



**GCL-Poly Energy Holdings Limited**

**保利協鑫能源控股有限公司**

(incorporated in the Cayman Islands with limited liability)

(Stock Code : 3800)

# ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORT 2016





## ABOUT THIS REPORT

GCL-Poly Energy Holdings Limited (“GCL-Poly” or “our Company”), headquartered in Hong Kong, is the first company with a polysilicon production capacity exceeding 70,000 MT in China. Moreover, we are one of the largest polysilicon producers globally, and occupy a leading position in clean energy aspects such as PV material production and solar power plant development in the industry. We also focus on solar power generation, operation and maintenance of solar power plants. Upholding the strategic principle of financial cooperation, technological innovation, gathering of talents and synergy creation, we employ a strategic mix of concentrated and distributed development to provide clean, safe and highly efficient green energy for society.

Since 2013, GCL-Poly has been publishing its annual Environmental, Social and Governance (ESG) report. This report covers the period between 1 January 2016 and 31 December 2016. As in the past, this report mainly focuses on GCL-Poly’s economic, environmental and social performance and achievement during the reporting period. This report was prepared in accordance with the Core Option of the G4 Sustainability Reporting Guidelines issued by the Global Reporting Initiative (GRI), the Environmental, Social, and Governance Reporting Guide issued by the Stock Exchange of Hong Kong Limited (SEHK), and the Guide to the Preparation of Corporate Social Responsibility Reports of China issued by the China Academy of Social Science.

GCL-Poly finished the disposal of its non-solar power business in December 2015. Compared with last year’s report, this report only covers the solar material and solar power plant business operated by GCL-Poly. The report contents is framed in accordance with the result of the materiality assessment and stakeholder engagement. Please refer to the section on Sustainable Development Management for more details. This report has successfully completed the Materiality Disclosures Service, which verifies that at the time of publication of the report, disclosures G4-17 to G4-27 were correctly located in both the Content Index and in the text of the final report.

There are Chinese and English versions for this report. For more details about the background, business development and sustainability vision of GCL-Poly, please refer to our website [www.gcl-poly.com.hk](http://www.gcl-poly.com.hk).

As in the past, we attach great importance to stakeholders’ opinions, which will guide us to further improvement. If you have any comments or recommendations regarding our report’s content and sustainable development performance, please contact us through the channels listed below:

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## **Appendix A**

GRI G4 Content Index

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Rating Report on the GCL-Poly 2016 Environmental, Social and Governance Report



# CHAIRMAN'S STATEMENT







2016 was a significant year in the development history of GCL-Poly. We have followed the Company's mission and vision to realise our promise to our shareholders on value creation and social development. As part of our efforts to promote the development of solar industry, we continue to fulfil our mission of bringing green energy to life, and have achieved excellent results.

After completing the divestiture of its other non-solar power plant business in 2015, our business focus on world-leading research and development, production and supply of polysilicon and wafers, and geographical expansion through its subsidiary, GCL New Energy, it has become a top-tier solar farm developer and operator in China.

As a world-leading corporate which has long been working on green energy, GCL-Poly firmly believes that besides being committed to the development of clean energy, we proactively fulfil our corporate social responsibility (CSR) to fuel the advancement of society and the economy through sustainable development. Besides our commercial operation, our employees, neighbouring communities and the environment have become an important part of our sustainable development. The Paris Agreement has moved the world towards tackling climate change by 2020. The Agreement also emphasises the urgent need to transform energy structures. At the same time, guaranteeing stable, clean and inexpensive supply of energy is not only the basis of socio-economic development but also an important factor related to the formulation of China's national development strategy. GCL-Poly has insisted on proactively promoting the use of clean energy with quality products and services. We reduce environmental impacts, provide care for our employees and help them realise self-development opportunities, devote ourselves to charity, give back to the community and fulfil our responsibilities as a corporate citizen. Through our hands-on approach, our directors lead our employees in proactively contributing to the development of the Company and adhering to their responsibilities in every aspect of their work. We appreciate all our employees who incorporate the concept of sustainable development into every management decision and operational task. Our employees' support has allowed for full implementation of the Company's strategy, receiving recognition and support from the general public.

Technological innovation is the source of motivation for GCL-Poly to keep moving forward. In 2016, we invested approximately RMB250 million in research and development. In addition, through improving project tracking, increasing our efforts in research and development of technical improvements and fostering industry collaboration, we have attained certain achievements in terms of patents and cost control.

We have pushed forward environmental upgrades and improvement on production processes and implemented environmental monitoring and control in 2016 to proactively reduce our impact on the environment. By continuously enhancing our environmental management rules, we have reduced greenhouse gas emissions with active management and technical advancement. In order to optimise the use of our raw material and water in production, we have constantly improved our production methods. This not only lowers the production cost but also further increases the environmental cost-effectiveness.

We have always seen safe production as a core value of sustainable development. In 2016, we continued to strengthen safe production. By further enhancing the safe production management system, installing safe production facilities and promoting safe production training, we holistically ensure production safety and safeguard our employees' safety and health. We are dedicated to providing a better work environment for employees. We have also created occupational health files and organised diverse cultural activities to allow all employees to be able to work at GCL-Poly safely and encourage self-development.

Apart from focusing on our business development, we actively inspire the further development of the industry. By working closely with the energy management departments and aligning with the national strategy and policies, we have laid the foundation for the industry's long-term development. We fully understand the positioning and planning of the solar industry as stated by our government. As a result, we constantly optimise our business to work towards the division of labour, professionalisation and product quality enhancement, and foster the industry's healthy development.

Besides offering excellent products and services, we proactively participate in charity activities. GCL Sunshine Foundation has organised "Sunshine Care Action", "Higher Education Scholarship Award" and other activities. We took part in earthquake relief, emergency response measures and poverty alleviation. Our charity activities organised throughout the years have received positive remarks from many sectors. Funing, Jiangsu Province experienced rare catastrophic weather in the summer of 2016. The Company called for an emergency rescue meeting and decided to donate RMB10 million to the affected area for disaster relief and post-disaster reconstruction.

We hope to realise our goal of bringing green energy to tens of millions of households with our efforts to contribute to society's sustainable development.

**Zhu Gongshan**  
Chairman

## HIGHLIGHTS IN 2016

### BUSINESS DEVELOPMENT

- Funing GCL Photovoltaics' diamond wire cutting project was successfully launched, realising GCL-Poly's extensive use of the new technique.
- Total production and sales of polysilicon for the year were 69,345 MT and 9,951 MT respectively, and total production and sales of wafers were 17,327 MW and 17,518 MW respectively.

### RESEARCH AND DEVELOPMENT

- GCL Ningxia Crystalline successfully produced its first monocrystalline silicon ingot.
- The black silicon technology research and development team under the wafer department introduced the black silicon wet mass production technique, under which black silicon cells can enhance efficiencies by 0.3%–0.6% by applying texturing techniques and realising mass production.
- GCL Testing Technology Centre of Jiangsu Zhongneng Polysilicon Technology Development Co., Ltd successfully passed professional appraisal and obtained the "Certificate of Laboratory Accreditation from the China National Accreditation Service for Conformity Assessment (CNAS)", becoming the first testing institution of GCL Group accredited by CNAS.
- The invention patent, GCL Polysilicon Production Method, won the 18th Chinese Outstanding Patented Invention Award in 2016.
- Subsidiaries under GCL-Poly applied for 100 patents (including 37 for inventions) and were granted 53 patents in 2016. To date, GCL-Poly has applied for 556 patents and was granted 374 patents, among which 104 were patents for invention.
- The Standard of "Testing of Chlorine in Silicon with Ion Chromatography" compiled mainly by GCL-Poly was released all over the world. To date, there are 3 international standards that were mainly compiled and released by GCL-Poly.

