



Solargiga Energy

Solargiga Energy Holdings Limited 陽光能源控股有限公司

(Incorporated in the Cayman Islands with limited liability)
(於開曼群島註冊成立的有限公司)
Stock Code 股份編號 : 757



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2021

Environmental, Social and Governance Report 環境、社會及管治報告



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ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORT

環境、社會及管治報告

Scope of report

The Environmental, Social and Governance Report (the “ESG Report”) of the Solargiga Energy Holdings Limited (the “Company”) and its subsidiaries (collectively, the “Group”) is prepared in accordance with the Environmental, Social and Governance Reporting Guide (the “ESG Reporting Guide”) provided in Appendix 27 to Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited. The information stated in this report covers the period from 1 January 2021 to 31 December 2021 (the “reporting period”), which aligns with the financial year as the 2021 annual report of the Company. This report focuses on the business policies, measures and performance of the Group’s core business, which is the provision of upstream and downstream vertically integrated solar energy services, aiming at strengthening communication and connection between and with the Group’s internal and external stakeholders.

The board (the “Board”) of directors of the Company is responsible for the supervision of the Group’s ESG work and assumes full responsibilities for the ESG reporting work. The Group regards ESG as an important part of facilitating the implementation of development strategy and it is committed to creating value for all stakeholders.

Reporting principles and boundary

The Group complies with the core reporting principles set out in the ESG Reporting Guide (i.e. materiality, quantitative, balance and consistency), and strives for enhancing the transparency and accountability through this report.

After considering that the Group’s offices located in Hong Kong, Japan and Germany which are of supporting nature or their economic activities have no material influence in social and environmental aspect, they are therefore not included in the scope of this report.

匯報範圍

陽光能源控股有限公司(「本公司」)及其附屬公司(統稱「本集團」)的環境、社會及管治報告，乃根據香港聯合交易所有限公司主板上市規則附錄27所載的環境、社會及管治(「ESG」)報告指引而編製。本報告所載資料引述期間為二零二一年一月一日至二零二一年十二月三十一日止(「本年度」)，與二零二一年度本公司的財政年度一致。本報告集中於本集團主要業務，即上下游垂直整合太陽能服務的業務政策、措施及表現，旨在加強與本集團內外利益相關方之間的溝通與聯繫。

本公司董事會(「董事會」)負責監督本集團ESG工作事宜，對ESG匯報工作承擔全部責任。本集團視ESG為推動企業落實發展戰略的重要組成部分，致力為各利益相關方創造價值。

匯報原則及邊界

本集團遵守環境、社會及管治報告指引所述的核心報告原則(即：重要性、量化、平衡及一致性)，力求通過本報告提高其透明度和問責性。

考慮到本集團位於香港、日本及德國的辦公室為支援性質的經營分部，或其經濟活動對社會、環境方面不構成重大影響，故不納入匯報邊界。

Reporting principles 匯報原則	Definitions 釋義	Application of reporting principles 匯報原則的應用
Materiality 重要性	Where ESG issues are sufficiently important to investors and other stakeholders, they should be reported by issuers. 當董事會釐定有關環境、社會及管治事宜會對投資者及其他持份者產生重要影響時，發行人就應作出匯報。	We identified the concerns and expectations of our stakeholders through having interaction with them, and made relevant disclosures accordingly. 我們透過與關鍵持份者的互動，了解彼等對環境、社會及管治議題的關注及期望，並進行披露。



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Reporting principles 匯報原則	Definitions 釋義	Application of reporting principles 匯報原則的應用
Quantitative 量化	<p>Key performance indicators (“KPIs”) for historical data should be measurable. Quantitative information should be accompanied by narrative, explaining its purpose, impacts, and giving comparative data where appropriate.</p> <p>有關歷史數據的關鍵績效指標須可予計量。量化資料應附帶說明，闡述其目的及影響，並在適當的情況下提供比較數據。</p>	<p>The Report discloses quantitative information on KPIs, and compares historical performance where appropriate.</p> <p>我們以量化方式密切監控及披露環境、社會及管治方面相關的指標，並每年進行比較。</p>
Balance 平衡	<p>The ESG Report should impartially report the performance of the issuer to avoid selections, omissions, or presentation formats that may inappropriately influence a decision or judgment by the report reader.</p> <p>環境、社會及管治報告應當不偏不倚地呈報發行人的表現，避免可能會不恰當地影響報告讀者決策或判斷的選擇、遺漏或呈報格式。</p>	<p>This report provides an objective and unbiased description of the environmental, social and governance performance of the Group during the reporting period.</p> <p>本報告為本集團於報告期間內的環境、社會及管治績效提供客觀及公平的描述。</p>
Consistency 一致性	<p>The issuer should use consistent methodologies to allow for meaningful comparisons of ESG data over time.</p> <p>發行人應使用一致的披露統計方法，令環境、社會及管治數據日後可作有意義的比較。</p>	<p>The Report used consistent methodologies wherever possible. If there is any change that may affect the comparison with previous reports, the Group will include a corresponding explanation in this report.</p> <p>在可行情況下，本報告所採用的方式與去年報告一致。若有任何可能影響與過往報告作比較的變更，本集團將於本報告相應內容加入註解。</p>



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Stakeholder engagement

The opinions of stakeholders are the basis for the Group to formulate and implement short-term and long-term business strategies. In order to identify the insights and expectations on business operations of our stakeholders, the Group has been actively engaged with key stakeholders through various channels to collect and understand their opinions on our sustainability performance.

