could catalyze a ripple effect that facilitates an even larger collective participation, ultimately ensuring the guardians of these cultures can find more avenues for continued sustenance and holistic growth.

Bloomage Biotechnology’s campaign serves as an example that corporate ethos should extend beyond figures and finances. Companies, in their capacity and capability, ought to be architects of societal well-being, heritage conservation, and sustainable communities.
Wuliangye Group Pioneers Innovative Constructed Wetland Solution in Sustainable Wastewater Treatment While Reviving Biodiversity

While many companies might see wastewater treatment as a mere regulatory requirement, Wuliangye Group Co. Ltd., one of China’s most recognizable liquor brands, has achieved an approach that demonstrates how industries can synergize environmental protection with their business efficiency.

Chinese baijiu making has a natural dependence on regional resources and therefore preserving water sources for alcohol production is vital. The major state-owned giant, which has an annual production capacity of 100,000 tons of grain-based liquor, has made strides to protect the ecological environment of the upper Yangtze River, as part of efforts to ensure sustainable industrial operations.

Committing an investment of more than 77 million yuan ($10.6 million), Wuliangye Group was the first among its distillery peers to embark on an environmental restoration and wetland construction project in 2017 to treat wastewater. More importantly, the initiative has been replenishing the Songgong River with more than 3 million cubic meters of clean water into annually since its completion in 2018.

Situated in Yibin, China’s southwest Sichuan province, the Songgong River (Wuliangye reach) Comprehensive Treatment Project redefines wastewater management. Unlike conventional models which often serve singular purposes, the project stands out for its integrated approach and multi-purpose mechanism. The resulting constructed wetland not only purifies wastewater but also involves dredging and desilting a 4,500-meter-long section of the Songgong River, improving the region’s biodiversity, providing flood control, enhancing the natural landscape, and serving as a buffer against urban encroachment.

This extensive revitalizing work of the Songgong River Basin ultimately aimed to establish a long-term maintenance mechanism to enhance the flooding and drainage capacity of the river, manage wastewater treatment and its reuse, and elevate water quality of the river. The constructed wetland, sprawled over 23,000 square meters, has a daily wastewater treatment capacity of 10,000 cubic meters.
Central to the efficiency of the wetland system is the innovative vertical flow filter bed. Employing a myriad of ecological fillings — from quartz sand and volcanic rock to iron slag and gravel — it facilitates aerobic reactions between pollutants such as ammonia nitrogen in wastewater and the microorganisms attached to the filter bed.

Phosphorus pollutants are then adsorbed and settled in the filter layer, while nitrogen ones are mainly removed through nitrification and denitrification processes. The result from the process is clear, quality water that meets strict provincial emission standards.

With this venture, Wuliangye Group has achieved a remarkable 60% reduction in ammonia nitrogen and phosphorus from wastewater, translating to environmental and economic gains of nearly 3 million yuan.

Wuliangye Group has also taken the lead in setting industry benchmarks. It proposed and formulated the “Technical Specification for Constructed Eco-wetland Treatment of Wastewater in Liquor Fermentation”, detailing the operating standards and management of distillery wastewater treatment by liquor enterprises, advocating for the broader adoption of constructed wetlands.