### ENVIRONMENTAL PROTECTION

- GCL-Poly invested RMB122.67 million in environmental upgrading and improvement in 2016.
- The Company reduced over 15 thousand tonnes of CO<sub>2</sub> emissions through technical improvement. Its subsidiary's solar farm business fed into the grid to become carbon neutral with about 165 thousand tonnes.
- No environmental non-compliance incidents were reported.
- The Company invested RMB77 thousand in environmental training, with 17,077 participants and 14,933 training hours in total.
- GCL-Poly successfully recycled 24,459 tonnes of waste.

### SAFETY AND HEALTH

- The Company invested RMB109 million to enhance safety measures, purchase protective equipment and provide safety training.
- A total of 50,273 participants attended production safety-related training.
- No significant safety incidents were reported, including work-related fatalities.

### COMMUNITY AND CHARITY

- The Company donated RMB10 million to affected areas in Funing devastated by severe weather for emergency rescue and post-disaster reconstruction.
- The Company subsidised a high school environmental society to travel to Inner Mongolia to combat desertification and promote afforestation.





# COMPANY OVERVIEW

# COMPANY OVERVIEW

## BUSINESS OVERVIEW

GCL-Poly was founded in 2006 with its headquarters in Hong Kong. Our mission is "Bringing Green Power to Life" and we are maintaining the leading position of the clean energy industry. GCL-Poly was listed on the Hong Kong Stock Exchange in 2007 (stock code: 3800.HK). In 2010, it was elected as a constituent of the Hang Seng Composite Index and the Hang Seng Mainland 100 index; in 2012, GCL-Poly was named as a Global Top 2000 listed company by Forbes.

2016 marked an important milestone for the development of GCL-Poly. After completion of the divestiture of its non-solar power plant business, the Company has focused on the production and supply, research and development of polysilicon and wafers. Meanwhile, with the expansion of its subsidiary, GCL New Energy, the Company has become a top-tier solar farm developer and operator in China. It had maintained its polysilicon production capacity at 70,000 MT at the end of 2016, with its wafer production capacity achieving 18.5 GW. The Group mainly operates its new energy business through the subsidiary, GCL New Energy. It has over 4 GW solar projects in operation globally.

## VISION

**To be internationally recognized as an environmentally responsible energy enterprise**

- We gain recognition from society due to our engagement in people-caring activities, devotion to environmental protection, contribution to regional economic development and sound corporate integrity. We have been recognised by the industry for our healthy and rapid growth, proven operating performance and philosophy of harmonious competition. We have gained the respect of our staff as we follow the philosophy of people-oriented management.

## MISSION

**Provide high-quality energy and services for a better living environment**

- GCL-Poly provides users with safe, affordable and reliable energy and services, and continuously promotes the utilisation of environmentally friendly energy. Harmonious development of society is to the benefit of all mankind; it is every enterprise's responsibility to reasonably utilise limited natural resources.
- We have only one Earth. Therefore, loving the environment means loving ourselves! GCL will start from the basics to build a more beautiful homeland!

## CORE VALUES

**People-oriented, Pursuit of excellence, Harmonious development, Value creation**

- Talent is the foremost valuable resource in GCL-Poly. GCL-Poly provides an ideal working environment by continuously optimising our recruitment mechanism and applying a detailed human management approach.
- We encourage our staff to involve themselves whole-heartedly to the enterprise to develop and realise their own value by cultivating their ability and realising their potential.
- Sense of mission, faith and pursuit of excellence provide forward momentum for GCL-Poly, while excellence in operating performance guarantees the path to our success. GCL-Poly pursues the best in every single matter.
- Enhancing corporate values continuously by utilising simple and flexible operating mechanisms, proven ability of execution and low-cost competitiveness.



## GCL-POLY SPIRITS

### Integrity

honest, promoting goodwill and acting in good faith.

### Dedication

performs duties in good faith, industrious and enterprising.

### Respect

values equality and trust, open-minded, objective and friendly.

### Cooperation

passionate and active, communicates for synergy, teaming for success.

### Realistic

practical, objective, accurate and efficient.

### Innovation

interactive and creative to better pursue improvement.

## GCL-POLY'S THREE BUSINESS SEGMENTS

### Solar Materials Business

- Mainly manufactures and sells polysilicon and wafers to companies operating in the solar industry

### Solar Farm Business

- Operates 371 MW solar farms
- 18 MW located in the US and 353 MW in China

### New Energy Business

- Represents the business operations of GCL New Energy, which is principally engaged in the development, construction, operation and management of solar farms

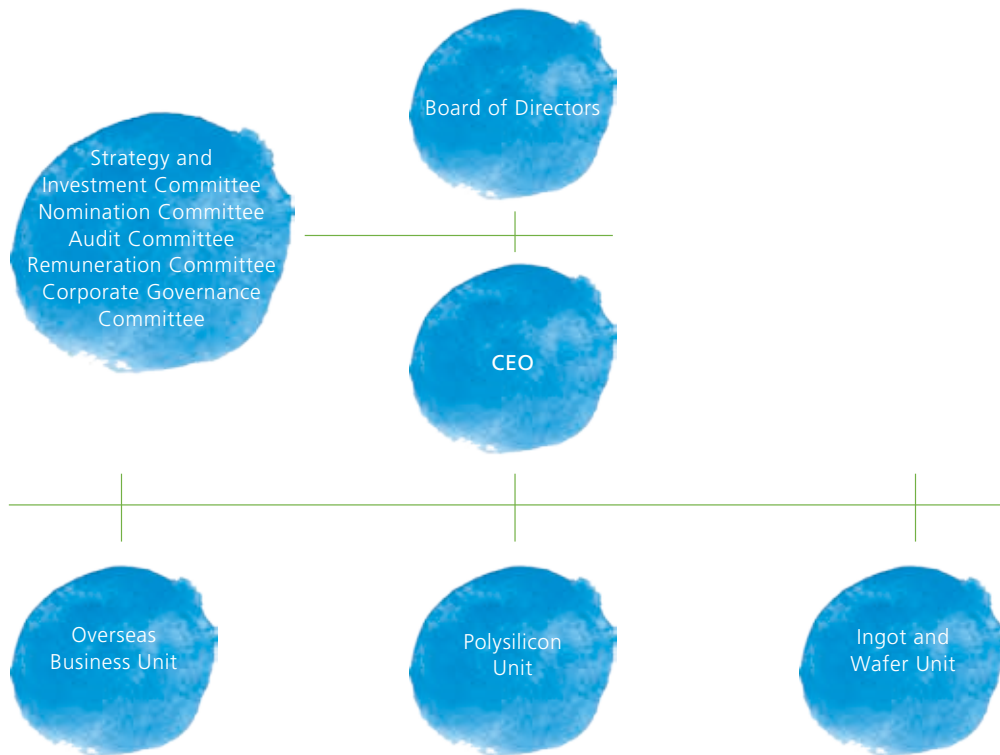
## STATUSES OF GCL-POLY'S SUBSIDIARIES (AS AT 31 DECEMBER 2016)