持份者參與

持份者的意見是本集團制定和實施短期及長期發展策略的基礎。為了識別持份者對業務運營的見解和期望，本集團積極透過各種渠道與關鍵持份者保持交流，收集及了解他們對我們於可持續發展表現的意見。

Key stakeholders 關鍵持份者	Communication channel 參與渠道
Employees 員工	Intranet 內聯網 Onboarding and on-the-job training 入職和在職培訓 Staff performance evaluation 員工績效評估 Staff activities 員工活動
Investors and shareholders 投資者和股東	Company's website 公司網站 Company's announcements 公司公告 Annual general meeting 股東大會 Annual and interim reports 年度和中期報告
Customers 客戶	Company's website 公司網站 Meetings 溝通會議 Customer's feedback and complaints 客戶反饋和投訴
Suppliers and business partners 供應商和業務夥伴	Performance evaluation 績效評估 Meetings 會議 On-site visit 實地考察
Government departments and regulatory bodies 政府部門和監管機構	Documentation 書面文件
Community 社區	Community activities 公益活動



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Environmental

Aspect A1: Emissions

As for environmental protection, the Group continues to invest in energy-saving equipment and emphasize green production while constantly advancing its technology in energy saving, emissions reduction and clean production. The Group also controls stringently the emission of wastes. According to its waste management policy, wastes have to be minimized, reused and recycled before the last resort of disposal. The Group regularly keeps track of the latest national and regional environmental laws and regulations, complies with relevant laws and rules such as the Environmental Protection Law of the People's Republic of China (中華人民共和國環境保護法), the Environmental Impact Assessment Law of the People's Republic of China (中華人民共和國環境影響評價法) and the Law of the People's Republic of China on Prevention and Control of Environmental Noise Pollution (中華人民共和國環境雜訊污染防治法), and takes various measures to achieve better performance in environmental protection amid daily office activities and specific business operations. During the year, the Group was not subject to any fines or related litigation in relation to environmental pollution.

Air pollutant emissions

Air emissions include nitrogen oxide (NOx), fluoride, and other pollutants regulated under national laws and regulations. Pollutants are primarily emitted from the raw material cleaning process. The fumes produced during the acid treatment of silicon feedstock by hydrofluoric acid and nitric acid are eventually treated and emitted through the acid mist towers.

Air pollutant emissions of the Group are detailed below:

環境

層面A1：排放物

環保方面，本集團繼續投資於節能設備及重視綠色生產，並不斷精進其於節能、減排和清潔生產方面的科技。本集團亦嚴格控制廢料排放，根據廢料管理政策，須先盡量減少、重用及循環再造廢料，最後才能進行必要的棄置。本集團定期留意最新的國家及地區環保法律法規，遵守《中華人民共和國環境保護法》、《中華人民共和國環境影響評價法》及《中華人民共和國環境雜訊污染防治法》等相關法律及規則，並採取多項措施，務求在日常辦公活動及具體業務中取得更佳的環保成效。年內，本集團並無就環境污染而面臨任何罰款或相關訴訟。

空氣污染物排放

廢氣排放包括氮氧化物、氟化物及其他受國家法律及法規規管的污染物。污染物主要從原料清洗工序排放，利用氫氟酸硝酸對硅料進行酸洗產生煙霧，最終經過酸霧塔處理排放。

本集團之空氣污染物排放如下：

	2021 二零二一	2020 二零二零
Fluorochemicals 氟化物	0.28 tonnes噸	0.95 tonnes噸
Hydrogen fluoride 氟化氫	—	0.04 tonnes噸
Hydrogen chloride 氯化氫	—	0.15 tonnes噸
Chlorine gas 氯氣	—	0.26 tonnes噸
NOx 氮氧化物	2.02 tonnes噸	2.39 tonnes噸



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Greenhouse gas emissions

Greenhouse gas emissions reflect the impact of our businesses on climate change. Greenhouse gases include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. Our greenhouse gas emissions were mainly attributable to the indirect emissions from purchased electricity.

Indirect greenhouse gas emissions (scope 2):

carbon dioxide (CO₂) equivalent emissions

2021: Approximately 367,923 tonnes

2020: Approximately 383,909 tonnes

Note: An emission factor of 0.792 tonnes to 1.083 tonnes CO₂-e/MWh was used for calculating electricity consumption. The emission factor is based on the "2019 China Regional Grid Baseline Emission Factors" published by the National Development and Reform Commission.

Hazardous wastes

The hazardous wastes generated by the Group mainly included:

Spent activated carbon felt cartridges 廢活性碳氈濾芯
Waste oil 廢油
Waste activated carbon 廢活性炭
Waste filter cotton 廢過濾棉
Waste plastic bucket 廢膠桶

Spent activated carbon felt cartridges are mainly used for temperature keeping in monocrystalline ingot pullers during the ingot pulling process and contain mainly activated carbon. Filtration through the activated carbon-based organic gas flaring towers gives rise to fluorochemical residues. Waste oil is a result of the replacement of air compressor lubricants, in particular during the ingot pulling process. Spent activated carbon and waste filter cotton are used in replacement of off-gas treatment systems, while waste plastic buckets are used in the glue filling process of the production line.

溫室氣體排放

溫室氣體排放反映我們的業務對氣候變化的影響。溫室氣體包括二氧化碳、甲烷、氧化亞氮、氫氟碳化物、全氟化碳及六氟化硫。我們的溫室氣體排放主要來自外購電力產生的間接排放。

間接溫室氣體排放(範圍2):

二氧化碳當量排放(CO₂)

二零二一: 約367,923噸

二零二零: 約383,909噸

註: 以排放係數每兆瓦時0.792噸至1.083噸二氧化碳當量用於計算的電力消耗。排放係數乃根據國家發展和改革委員會出具之《2019年中國區域電網基準線排放因子》所得。

有害廢棄物

本集團所產生的有害廢棄物主要包括:

	2021 二零二一	2020 二零二零
Spent activated carbon felt cartridges 廢活性碳氈濾芯	3.6 tonnes噸	4.8 tonnes噸
Waste oil 廢油	45.5 tonnes噸	139.3 tonnes噸
Waste activated carbon 廢活性炭	0.2 tonnes噸	0.5 tonnes噸
Waste filter cotton 廢過濾棉	0.4 tonnes噸	1.0 tonnes噸
Waste plastic bucket 廢膠桶	0.4 tonnes噸	0.7 tonnes噸

廢活性碳氈濾芯主要用於拉晶生產中單晶爐體保溫，其主要成分是活性炭，通過活性炭有機廢氣燃燒塔過濾後有氟化物的殘留。廢油主要是空壓機設備潤滑油更換而產生，主要是由於拉晶工序產生。廢活性炭和廢過濾棉是廢氣處理設施內部更換而產生，而廢膠桶是產線灌膠工序產生。



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Non-hazardous wastes

The non-hazardous wastes generated by the Group mainly included:

	2021 二零二一	2020 二零二零
Waste steel wire 廢鋼線	24.0 tonnes噸	13.5 tonnes噸
Packaging waste 廢包裝物	318.3 tonnes噸	239.9 tonnes噸
Plastic waste 塑料製品	273.7 tonnes噸	150.2 tonnes噸
Waste EVA/TPT edge strips 廢EVA/TPT邊條	1.0 tonnes噸	0.6 tonnes噸

Waste steel wire is the major consumable used for cutting during the wafer slicing process, and the waste materials left behind are recovered by professional recycling companies. The Group's four major production operations all involve packaging equipment, raw materials, auxiliary raw materials and so forth, which produce paper, wood and plastic packaging waste, among others. Plastic waste is produced during plastic packaging in the production process. Ethylene vinyl acetate ("EVA") is produced by our module assembly companies during the trimming of redundant edge strips in the process of module encapsulation. Tedlar polyester tedlar ("TPT"), a solar panel material, is also produced by our module assembly companies during the trimming of redundant edge strips in the course of module encapsulation, involving materials such as polyvinylidene fluoride and PMMA copolymers, polyethylene terephthalate and tetrafluoroethylene/vinyl ester copolymers.