Category	Name of Subsidiaries
Six R&D Centres	<ul style="list-style-type: none"> <li>Suzhou GCL-Poly Industrial Application Research Institute</li> <li>Polysilicon R&amp;D Centre</li> <li>Dicing R&amp;D Centre</li> <li>GCL Software Control Equipment R&amp;D Centre</li> <li>Solar Energy Materials R&amp;D Centre</li> <li>US Richland R&amp;D Centre</li> </ul>
One Management Centre	<ul style="list-style-type: none"> <li>Suzhou Management Centre</li> </ul>
Two Representative Offices	<ul style="list-style-type: none"> <li>Beijing</li> <li>Taiwan</li> </ul>
10 Polysilicon & Wafer Manufacturing Subsidiaries	<ul style="list-style-type: none"> <li>Jiangsu Zhongneng Polysilicon Technology Development Co. Ltd.</li> <li>Jiangsu GCL Silicon Material Technology Development Co. Ltd.</li> <li>Suzhou GCL Photovoltaic Technology Co. Ltd.</li> <li>Konca Solar Cell Co. Ltd.</li> <li>Yangzhou GCL Photovoltaic Technology Co. Ltd.</li> <li>Taichang GCL Photovoltaic Technology Co. Ltd.</li> <li>Changzhou GCL Photovoltaic Technology Co. Ltd.</li> <li>Ningxia GCL Monocrystalline Silicon Technology Development Co. Ltd.</li> <li>Funing GCL Photovoltaic Technology Co. Ltd.</li> <li>Henan GCL Photovoltaic Technology Co. Ltd.</li> </ul>
10 Solar Farm Companies*	<p>Solar farms established in the PRC: (Managed by GCL New Energy)</p> <ul style="list-style-type: none"> <li>Xuzhou GCL Solar Energy Co. Ltd.</li> <li>Jiangsu Guoneng Solar Technology Co. Ltd.</li> <li>Datong Xian GCL Solar Energy Co. Ltd.</li> <li>Datong Xian Xinneng Solar Energy Co. Ltd.</li> <li>Ningxia Qingyang New Energy Co. Ltd.</li> <li>Ningxia Hengyang New Energy Co. Ltd.</li> <li>Funing Xinneng Solar Energy Co. Ltd.</li> <li>Baoying Xingneng Renewable Energy Co. Ltd.</li> <li>Huocheng Xian Tukai New Energy Technology Development Co. Ltd.</li> <li>GCL-Poly (Sangri) Solar Power Co. Ltd.</li> </ul> <p>Overseas solar farm holding company:</p> <ul style="list-style-type: none"> <li>GCL Solar Energy, Inc. (Managed by GCL New Energy)</li> </ul>

\* Excluding solar power stations under GCL New Energy's business



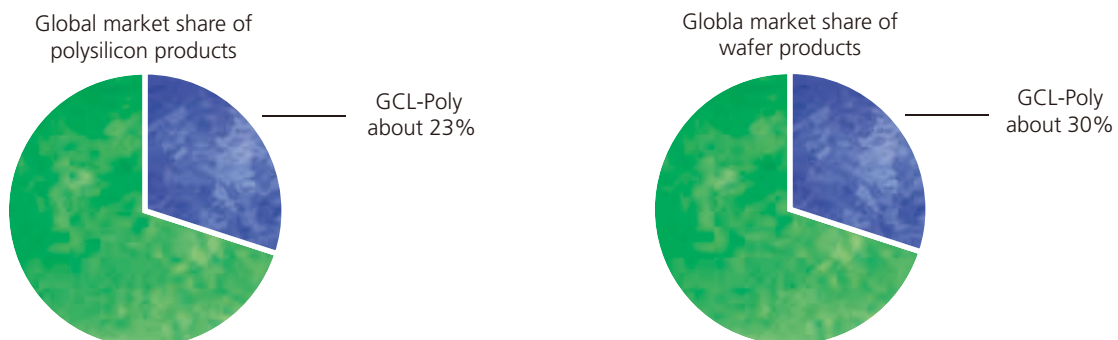
## CORPORATE STRUCTURE



## BUSINESS DEVELOPMENT

In 2016, we continued to follow the guideline of “technology innovation for transformation and upgrading, management reform for efficiency improvement and resource consolidation for synergistic development” and the approach of “innovation, transformation, ingenuity and cooperation” to improve our evaluation system for refined production, and implement and improve the level of automation and information in respect of production methods; thus creating a benchmark for intelligent manufacturing in the industry which greatly boosts production efficiency and makes a significant contribution to the achievement of the Company’s annual operating results.

The Company further achieved remarkable results in both production and sales in 2016. The total production and sales of polysilicon were 69,345 MT and 9,951 MT respectively, and those of wafers were 17,327 MW and 17,518 MW respectively. Both production and sales targets were fully achieved in 2016.



The Company **ranked first in the world** in terms of the global market share of polysilicon and wafer products.

## VARIOUS MAJOR BUSINESS INDICATORS SHOWED SIGNIFICANT IMPROVEMENT

Items	2016	Increased by
Revenue	RMB22.02 billion	7.5%
Gross profit	RMB7.04 billion	22.7%
Income tax expense	RMB537 million	10.9%
Total PV installed capacity	3,516 MW	114.4%
Total revenue from new energy business	RMB2.25 billion	226.5%
Profit from new energy business	RMB0.24 billion	309.8%

## CORPORATE GOVERNANCE AND RISK MANAGEMENT

We are dedicated to continuously improving our corporate governance standards and procedures. The board believes that comprehensive and reasonable corporate governance is the key to sustain business growth, safeguard the Company's interest and assets, and create value for shareholders and other stakeholders. GCL-Poly complies with the code provisions set out in the Corporate Governance Code and Corporate Governance Report contained in Appendix 14 of the Listing Rules. We are in strict accordance with the relevant provisions of SEHK to conduct investor relations management and disclose information. We publish annual report, interim report and hold annual and special general meetings regularly to keep communication with shareholders. In this way, we can ensure shareholders and investors can publicly, equally and immediately obtain the company information and participate in corporate governance, which can help protect the interests of small and medium investors. We also adhere to the China Securities Regulatory Commission's Basic Norms of Enterprise Internal Control and have implemented a series of risk and internal control rules and systems, including the General Risk Management Guidelines, Principles and System of Internal Control Management, System and Standard Guideline for Internal Audit and Risk Alert Management Measures.

For more information on our corporate governance and the Board, please refer to our 2016 Annual Report, which can be accessed via our company website, <http://gcl-poly.com.hk/en>.

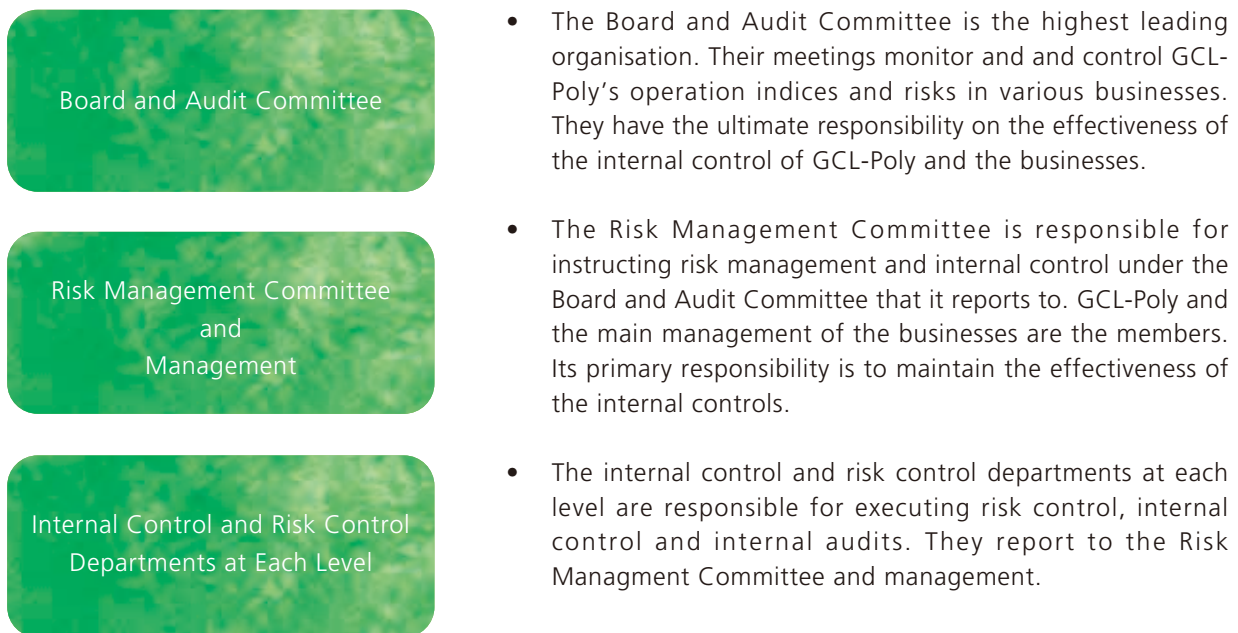
GCL-poly strives to create a corporate culture of integrity. We have established Employee Handbook to provide employees with clear guidance on moral behaviour with regard to conflict of interest, confidential information, and other situations. When a situation where a conflict of interest arises at work, employees should act in an independent manner for the company's best interest. Regarding the protection of our confidential information, we have a stringent information authorisation system to properly manage company's confidential information. In addition to the employee code of conduct, we have also set up various employee guidance such as "Integrity, Culture, and GCL ten taboos", "Anti-corruption Management System", "Employee Behaviour Standard", "Anti-fraud and Whistle-blowing Mechanism" to increase employees' awareness of inappropriate behaviour and misconduct, and provide clear guidance on actions to be taken in the event of encountering such behaviour to ensure operational compliance. GCL-Poly is committed to maintaining good corporate governance. In order to ensure high level of transparency, the duties and responsibilities of the board committees have been uploaded on our website and the website of the Hong Kong Stock Exchange. Additionally, we take proactive steps to combat and prevent corruption. All subsidiaries of GCL-Poly undergo at least once corruption risk evaluation per year, together with training and regular notices to convey our corruption policy and procedures, with the aim to highlight our firm stance against fraud behaviour, increase employee's awareness on fraud prevention, and achieve self-discipline.



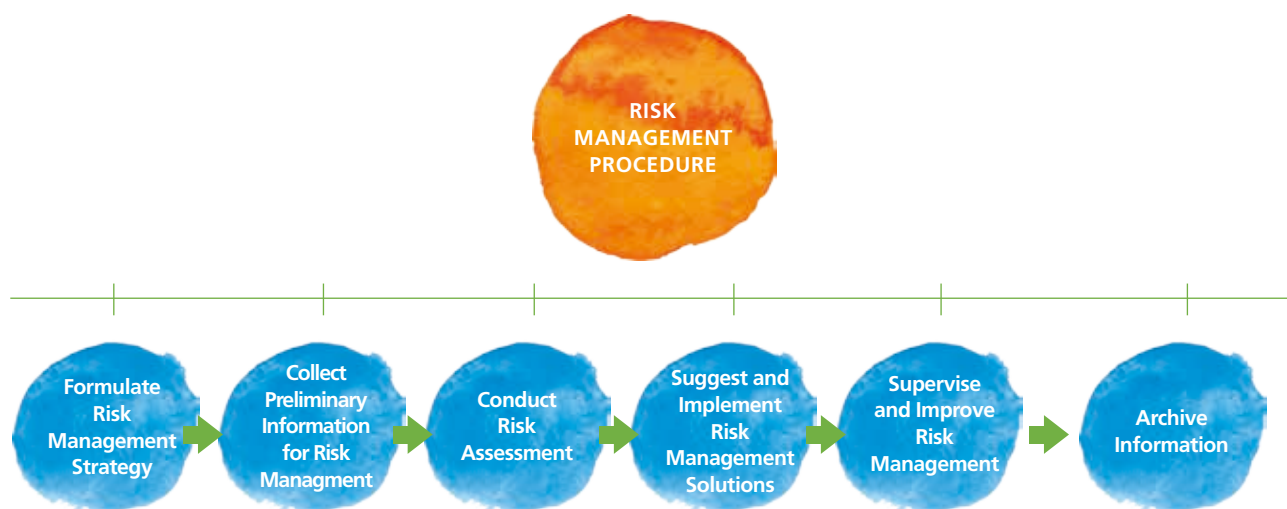
During the reporting period, there were no reported incidents of corruption, anti-competitiveness behaviour, or monopoly.

GCL-Poly has a sound risk management system which clearly depict the way of establishing policies and monitoring procedures as well as the employee communication channels. Our risk management department carries out an audit every year and submits an annual risk management work report to the board. This department is in charge of monitoring of all risk-related internal processes, behaviour, and the preparation of work reports. We have developed risk management mechanism to oversee all risks identified in factories and management centres under polysilicon, ingot growing, and wafer departments with the aim to control risk at the sources, standardise internal risk inspections, and cultivate a culture of self-examination and self-improvement. The implantation of this mechanism enhance accountability and highlight the importance of each individual's responsibility, significantly increase employees' risk awareness. In addition, this mechanism can help ensure the operational stability of the company.

## RISK MANAGEMENT ORGANISATION AND RESPONSIBILITIES



GCL-Poly and its subsidiary work towards the operational goals. By executing the basic procedure of risk management in enterprise management and every aspect and operation process, cultivating a good risk management culture and establishing a healthy and holistic risk management and internal control system, we fulfil the overall objective in risk management.



To further improve the risk management work, we forewarn of emergent or potential significant risk in the operation process in a timely manner. We also take preventive measures to avoid risk as much as possible, in the hope of reducing or avoiding related loss.

Red, yellow and green risk levels have been adopted as follows.



Urgent and dangerous. Effective preventive measures must be adopted immediately to reduce or avoid the risk.

Cautious. If standard measures are not adopted, it will evolve into a dangerous situation.

Safe. No risk is present at the moment, or the risk has been eliminated.

## INVESTMENT IN SCIENTIFIC RESEARCH

Technology innovation is a driving force for the long-term development of an enterprise. In 2016, the Company's investment in research and development amounted to approximately **RMB250 million**, representing **1.1%** of the principal business. We continuously strengthen projects in technology improvement and research and development, and implement effective project tracking mechanisms. These provide technical support for updates on product recalculation and cost control for existing products.

Through improving the technology of production processes, managing and controlling energy consumption, and adopting refined management, we have effectively reduced the production cost of wafer products. In 2016, GCL-Poly's vertical production cost of wafer decreased by 10% compared to that in 2015. In 2016, the independently developed polycrystalline silicon wafer product, "GCL Multi-Wafer S4" achieved sales of 57.56 million, with the sales income of 326.83 million RMB. In addition, we also began to test and introduce the diamond wire saw cutting polysilicon technology which successfully adopted and in mass production. For our business of monocrystalline silicon, we have invested in production capacity of Ningxia Zhongwei 1GW monocrystalline silicon project. In summary, through product innovation, increase in income was achieved.

GCL-Poly made various achievements in intellectual property in 2016:

Throughout the year, subsidiaries under GCL-Poly applied for 100 patents (including 37 patents for inventions) and were granted 53 patents. To date, GCL-Poly has applied for 556 patents and was granted 374 patents, among which 104 were patents for invention.

GCL Group's expert team continued to grow in 2016:

GCL Group has established an expert committee, with 3 fellows and 2 Changjiang academics as external experts. The internally recruited expert team comprises 17 people involved in multiple professional areas related to "Two Value Chains, Four Networks and One Cloud".