Prevention of emissions

We pursue to utilize energy efficiently and take this as the primary approach to reducing greenhouse gas emissions. In order to continuously improve energy performance and lower carbon footprint, we have implemented various energy-saving as well as emission and waste reduction measures such as the air compressor frequency conversion transformation and air compressor heat recovery projects. Frequency conversion transformation of air compressors can ensure not only the effective controls of frequency conversion in air compressors but also real-time monitoring of pressure conditions in production systems, therefore saving energy while coping with systems' energy demands. This can save us approximately RMB400,000 on electricity fee per year. Likewise, the air compressor heat recovery project can ensure effective recovery of heat energy and reduce energy use by recovering approximately 24,000 tonnes of hot water every year.

無害廢棄物

本集團所產生的無害廢棄物主要包括：

	2021 二零二一	2020 二零二零
廢鋼線	24.0 tonnes噸	13.5 tonnes噸
廢包裝物	318.3 tonnes噸	239.9 tonnes噸
塑料製品	273.7 tonnes噸	150.2 tonnes噸
廢EVA/TPT邊條	1.0 tonnes噸	0.6 tonnes噸

廢鋼線是切片工序使用進行切割的主要耗材，使用完為廢棄物後，由專業回收公司進行回收。集團內的四個主要生產環節都含有包裝設備、原料、輔料等材料，均會產生紙質、木質、膠質等廢包裝物。塑料製品為產生過程中產生的塑料類包裝造成。乙烯醋酸乙酯共聚物(「EVA」)為集團內組裝組件類公司產生，為組件封裝時多餘的邊條進行裁剪產生。太陽能電池背板(「TPT」)為集團內組裝組件類公司產生，為組件封裝時多餘的邊條進行裁剪產生，物質包括聚偏二氯乙烯、PMMA共聚物、聚對苯二甲酸乙二醇酯、四氟乙烯／乙烯基酯共聚物。

防止排放

我們追求高效利用能源作為減少溫室氣體排放的主要手段。為了不斷提高能源利用率和降低碳排放量，我們實施了多項節能及減少排放及廢棄物的措施，例如：空壓機變頻改造、空壓機熱回收項目等。空壓機變頻改造能有效地控制空壓機變頻，並檢測生產系統的實時壓力，以適應系統需求而節約能量，電費每年可節約人民幣400,000元。另外空壓機熱回收項目能有效回收熱能，減少能量的浪費，每年可回收約24,000噸熱能水。



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Reduction of hazardous wastes and non-hazardous wastes

The Group has specially set up the Environmental and Safety Department for monitoring and administering its various eco-friendly facilities to ensure compliance with national standards for pollutant and waste emissions. All wastes shall be minimized, reused and recycled before the last resort of disposal. As for the hazardous wastes generated during the production process, industry qualified professionals are engaged to handle their recovery and transposition pursuant to the applicable regulations, whereas non-hazardous wastes are sold to external parties to minimise disposal volume.

Aspect A2: Use of Resources

The Group adheres to the concepts of green development, strictly executes the policies, regulations and standards on energy conservation provided by national, local and industrial authorities, such as the Law of the People's Republic of China on Energy Conservation (中華人民共和國節約能源法). In order to achieve better efficiency of resources, the Group emphasizes on saving energy, water, materials and land, comprehensive use of resources, and development of circular economy. The Group also facilitates its sustainable development with better management measures, an enhanced awareness of saving resources, and efficient and cyclic use of resources. It strictly manages its use of resources to ensure reasonable use of resources in the course of operation, restrained waste and avoid waste. Upon assessment by our Environmental and Safety Department, there is no significant impact brought by the Group's environmental and natural resource use. The Group is active in practicing the concept of green development and promoting the green development of the production chain.

Electricity

In 2021, electricity consumption of the Group totaled 404,879 MWh (2020: 402,633 MWh). Electricity consumption of our three major production operations is detailed below:

	2021 二零二一		2020 二零二零	
	Power consumption (MWh) 電能消耗量 (兆瓦時)	Approximate average consumption (kWh/unit) 平均耗量約 (千瓦時/單位)	Power consumption (MWh) 電能消耗量 (兆瓦時)	Approximate average consumption (kWh/unit) 平均耗量約 (千瓦時/單位)
Ingots 硅棒	308,496	21.12/kg 公斤	286,801	26.35/kg 公斤
Wafers 硅片	20,003	0.09/piece 片	29,369	0.12/piece 片
Modules 組件	56,179	25.01/kW 千瓦	78,359	29.84/kW 千瓦

減少有害廢棄物及無害廢棄物

本集團特別設立環境安全部對各項環保設施進行監督與管理，確保污染物及廢棄物達國家標準。所有資源採取盡量減少、重用及循環再造廢料，最後才能進行必要的棄置。對於生產程序上所產生的有害廢棄物，按照有關規定，均與有資質的專業公司進行回收轉移處理。而無害廢棄物則進行外售處理，盡量減低棄置量。

層面A2：資源使用

本集團秉承綠色發展理念，嚴格執行國家、地方及行業機關規定的節能政策、法規及準則，例如《中華人民共和國節約能源法》。為達致更高的資源效益，本集團著眼於節約能源、用水、材料和土地、資源全面利用以及循環經濟發展。本集團亦通過改進管理措施、提高節約資源意識、資源的高效及循環利用，以促進其可持續發展。本集團嚴格管理資源運用，確保在營運過程中合理使用資源，遏止浪費和避免產生廢料。經我們的環保及安全部門評估後，本集團的環境及天然資源運用並無重大影響。本集團積極落實綠色發展概念，推動生產鏈的綠色發展。