## CASE SHARING

### GCL-Poly's Black Silicon Technology Research and Development Team under the Wafer Department Introduced the Black Silicon Wet Mass Production Technique

To solve the problem of unsatisfactory texturing caused by the smooth surface of diamond-wire-cut polysilicon, GCL-Poly developed a wet black silicon technique to allow diamond wire cutting to be applied to the production of polysilicon. It helps significantly in the widely adoption of the latter technique. Beyond improving the solar conversion rate by 0.3-0.6%, this technique has reduced the cost of silicon.



## CASE SHARING

### Development of Large and High Efficiency Polycrystalline Silicon Reduction Furnace and Its Chemical Vapor Deposition Technology

The polycrystalline silicon reduction furnace is the key equipment of polysilicon production process, since the performance of the device directly affect the efficiency of polysilicon production and energy consumption. We have developed a new type of energy-saving 36 pairs of rods, 40 pairs of rods, 48 pairs of rods and 66 pairs of rods large-scale high-efficiency reduction furnace. Through the auxiliary Fluent analog technology, the most closest arrangement of the silicon rod has been achieved on the unit chassis area, hence the reactor space can be fully utilized. Also, a polysilicon deposition process which supports the new reactor was developed, and the best performance of the equipment has been achieved. It also enhanced the deposition rate of polysilicon, raw material utilization and product quality and reduced production costs. Relevant technical indicators have reached the international leading level.

We have been investing totally RMB80 million in the large-scale and efficient polysilicon reduction furnace and its chemical vapor deposition technology development. Currently the 40-pair rods reduction furnace has been successfully applied to industrial production, supporting us in increasing the polysilicon production capacity from 18,000 tonnes per year to 70,000 tonnes per year and facilitate cost reduction.

## CASE SHARING

### First in the Industry: Successful Development of the GCL-Poly Diamond Wire Cutting Technique

As the industry's successful corporation to transform MB slurries-based cutting machines into diamond wire cutting equipment, GCL-Poly seized an important market opportunity. More importantly, it allowed the Company to avoid eliminating significant equipment assets, and reduced spending substantially for procuring diamond wire-exclusive machines.



Diamond wire cutting is a revolutionary progress for the solar silicon material cutting industry. Compared with the traditional slurries-based cutting, the new method has advantages in pollution-free and silicon-saving. In the traditional wafer production and processing costs, the line cutting costs accounted for about 75%. Therefore, the breakthrough of wire cutting technology is a critical way to reduce the cost of silicon processing. Diamond wire cutting speed is 2-3 times of the ordinary steel wire, so the depreciation of unit production, labor and energy costs will be reduced by half. Diamond wire cutting silicon chips have better performance than the existing common slurries-based cutting ones, showing advantages in smaller TTV, less loss of silicon surface and lower chip fragmentation rate. Through the core technology innovation, the cutting speed has been increased for 2-3 times, which substantially reduces the production costs. The use of expensive mortar, which is also difficult to deal with, has been avoided, and the process has no environmental pollution, fulfilling the requirements of energy efficiency and environmental protection. The transforming facility of diamond wire greatly improved the production efficiency, reduced costs, energy consumption and pollution. It was the first implementation of the diamond wire cutting polysilicon chip in China, while mortar slicers were transformed for diamond cutting and could reach the same cutting level as diamond wire slicers. It can reduce the processing cost of silicon cutting and save device procurement costs for the company.



## CASE SHARING



### Application to Automate Pre-grinding Detection

The automating pre-grinding detection project is by far the most complicated in the design process. It has adopted the most advanced automated detection system in the industry which allows for an unprecedented degree of system integration. After the completion of this project, it will form an entirely automated production line, from pre-grinding detection and cut-off procedures to the final post-grinding detection. It not only reduces the intensity of labour but also significantly enhances the production efficiency and product quality, lowering labour cost effectively.

Taking pre-grinding detection as an example, five people instead of eight originally would be required for the procedure, with the production per unit time improving from 900 to 980. It also reduces human-induced error, effectively improving the product quality and supplying more efficient and accurate quality products for downstream customers.



While researching and developing internally, GCL-Poly will collaborate with or acquire nationally well-known corporates to introduce its globally competitive core technology in 2017. This will allow the Company to continue to maintain its leading position and enhance its competitiveness.

## PROACTIVELY PARTICIPATE IN INDUSTRY ACTIVITIES

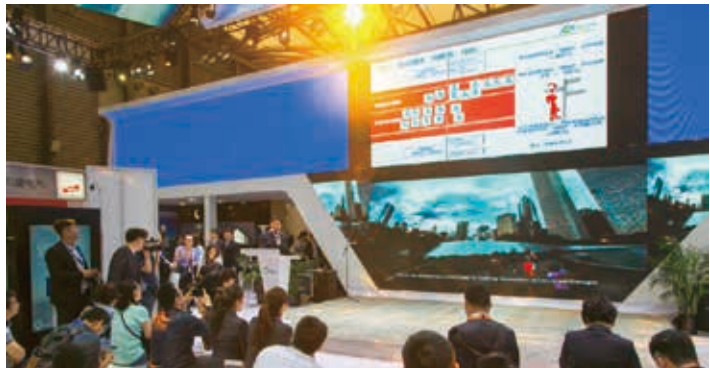
While developing its own business, GCL-Poly and other enterprises in the industry are dedicated to the enhancement of PV technology. By joining many associations and proactively participating in different exchanges and experience sharing activities, we hope to collaborate with other corporates to support the sustainable development of our national PV industry.

The industry associations joined by GCL-Poly are primarily as follows:

Association Name	Membership Type
Asia Photovoltaic Industry Association	Co-chairman
Jiangsu Photovoltaic Industry Association	Vice president
China Photovoltaic Industry Association	Co-chairman
Suzhou City Photovoltaic Association	Vice president
Suzhou Hi-tech Enterprise Association	Member
Shanghai New Energy Industry Association	Member
Silicon Industry of China Nonferrous Metals Industry Association	Vice president
Polysilicon Technical Innovation Alliance	Vice president
SEMI Standards Committee	Member
Jiangsu Province Renewable Energy Industry Association	Director

GCL-Poly proactively participated in various large-scale conferences, seminars and exhibitions organised by the associations and the government in 2016:

## ACTIVITIES



## CASE SHARING

The Standard of Testing of Chlorine in Silicon with Ion Chromatography compiled mainly by GCL-Poly was globally launched. To date, there are 3 international standards that were mainly compiled and eventually released by GCL-Poly.

Chlorine is an impurity which is relatively rich in raw polysilicon. It directly affects the conversion efficiency of silicon products. Before this, the industry had lacked an effective means of detecting the element in silicon. GCL-Poly's subsidiary GCL Testing Technology Centre of Jiangsu Zhongneng Polysilicon Technology Development Co. Ltd. innovatively adopted ion chromatography as a testing method after three years of experimentation. With in-depth exploration and repeated testing, the technique was eventually developed as an ion chromatography testing solution with ultra-high precision.

The Standard of Testing of Chlorine in Silicon with Ion Chromatography primarily engages in the development of testing methods for polysilicon impurity, particularly on silicon products undergoing the fluidised bed reactor (FBR) process which have a relatively higher content of chlorine ions. This Standard offers a reliable measure for analysis to assure the quality of FBR silicon products.