電力

本集團電力於二零二一年總消耗量為404,879兆瓦時(二零二零：402,633兆瓦時)。三個主要生产環節耗電量如下：



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Water

We are committed to using water in a responsible manner and have developed relevant strategies to reduce raw water consumption and to promote water-saving measures, and meanwhile to review the relevant processes and perform regular monitoring. The Group's production plants use municipal water as their primary water source. The use of water is regulated in accordance with the prevailing energy management rules. Management of second-tier energy consumption is rationalized and measuring devices are installed to save water. The Group had no issue in sourcing water during the year. Concentrated water produced by ultrapure water equipment for production purpose is reused, with the annual reuse volume reaching 120,000 tonnes. Both ultrapure water production techniques and equipment are refined to increase pure water output and reduce consumption of raw water. During the year, the Group consumed a total of 1,807,346 tonnes (2020: 1,454,052 tonnes) of raw water. Water consumption density was 246.1 tonnes/MW (2020: 213.5 tonnes/MW).

Packing material

The main packaging material consumed by the Group is carton boxes. These are in line with main customers' standard packaging requirements. The total weight of carton boxes used in 2021 was approximately 1,398 tonnes (2020: approximately 1,763 tonnes). Packaging material consumption density is 0.19 tonnes/MW (2020: 0.26 tonnes/MW).

Aspect A3: The Environment and Natural Resources

There is no material impact to the environment and natural resources from our operation activities, yet to minimise the aforementioned impact on the environment from our business operations, the Group implements measures for environmental protection, including using energy-efficient equipment to achieve additional energy savings and reduce waste. To reduce energy use, circulating water instead of coal boiler is used to provide heating in winter seasons. Further, sewage treatment stations, acid mist treatment towers, purification towers and so on have been developed to achieve environmental sustainability. These measures have achieved energy conservation and consumption reduction, and reduced the impact of pollutant emissions on the surrounding environment. In future, we will continuously contribute to environmental protection and strive for a greener environment, in an effort to fulfill our duties as part of a sharing community.

水

我們致力於以負責任的方式用水，並已制定有關策略減少原水量消耗，推行節水措施，同時檢討有關過程，定期監測。集團生產廠房水源主要使用市政自來水，按照能源管理規定管理對水的使用，完善次級用能管理，加裝計量儀表，節約用水。本集團於年內尋找適用水源時沒有出現任何問題。對於生產用超純水設備產生的濃水進行回用，年回用量120,000噸，改進超純水生產工藝及設備，提高純水產出，降低原水使用量。本集團於年內原水總使用量為1,807,346噸（二零二零：1,454,052噸）。耗水密度為246.1噸／兆瓦（二零二零：213.5噸／兆瓦）。

包裝物料

本集團之消耗的包裝物料主要為紙箱，符合主要客戶的標準包裝要求。二零二一年財政年度內消耗的紙箱，總重量約1,398噸（二零二零：約1,763噸）。使用的包裝物料密度為0.19噸／兆瓦（二零二零：0.26噸／兆瓦）。

層面A3：環境及天然資源

我們的營運活動不會對環境和自然資源造成重大影響，但為降低前述業務營運對環境造成的影響，本集團實行環保措施，包括使用高能源效益設備，進一步節電減廢。為節省能源使用，本集團於冬季期間並無使用燃煤鍋爐供暖，而使用循環水。另外，我們已發展污水處理站、酸霧處理塔和淨化塔等，以達致環境的可持續發展。這些措施做到了節能降耗，減少污染物排放到周圍環境的影響。我們日後將會繼續致力於環境保護，並努力建設更加綠色的環境，履行我們作為共同生活社區一分子的責任。



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Aspect A4: Climate Change

Governance

The Board has overall responsibility for overseeing the Group's sustainability issues including climate-related issues. The Board establish general targets, monitor and review the Group's performance regarding climate-related matter. At management level, management formulate strategies based on the direction set by the Board and lead the climate-related working group.

Strategy

Climate change is undoubtedly a challenge facing by various industries. In order to better manage the impacts that climate change brings to the Group's business, we have set out a series of countermeasures. Extreme weather may cause shortage in water and electricity supply. Utilisation of the recycling water from the preset sewage station can secure water supply temporarily, in addition, backup generators together with fuel are prepared to ensure emergency power supply in the event of electricity shortage. In order to mitigate the impact of natural disasters such as typhoons or floods, facilities with wind resistance materials were designed with reference to the historical typhoon levels, in addition, flood protection facilities were installed. Furthermore, to avoid staff working during periods of high temperature or heavy snow, operation hours will be adjusted flexibly according to the weather. Cooling and cold-resisting facilities are also available in the production plant.

Risk Management

Climate-related working group is composed of environmental safety department manager and front line production manager. They report to the management representative regularly in regard of climate-related risks. The management representatives reviewed the risk identified and ensure the relevant policies and measures are implemented (if any). The identification, assessment and management of these risks are also incorporated into our annual risk management framework.

Apart from the risk identified, there are also opportunities associated with climate change, including growing demand of investors and financial institutions for green and low-carbon finance and investment. One of the Group's long term target is to introduce green financing and diversify our financing sources.

層面A4：氣候變化

管治

董事會全面負責監督集團的可持續發展問題，包括氣候相關問題。董事會為氣候相關事宜制定大方向目標，並監督和審查集團與氣候相關的表現。在管理層面，管理層根據董事會制定的方向制定策略，並領導氣候相關工作小組。

策略

氣候變化毋疑是各行業正在面對的挑戰，為了更好地管理及適應氣候變化對本集團業務帶來的風險，我們制定了一系列應對措施。極端天氣有機會導致水、電無法如常供應，透過預設污水站排水的回收利用，能夠抵禦供水短缺；並準備了備用發電機，備好對應的燃油材料，在停電時能夠保證應急供電。為應付颱風或洪水等災害所帶來的影響，我們根據以往颱風等級去設計設施的抗風等級、並設置了防洪應急器材，避免廠房的生產受到影響。廠房亦有消暑及抗寒設施，我們會按照天氣對工作時間進行調整，避開員工於高溫或大雪寒冷時間段施工。

風險管理

氣候相關工作小組由環境安全部經理及前線生產經理組成。他們定期向管理層代表報告氣候相關風險。管理層代表審閱了已識別的風險，並確保相關政策和措施得到實施(如有)。這些風險的識別、評估和管理也納入了我們的年度風險管理框架。

除了已識別的風險之外，氣候變化也帶來了機遇，包括投資者和金融機構對綠色和低碳金融和投資的需求不斷增長。本集團的長期目標之一是引入綠色融資及多元化融資來源。



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Metrics and Targets

In response to and in line with China's "3060" dual carbon goals, the Group strives to cooperate with the country, focus on reducing carbon emissions in our production.