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1. SNEC 2016 International Photovoltaic Power Generation Conference and Exhibition
2. Dr. You Da, Vice President of GCL-Poly's Ingot Growing Segment, presented on the topic of "GCL's silicon: Helping the leaders"
3. Xuzhou Solar's Research and Development Laboratory organised the Academic Symposium (Summer 2016). It gathered technical experts from key corporates in the photovoltaic industry and focused on discussing the future development of the industry and solutions to critical technical issues.
4. Spring Conference by SEMI China PV Standards Committee
5. Photovoltaic Industry Intelligent Manufacturing Seminar by the Ministry of Industry and Information Technology
6. 3rd Renewable Energy Material Summit 2016
7. China Photovoltaic Industry Association's Polycrystalline Diamond Wire Cutting and Black Silicon Technique Forum
8. CREC Chinese Renewable Energy Conference and Exhibition 2016 in Wuxi
9. Leading Manufacturing Countries Summit 2016
10. China International Silicon Industry Conference and Photovoltaic Industry Exhibition
11. Taiwan International Photovoltaic Exhibition 2016







# SUSTAINABILITY MANAGEMENT

GCL-Poly is committed to fulfilling its social responsibility, putting CSR at the core of its development strategy. Besides its goal of making affordable clean energy a reality and maintaining a high standard of corporate governance, the Company hopes to create value for society and make a significant contribution to the country's development.

## CORPORATE RESPONSIBILITY STRUCTURE AND POLICY

Aspiring to become a responsible corporate citizen, our every decision and action take into account our impact on the environment, society, economy and governance. We are dedicated to contributing to social development and creating shared value for stakeholders. Our company has excellent governance standards and moral value systems. At the same time, we are responsible to our stakeholders and the environment. Our board of directors assumes duties in different aspects of corporate governance and social responsibility. Through putting words into action, our board leads all employees to fulfil their responsibility to practice sustainable development in daily management and operation. In terms of policy, we have implemented the GCL-Poly Corporate Citizen White Paper and GCL-Poly Corporate Citizen Guide alongside other CSR-related documents, which set out our CSR values.

By capitalising our business advantages and making use of our research and development achievements, we continuously promote the popularisation of clean energy. At the same time, we uphold our corporate responsibilities in clean production, recycling and reuse of materials, efficient allocation of environmental resources and regional economic advancement. Together with our employees, we stringently oversee every aspect of production management, quality control and marketing management, striving to bring positive effects to the environment and society with our influence.

## GCL-POLY CORPORATE CITIZENSHIP FRAMEWORK

### Our Green Promise:

As a company engaged in PV business, we strictly abide by the low-carbon, emission reduction and energy conservation principles. This is our promise to Mother Earth.

### Our Industry Aspiration:

We see the production of energy-saving and environmentally friendly polysilicon for affordable solar energy as our responsibility. Through self-initiated innovation, we explore the energy issues of the current and future world.

### Our Green Mission:

Powered mainly with solar, we grow with the idea of “creating and sharing green energy”.

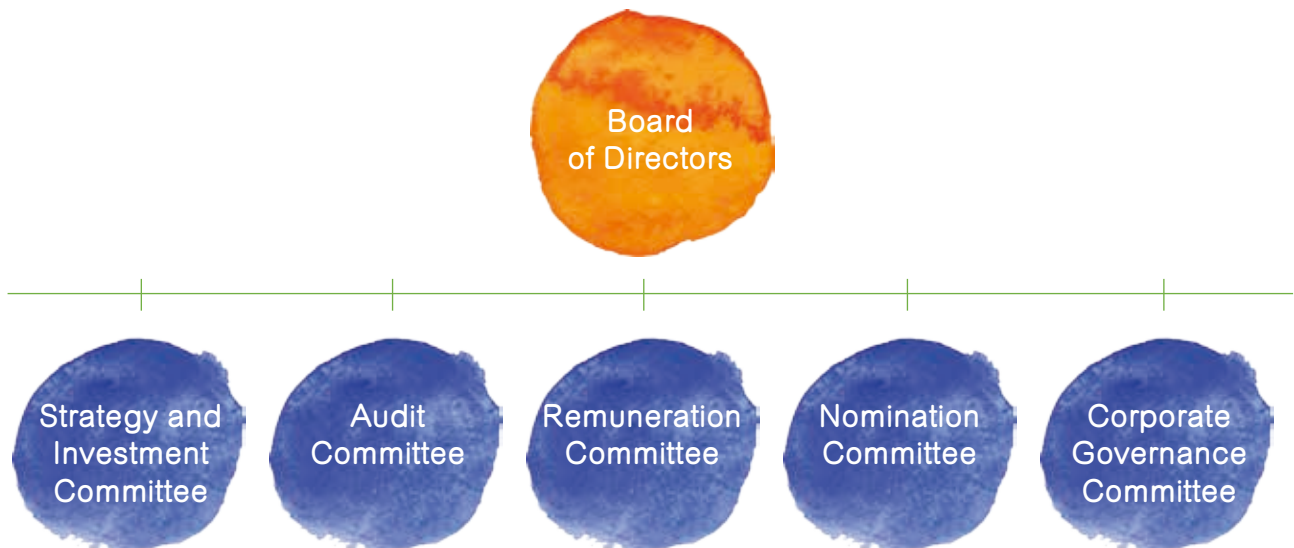
### Our Corporate Responsibilities:

We adhere to our responsibilities to our shareholders and investors, employees, clients, industry, society and future generations. We adhere to the operation concepts of fairness, integrity, sharing and mutual benefits, to serve our clients, care for our employees and create value for our investors and society.

### Our Charity Actions:

We give back to society with gratitude by participating in various charitable functions. We are committed to our duties in education, charity and other areas to facilitate harmonious social development.



**GCL-Poly's Board Structure**

The duties of GCL-Poly's Board of Directors on Corporate Governance and Social Responsibility:

- Evaluate long-term development plan
- Evaluate the Company's full-year performance; assess the execution and progress of the long-term development plan
- Evaluate the political, social and economic development that affects or may affect GCL-Poly and provide recommendations to the Board
- Review and monitor, or build, the relationship with major strategic joint venture partners
- Monitor and assess the internal control system and risk management system
- Monitor and assess the performance of the internal control department
- Always be aware of the possibility of improper conduct; conduct independent investigations and adopt suitable follow-up actions
- Implement and review policies and practices on corporate governance
- Review and monitor the Company's policies and practices on compliance with laws and regulations
- Implement, review and monitor a suitable Code of Conduct applicable to employees and the Board
- Review the Company's status on compliance with the Code and disclosure in the corporate governance report

**STAKEHOLDER ENGAGEMENT**

As we believe that two-way, transparent and regular communication are the keys to harmonious relationships, mutual trust and respect, we value the opinions of every stakeholder. This mind-set has had a highly positive influence on the sustainable development of GCL-Poly. We are committed to building multiple communication channels with our stakeholders, allowing each of them to have sufficient and convenient channels to express their opinions. We have identified the following 7 key stakeholder groups based on their impact on GCL-Poly's decision-making and their proximity to our operation (contractually or geographically, for example) [G4-25]:

- Employees
- Shareholders/Investors
- Government departments
- Clients
- Business partners (e.g., suppliers/contractors)
- Community members/organisations
- Media

We proactively communicate with stakeholders to understand their concerns, and regularly review the effectiveness of the exercise to enhance the communication channels and better reflect the stakeholders' opinions. The table below lists the stakeholders' concerns, major communication channels and reporting frequency.