Social

Employment and Labour Practices

Aspect B1: Employment

Employees are the important value of our Group. In 2021, the Group has complied with all relevant labour laws and regulations in respective countries and regions. The Group offers competitive remuneration, promotional opportunities, compensation and benefit packages to attract and retain talents. Salaries are reviewed regularly in reference to performance appraisals and market trends.

All employments are based on personal capabilities and qualifications regardless of race, social status, religion, gender, age, national origin, citizenship or any other grounds of discrimination. The Group strictly prohibits discrimination among the employees in all business operations and also provides equal opportunity to all employees. Stringent and cautious measures such as training have been implemented by our human resources department in order to prevent cases of discrimination.

指標和目標

為響應和配合中國「3060」雙碳目標，本集團致力與國家合作，著眼於生產上減低碳排放。

社會

僱傭及和勞工常規

層面B1：僱傭

僱員為本集團的重要價值所在。二零二一年，本集團已遵守有關國家及地區所有相關的勞動法律及法規。本集團提供具競爭力的薪酬、晉陞機會、報酬及福利方案，藉以吸引和挽留人才。我們定期參照績效評核和市場趨勢檢討薪金。

所有僱員都是因應個人才能和資歷聘請，並不存在任何種族、社會階級、宗教、性別、年齡、國籍、公民身份或任何其他形式的歧視。本集團嚴禁所有業務營運的僱員之間有任何歧視，全體僱員均享有平等的機會。我們的人力資源部門已實行嚴謹措施（例如培訓），以免出現歧視。



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環境、社會及管治報告

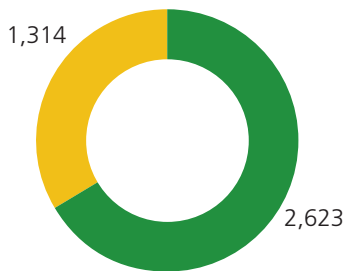
Total number of employees by category

As of 31 December 2021, the Group had a total of 3,937 employees as categorized below:

按組別劃分的僱員總數

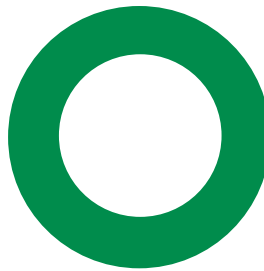
於二零二一年十二月三十一日，本集團總員工人數為3,937人，員工組成情況如下：

Gender 性別



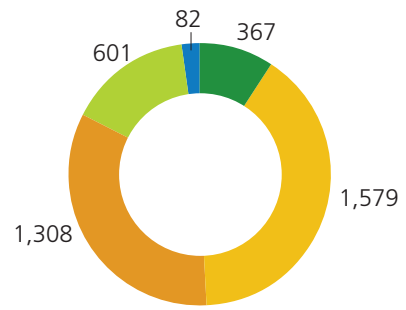
- Male (男)
- Female (女)

Employment type 僱傭類型



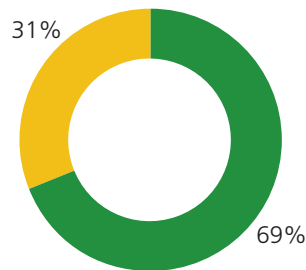
- Full-time (全職)

Age group 年齡



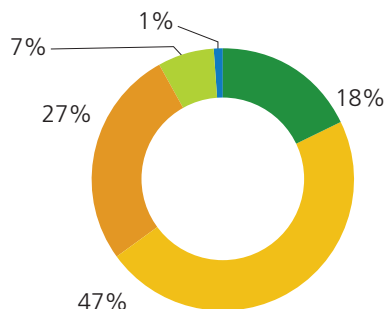
- Aged under 25 (25歲以下)
- Aged 26-35 (26-35歲)
- Aged 36-45 (36-45歲)
- Aged 46-55 (46-55歲)
- Aged 56 or above (56歲及以上)

Employment turnover rate by gender (note) 按性別劃分員工流失比率(附註)



- Male (男)
- Female (女)

Employment turnover rate by age group 按年齡劃分員工流失比率



- Aged under 25 (25歲以下)
- Aged 26-35 (26-35歲)
- Aged 36-45 (36-45歲)
- Aged 46-55 (46-55歲)
- Aged 56 or above (56歲及以上)

Note: Employment turnover rate = number of employee lost ÷ (number of employees at the beginning of the year + number of employees at the end of the year) × 100%

附註：員工流失比率=員工流失人數÷(年初員工人數+年末員工人數)×100%



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Aspect B2: Health and Safety

The Group always regards the safety protection and occupational health of employees as the top priority and has complied with all relevant laws and regulations in respective countries, especially those related to its production processes. A series of health and safety policies is in place to ensure the overall safety of our working environment.

Work safety management system

Safety production is the foundation for the healthy development of a company. All employees strictly comply with all the health and safety codes and manuals of their production processes and departments. New join employees were required to have three-level safety training, occupational health and safety training and medical examination before onboarding. The Group also conducted regular inspections at its production plants and hired qualified professionals to identify the factors that may cause occupational hazard in work environment. Warning signs regarding occupational hazard were post at prominent positions within the working area to improve the safety level within the plants. Labour protective equipment such as safety shoes, masks, acid-proof gloves and boots, earplugs, insulating gloves and boots were provided to employees for work. In addition, physical examinations related to occupational hazard were provided to employees who were exposed to occupational hazards each year. No cases of work-related fatality occurred during the past three years ended 31 December 2020. However, a fatal work accident was unfortunately recorded in Jinzhou. An employee in Jinzhou died in a commuting accident and there were 12 employees involved in work injury and lost 490 workings days in 2021. In order to avoid the recurrence of the same type of accidents involving work-related injuries and death, the Group has launched the relevant training courses on "Enterprise Safety Management about Zero Accident—Target of 100% Safety and Zero Accident". During the year, the Group did not have any non-compliance with any laws and regulations in respect of employees' health and safety.