Stakeholder Group [G4-24]	Concerns [G4-27]	Major Communication/ Feedback Channels	Reporting Frequency [G4-26]
Employees	<ul style="list-style-type: none"> <li>Employee career management and personal development opportunities</li> <li>Remuneration and benefits</li> <li>The Company's long-term development direction</li> </ul>	<ul style="list-style-type: none"> <li>Employees' meeting</li> <li>Performance review</li> <li>Internal publications (GDLeR newspaper, GDL magazine)</li> </ul>	<ul style="list-style-type: none"> <li>Annual (performance review, employees' meeting)</li> <li>Monthly (GCL newspaper)</li> <li>Quarterly (GCL magazine)</li> </ul>
Shareholders/Investors	<ul style="list-style-type: none"> <li>Business development</li> <li>Financial performance</li> <li>Corporate governance</li> <li>Compliance</li> </ul>	<ul style="list-style-type: none"> <li>General meeting/special meeting</li> <li>Investor's meeting</li> <li>Result announcement meetings</li> <li>Press release/announcements</li> <li>On-site visits</li> </ul>	<ul style="list-style-type: none"> <li>A general meeting is normally held once a year. In case of significant events, special meetings will be arranged. Other meetings are held irregularly when necessary</li> </ul>
Government Departments	<ul style="list-style-type: none"> <li>Business development</li> <li>Compliance</li> <li>Safe production</li> <li>Contribution to the Community</li> <li>Corporate governance</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Telephone</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
Clients	<ul style="list-style-type: none"> <li>Company's development direction</li> <li>Research and development in technology</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Client acknowledgement and exchange meetings</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
Suppliers	<ul style="list-style-type: none"> <li>Research and development in technology</li> <li>Business development</li> <li>Quality and service standard</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> <li>Supplier meetings</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
Community members/ organisations/non-profit organisation	<ul style="list-style-type: none"> <li>Environmental performance</li> <li>Community engagement</li> <li>CSR management system and concept</li> </ul>	<ul style="list-style-type: none"> <li>On-site visits</li> <li>Meetings</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>
Media	<ul style="list-style-type: none"> <li>Business development</li> <li>Compliance</li> <li>Product and service quality</li> </ul>	<ul style="list-style-type: none"> <li>Press release/announcement</li> <li>Conference</li> <li>Exhibition</li> <li>Luncheon</li> <li>Acknowledgement meeting</li> <li>Interview</li> </ul>	<ul style="list-style-type: none"> <li>Irregular</li> </ul>

## MATERIALITY ASSESSMENT

In the course of preparing this report, we commissioned an independent consultant to conduct the materiality assessment to further understand the stakeholders' opinions, expectations and concerns regarding GCL-Poly's social responsibility in the past year. It also helped us to establish the framework of this report to respond to comments from stakeholders [G4-27]. The independent consultant mainly engaged stakeholders from different sectors through questionnaires and interviews. Analysis was also conducted with the results and information was collected.

Our materiality assessment mainly consists of four phases. As shown in the diagram below, we first identified every possible material topic that may impact GCL-Poly or our stakeholders in terms of the environment, society and governance. We then prioritised the topics and validated the results with management. Eventually, we reviewed the materiality assessment procedure.



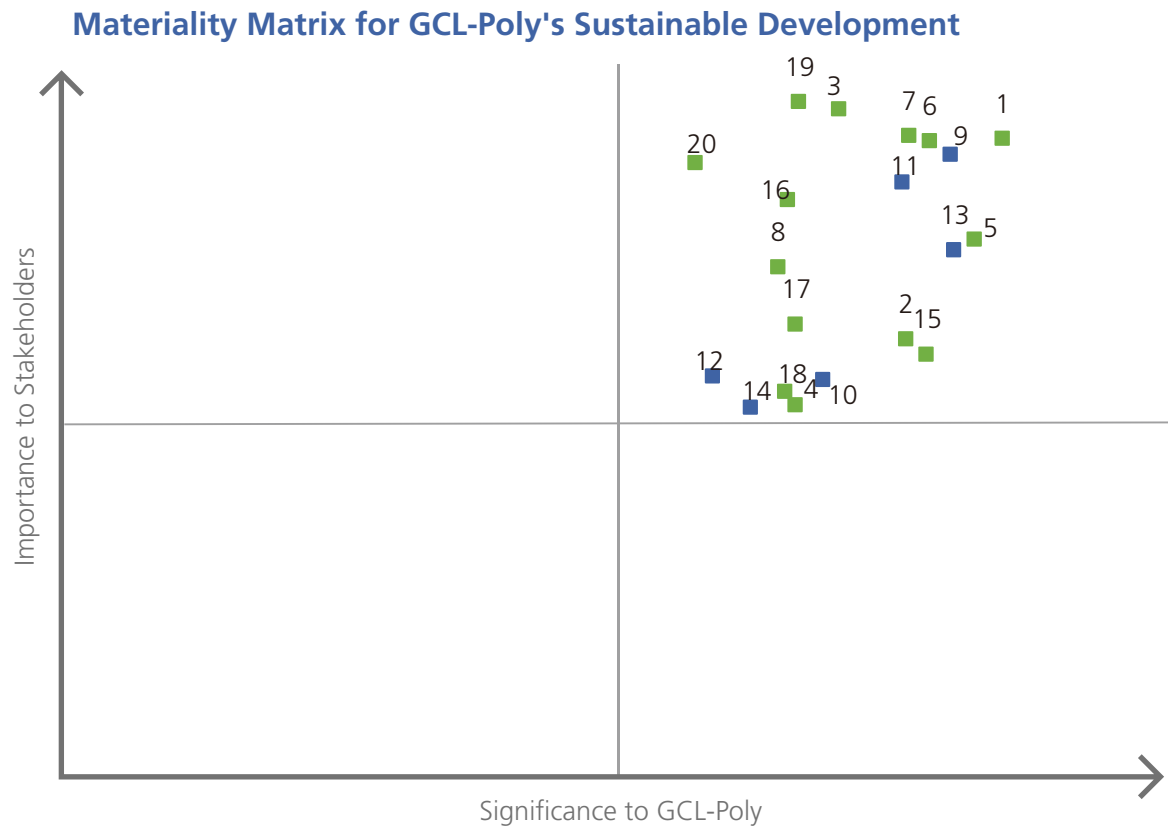
On 19 July 2016, GCL-Poly organised the 2016 Biannual Customer Acknowledgement and Exchange event. Mr. Zhu Zhanjun, CEO, organised an interactive discussion. Jiangsu Photovoltaic Industry Association, Canadian Solar, Trina Solar, Motech Solar, Talesun Solar, Tongwei Solar and other industry organisations and a number of important client representatives participated in the discussion and exchange.



## MATERIALITY ASSESSMENT PROCESS [G4-18]

Identification of potentially material issues	Through reviewing internal publications and other relevant documents, and, at the same time, conducting media analysis and peer analysis, the consultant identified a list of potentially material ESG issues that are related to GCL-Poly.
Prioritisation of material issues	The independent consultant formulated a stakeholder communication plan, including designing a questionnaire and conducting surveys and interviews. Over 1,000 people from a total of 7 stakeholder groups participated in the surveys and interviews. The consultant then analysed the result to understand the prioritised concerns of our stakeholders. Eventually, a materiality matrix was derived to identify the material issues of GCL-Poly.
Validation by Management	The result of the materiality matrix was submitted to management by our independent consultant for review to validate the materiality of the identified issues. GCL-Poly's performance on the relevant issues was also reflected truthfully in the report to ensure effective response to the demands and expectations of every stakeholder.
Review	The report content was reviewed to see if the sustainability performance of GCL-Poly provided was reasonably described, and whether the report content preparation procedures reflect the intention of the report. The independent consultant invited management, employees and other stakeholders to provide their comments in this regard.

Through the above assessment process, 20 material social responsibility issues were identified. They form an important part of this report, and we will disclose the relevant information in detail in this document.