Measures in response to COVID-19

At the time of the outbreak of epidemic, the group has set up an epidemic prevention and control leading group and published working guidelines regarding epidemic prevention and control to all employees according to relevant guidance published by government. The epidemic situation was closely monitored by the epidemic prevention and control leading group, all employees were required to wear mask at work and wash hands frequently. Measures such as regular disinfection within working environment, daily temperature monitoring of employees and restriction on visit from outsiders were strictly followed. During the period of the epidemic, work from home measures were applied where possible and closed-off management to employee in plants is carried out. Staff at all levels conscientiously follow the epidemic prevention and control policy to ensure the physical and mental health of all employees.

層面B2：健康與安全

本集團始終將員工的安全保障和職業健康是為重中之重，和已遵守有關國家所有相關的法律及法規，特別是在生產流程方面。本集團訂有一系列健康與安全政策，確保工作環境的整體安全。

安全生產管理體系

安全生產是企業健康發展的基礎。我們嚴格要求全體僱員遵守其生產流程及部門的所有健康與安全守則及手冊。新員工入職亦需進行安全(三級安全教育)、職業健康培訓、入職體檢。集團亦定期於廠房進行檢查，每年聘請有資質的相關單位對廠房涉及到職業病危害因素崗位進行檢測，張貼職業病危害因素警示標示，以監察及提升廠房內之安全水平。為廠房工作的員工提供勞保服、安全鞋、口罩、防酸手套、防酸靴、耳塞、絕緣手套、絕緣靴等勞保用品，並每年對接觸職業病危害因素的員工進行職業病危害體檢。於二零一八年至二零二零年度，集團沒有發生任何因工死亡個案。然而於本報告期間，我們不幸地錄得合共一宗員工因工身亡事故，一名員工在下班途中因交通意外身亡。另外有12名員工因工傷而損失共490天工作日數。為避免工傷亡同類型事故再次發生，本集團已加入「安全百分百事故零目標——企業零事故安全管理」的相關培訓課程。年內，本集團並無違反任何有關僱員健康與安全的法律及法規。

新型冠狀病毒疫情的應對措施

在疫情的爆發之際，集團成立了疫情防控制導小組，並根據政府發佈的新型冠狀病毒感染的肺炎疫情防制工作的相關指導意見對全體員工發佈疫情防制工作指引。疫情防制小組緊貼關注疫情動態，要求全體人員在崗期間佩戴口罩、勤洗手、每日定時對現場進行消毒及員工體溫監測，嚴格管控外來人員等。與疫情期間，公司部分人員採用家遠程辦公方式，車間上班人員進行封閉式管理。各級人員認真貫徹疫情防制政策，確保全體員工身心健康。



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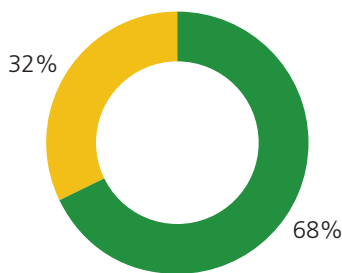
Aspect B3: Development and Training

Training and development always serve as the key factors for business success and optimization of talent structure. The Group has provided various tailor-made training programs covering corporate culture, occupational safety, laws and regulations, professional skills and other aspects for employees from different departments to cope with their business needs and to enhance the professional capability of the employees and help them accumulate experience. The training programs are evaluated regularly to review the effectiveness and compared to the business needs. The Group also updates its employees from time to time on the latest information of the industry and laws and regulations which is essential to the Group's operations and their job responsibilities.

層面B3：發展及培訓

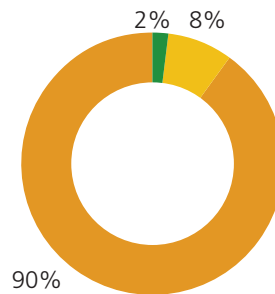
培訓及發展一直為業務成功和人才結構優化的關鍵因素。本集團為不同部門僱員度身設計不同的培訓計劃，涵蓋企業文化、職業安全、法律法規、專業技能及其他方面，以應付其業務需要和提升員工的在職能力及幫助其積累經驗。我們定期評估培訓計劃的成效，並與業務需要互相對比。本集團亦不時向僱員提供對本集團營運及其職責至為重要的最新行業及法律法規信息。

Percentage of employees trained by gender
按性別劃分受訓僱員百分比



■ Male (男)
■ Female (女)

Percentage of employees trained by employee type
按職級劃分受訓僱員百分比



■ Senior management (高級管理層)
■ Middle management (中級管理層)
■ Other employees (一般員工)

Information on average training hours completed per employee is set out below:

按員工類別計算的平均受訓時數及參訓人次如下：

	Average training hour 平均受訓時數	Number of employee trained 參訓人數
By gender 按性別		
Male 男	26 hours 小時	1,296
Female 女	26 hours 小時	615
By employee category 按職級		
Senior management 高級管理層	10 hours 小時	35
Middle management 中級管理層	18 hours 小時	150
Other employees 一般員工	27 hours 小時	1,726



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Aspect B4: Labour Standards

Prevention of Child labour or forced labour

The Group has complied with all relevant local labour laws and regulations in respective countries. In PRC, the Group regularly keeps track of the latest laws and regulations such as the Labor Law of the People's Republic of China (中華人民共和國勞動法) and the Labor Contract Law of the People's Republic of China (中華人民共和國勞動合同法). In order to ensure that the employees can work in a peaceful and willing environment, the Group strictly prohibits the use of child or forced labour in its business operations. It is clearly stated in the application conditions that child labor and forced labor are prohibited. Identity verification and qualification review of applicant are strictly carried out during the recruitment process. Any information indicating violation of employment laws or standards is found after recruitment, the labor relationship will be terminated immediately to protect the rights and interests of both parties.

Operating Practices

Aspect B5: Supply Chain Management

The Group is committed to effectively managing its supply chain and providing customers with premium products and services, in an effort to meet and even exceed customers' expectations. When purchasing products and services, the Group complies with all applicable environmental laws, regulations and rules. Comprehensive assessment of suppliers is performed on an ad hoc basis to benchmark against customers' expectations of product quality. Most of the key suppliers maintain a close and long-term partnership with the Group. During the year, the Group maintained good and stable relationships with its suppliers.

Supply chain management mechanism

In accordance with supplier management control procedures, the Group has clear regulations on engaging new suppliers and the evaluating existing suppliers. Before engaging with a new supplier, the Group will review the company information provided by the potential supplier, including but not limited to business license, business and product information, production capacity, main customer groups, testing equipment, customer complaint managing procedures, material safety data sheet (MSDS), environmental safety related qualifications and other materials. After that, technicians and environmental and safety personnel will conduct site visit of the potential supplier, to better understand the management system of the factory and operation, and to verify the accuracy and completeness of the information provided previously.

層面B4：勞工準則

預防童工及強制勞工

本集團已遵守有關國家所有相關的地方勞動法律及法規。在中國，本集團定期留意最新的法律法規信息，例如《中華人民共和國勞動法》及《中華人民共和國勞動合同法》。為確保員工能在一個和平自願的情況下工作，本集團嚴禁在業務營運中使用童工或強制勞工。應聘條件中亦註明不錄用童工及強制勞動，並在招聘過程中進行嚴格的身份核實及資格審核。倘有任何資料顯示招聘後有違反僱傭法律或標準的個案，將即時終止解除勞動關係以保護雙方權益。

營運慣例

層面B5：供應鏈管理

本集團致力對供應鏈進行有效管理，為客戶提供優質產品及服務，力求滿足乃至超越客戶期望。於採購產品及服務時，本集團會遵守所有適用的環境法例、法規及規定。站在客戶對產品質量要求的高度對供應商進行不定期的全面審核。大部分主要供應商均與本集團維持緊密的長期合作關係。年內，本集團與其供應商保持良好且穩定的關係。

供應鏈管理機制

本集團按照供應商管理控制程序，對開發新供應商及評估現有供應商有明確的規管。開發新供應商前會審查供應商所提供的企業信息，包括但不限於營業執照、商務及產品信息、產能、主要客戶群體、檢測設備、出貨客訴處理流程、化學品安全技術說明書 (MSDS)、環境安全相關資質等資料。期後由技術人員及環境安全部人員前往供應商，透過驗廠了解工廠的管理制度和運作情況，盡可能確認其資料的真實及完整性。



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The Group also conducts regular factory inspections and performance evaluation of existing suppliers. Once a supplier is found to have any improper behavior in the production process or fails to meet the performance standards of the Group, the Group will issue a warning to the supplier, and if the supplier does not make any remedy measures in time, its supplier qualification will be cancelled.

Actively searching for sustainable suppliers

With global social responsibility as objective, the Group has implemented socially responsible procurement and concerned about the impact that supply chain brings to the environmental and occupational health and safety aspects. The materials provided by suppliers and the process of transporting these materials can directly affect the environmental, health and safety of the Group's production processes and products. There are clauses on environmental requirements in the contract with the supplier, and supplier is also encouraged to train its employees on the relevant content. Suppliers with environmental related certificates issued by the local government would be our prior choice.

Number of major suppliers by geographical locations during the year is set out below:

本集團對現有供應商亦會定期進行驗廠及供應商績效評估，持續評估彼等的績效。倘發現供應商在生產過程存在任何不當行為或未能達到本集團的績效標準，本集團將向供應商發出警告，若供應商沒有及時更改將取消其供應商資格。

積極尋找可持續發展的供應商

本集團將全球化社會責任作為目標，實施社會責任採購，並對於供應鏈有機會對環境、職業健康安全造成的影響表示關注。供應商提供的物料及運輸物料的過程能直接影響本集團生產過程及產品的環保性、健康安全。與供應商的合同中有對環境要求的條款，亦鼓勵供應商就有關內容對員工進行培訓。集團亦優先選擇具有當地政府發放的環評證書的供應商。

本年度按地區劃分的主要供應商數目如下：

	Number of major supplier 主要供應商數目
Mainland China 中國	154
Tai Wan 台灣	2
Europe 歐洲	1
Hong Kong 香港	1
Japan 日本	1
	159



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Aspect B6: Product Responsibility

The Group is well aware that providing quality products for customers is the most basic responsibility and the quality of products is the important key to customers' loyalty. The Group performs high quality controls in every production operation. Procedures and policies are established to govern all sorts of claims and complaints. If the Group receives any claims or complaints regarding its products and services, it will conduct investigation in order to provide immediate and appropriate responses to customers. This strengthens product quality, enhances the quality awareness of employees and consequently enables us to stay competitive in the market and to play an important role in enhancing the brand image.

Customer service and complaints management

In order to improve customer satisfaction, the Group attaches great importance to customer feedback and complaints. If any complaint is received, the Group will endeavor to take timely action to resolve the problem and take effective corrective measures. The Quality Management Department will also conduct regular discussions and reviews to prevent the same type of incident from happening again. In this reporting year, there were no cases of recalling sold or shipped products due to safety and health reasons. A total of 418 complaints about products and services were received throughout the year, most of which were minor defects or damage to the goods during transportation, and a small number of them were caused by customers not installing in accordance with the installation requirements. The complaints during the year have been communicated well with customers and replaced products for customers.

Quality control

The Group's quality control department conducts routine quality inspections on products to ensure that the manufactured products meet the requirements, technical specifications and quality standards set by customers. When receiving a customer's request for the return and exchange of defective products, the quality control department will first arrange re-inspection of the returned defective products and make corresponding measures based on the cause of the defective products.

層面B6：產品責任

本集團深知為客戶提供優質產品是最基本的責任及產品質量是客戶忠誠度的關鍵所在。本集團對每一生產環節實行優質監控，並設有程序及政策規管各項申索和投訴。若本集團接獲任何有關產品及服務的申索或投訴，本集團將會進行調查，向客戶提供即時、適當的回應，此舉措可加強產品質量及增強員工質量意識，從而保持我們在市場上的競爭力及對品牌形象的提升發揮重要作用。

客戶服務及投訴管理

為了提高客戶的滿意度，本集團高度重視客戶的反饋及投訴。倘接獲任何投訴，本集團將努力及時採取行動解決問題，並採取有效的糾正措施。質量管理部亦會定期進行討論及檢討以防再次同類型事件發生。在本報告年度並沒有任何因安全與健康理由而須回收已售或已運送的產品個案。全年接獲有關產品及服務的投訴數目共418宗，大部分為輕微瑕疵或於運輸過程導致貨物有破損，少量為客戶未按照安裝要求進行安裝造成破損。年內的投訴已經與客戶一致溝通好並為客戶更換產品。

品質控制

本集團的品質保證部門對產品進行嚴格的常規質量檢查，確保已製造的產品符合客戶所規定的要求、技術規格及預定的質量標準。倘收到客戶提出不良品退換貨要求時，品質保證部門先對收回的不良品安排複檢工作。集團會根據造成不良品的成因，作出相應的處理辦法。



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Protection of intellectual property

The Group recognises intellectual property as an important asset and strictly follows relevant laws and regulations such as the “Patent Law of the People’s Republic of China” and the “Copyright Law of the People’s Republic of China”. The Group adopts a zero-tolerance attitude towards any behavior that may infringe the intellectual property rights of third parties. Also, the Group raises employees’ awareness of intellectual property protection through internal publicity and employee training from time to time.

Privacy protection

In order to maintain mutual trust with our customers, the Group recognises the importance of privacy protection of individuals and business data. It is the Group’s policy that, when handling confidential and sensitive information, only authorised staff of the relevant departments are allowed to collect, access and handle such information. All employees are prohibited from making copies or disclosing any form of confidential information to third parties without prior approval from management or clients.

Aspect B7: Anti-Corruption

The Group is committed to achieving the highest possible standards of fairness, openness and integrity. Hence, it strictly implements various operating procedures and codes of conduct to regulate the work ethic of the Group’s staff. In order to prevent corruption from happening, the group has included a clause in the transaction contract, stating that the supplier shall not provide any direct or indirect benefits to the Group in any form for any reason. If the supplier is found to be in violation of this regulation, its supplier’s qualification will be cancelled immediately on the grounds that the supplier has adopted unfair competition ways of business. The group also requires suppliers, construction units and relevant persons in charge of the project to sign an integrity declaration, and employees are required to declare potential conflicts of interest. During the year, the group also conducted trainings on financial security and anti-corruption for the department heads of the company, and organised visits to prisons to have sharing on integrity and anti-corruption by prisoners. Further, a whistle-blowing policy is also in place to minimise the risk of fraudulent acts or criminal offences occurring in the workplace. During the year, the Group did not find any cases in breach of the relevant laws and regulations relating to corruption, bribery, extortion, fraud or money laundering.

保護知識產權

本集團視知識產權為重要資產，並嚴格遵循《中華人民共和國專利法》《中華人民共和國著作權法》等相關法律法規。集團對可能侵犯第三方知識產權的任何行為採取零容忍態度，並不定時透過內部宣傳及員工培訓提高員工的知識產權保護意識。

私隱保障

為了維持與客戶的互信，本集團重視個人及商業資料的保護。針對處理機密及敏感資料方面，集團設有私隱保護管理措施，僅可由獲授權人員收集、存取及處理相關資料。未經管理層或客戶批准前，員工嚴禁複印或向第三方披露任何形式的機密資料。

層面B7：反貪污

本集團致力達致最高的公平、開放及誠信水平。因此，本集團嚴格執行各項作業程序及操守守則，以規範本集團全體員工的職業道德。為了防範貪污事件的發生，集團於在交易合同中加入廉政約定，明確供方不得以任何理由及任何形式向需方提供任何直接或間接的利益。若發現供方違反此規定，集團將以供方採取了不正當競爭手段為由立即取消供方供貨資格。集團亦要求供應商、工程施工單位及項目相關負責人簽署廉潔承諾書，僱員亦均須申報潛在的利益衝突。集團另亦設有舉報政策，以盡量減少工作場所發生的舞弊行為或刑事罪行。在本報告年度，本集團並無發現任何違反與貪污、賄賂、勒索、欺詐或洗黑錢的相關法例及法規的違規案例。



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Community

Aspect B8: Community Investment

Over the years, the Group has focused on community activities and placed great emphasis on both physical and mental health of employees. The Group continuously organizes activities such as badminton, billiards, basketball and table tennis, to enrich employees' health and cultural life and building a good corporate culture. The Group also shows its concerns to community investment for the elderly and social welfare. Unfortunately, in order to reduce unnecessary social activities during the epidemic, the Group was unable to organise community activities and volunteer services as we used to. During the reporting period, the Group had made donation of approximately RMB228,958, including donation to elderly people who have no working ability, no source of income and no legal dependents, amounted to approximately RMB150,000 and donation relating to poverty alleviation programmes amounted to approximately RMB50,000.

The Group will continue to keep track on the policies and development of the community, advocate the concept of green life, share love and care with disadvantaged groups and those in need, and be a socially responsible enterprise.

Feedbacks

We are committed to disclosing ESG information to our stakeholders and you are welcome to provide opinions and advice on this report through the following contact methods:

Solargiga Energy Holdings Limited
Address: Room 1402, Harbour Centre, 25 Harbour Road, Wanchai, Hong Kong
Email: esg@solargiga.com

Hong Kong, 31 May 2022

社區

層面B8：社區投資

本集團多年來一直專注於社區活動，重視僱員的身心健康。本集團持續舉辦羽毛球、撞球、籃球和乒乓球等活動，以豐富僱員的健康及文化生活，建構企業文化。本集團亦關注長者及社會福利的社區投資。遺憾在疫情期間，本集團為了減少不必要的社交活動，未能如以往舉辦社區活動及義工服務。於本報告期間，本集團共捐款約人民幣228,958元，其中包括向沒有工作能力、沒有收入來源及沒有法定贍養人的老人捐款約人民幣150,000元及向貧困縣進行消費扶貧約人民幣50,000元等。

本集團將繼續關注社區的政策和發展，提倡綠色生活理念和向弱勢社群及有需要人士分享愛心及關懷，成為一家具社會責任感的企業。

意見反饋

我們致力於為利益相關方披露的ESG信息，歡迎您對本報告提出意見及建議。聯繫方式如下：

陽光能源控股有限公司
地址：香港灣仔港灣道25號海港中心1402室
電郵：esg@solargiga.com

香港，二零二二年五月三十一日





Solargiga Energy