**MATERIALITY MATRIX [G4-20] [G4-21]****Boundary delineation for material issues:**

■ Beyond GCL-Poly's internal and organisational boundaries    ■ Within GCL-Poly's boundary

**LIST OF MATERIAL ISSUES [G4-19]**

Economic Issues	Environmental Issues	Labour Issues	Social Issues	Product and Services Responsibility Issues
1 Business performance	4 Waste management	9 Employee occupational safety and health	15 Contribution to the community	18 Supply chain management
2 Corporate governance	5 Wastewater treatment	10 Equal opportunities	16 Business impact on the community	19 Grievances redress mechanism
3 Research and development in technology	6 Greenhouse gas emissions	11 Rewards to employees	17 Anti-corruption	20 Products and services quality control
	7 Environmental compliance	12 Career development and training		
	8 Energy consumption and saving measures	13 Morality and conduct		
		14 Human rights protection		

# PRODUCTS AND SERVICES





## QUALITY CONTROL

Stringent quality control has been of primary concern to us. In terms of management, we are committed to refined management. Together with the monitoring and standardisation of our production processes, we have succeeded in practicing good management.

In 2016, after the first successful commercialised mass production of the S series polycrystalline products, we introduced diamond wire cutting techniques to continuously enhance the quality and conversion efficiency, and reduce the production cost of polysilicon. We also finished the gradual conversion from mortar wire cutting to diamond wire cutting. Through researching and developing diamond wire technology and continuously innovating on the cutting work, we broke the limit of silicon loss in diamond wire cutting, constantly reducing the amount of loss during cutting and increasing the production rate.

## CASE SHARING

### GCL-Poly Launched the Latest TS Series of Black Silicon Wafer

We have developed a number of cutting-edge technologies to open up a new era of diamond wire polycrystalline cutting. This product significantly enhances the cell conversion efficiency and reduces product cost. With quality light-trapping performance, it has tremendous application value. The wafer is a powerful product that is competing to be the industry leader.



TS black silicon wafer technology: Diamond wire cutting polysilicon technique and metal catalysed chemical etching technique realising multi-faceted evolution.



As a whole, the cost of TS black silicon wafers can be reduced by RMB0.4-0.6 per piece and efficiency can be enhanced by 0.3-0.6%.

In terms of raw material management, we only collaborate with suppliers who hold an effective national business license and other relevant qualifications. This standard is our first line of defence in supplier management. In addition, we take into consideration the suppliers' ability to perform the contract, their credibility, business performance in the industry, effectiveness of their quality assurance system and whether their quality commitment fits the national and industry production standards. By assuring the quality of raw material, we ensure our product quality.

## CUSTOMER SERVICE

GCL-Poly highly emphasises customer experience. We adhere to the values of fairness, integrity, sharing and mutual benefits, and we have provided the highest quality products and services to our customers over the years. GCL-Poly's value lies on its capability to satisfy customers and exceed their expectations. The most important concept in customer service is the ever-changing customer demand which is also the most difficult part to control. This is especially true in the era of internet popularisation, information expansion and technological advancement. While we strengthen our product ability to satisfy our customers, we put more emphasis on keeping close communication and collaboration with them. We work to understand their requirements and expectations, particularly through after-sales rating of our products and services. In addition, we have established an effective mechanism to maintain company-customer communication. Apart from ensuring the provision of products and services that meet the quality target, we have improved our means of responding to our customers. This enhances our communication system and ensures our customers can receive higher quality, environmentally friendly, energy-saving and personalised products and services. We also conduct customer satisfaction surveys by actively connecting with our customers. By letting them give us ratings and opinions holistically, including their perspectives of on their purchase decisions and after-sales services, we can continuously improve our products.

Our goals are to insightfully identify our customers' development direction and demand, help them to develop stably, satisfy their pursuit of high-efficiency energy conversion, co-create linkage effects and drive the industry development.

### In 2016,

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100% After-sales problem resolution  
Less than 0.6% of total product return  
Over 90 marks in customer satisfaction

## SUPPLY CHAIN MANAGEMENT

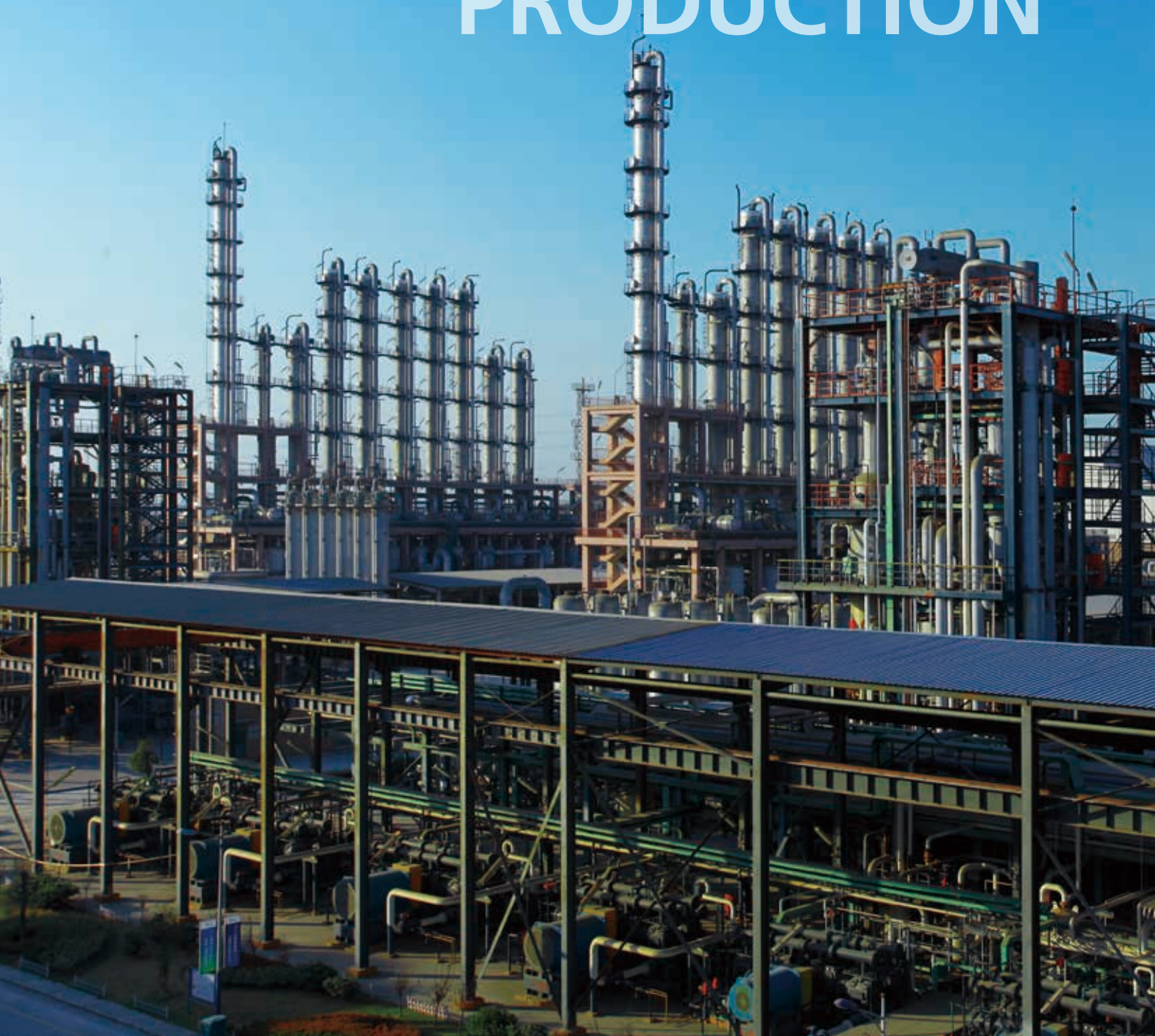
GCL-Poly maintains good collaboration relationships with its suppliers. On the ground of mutual respect, we have maintained stable long-term collaboration arrangements and grown together. As at December 2016, we had a total of about 1,514 suppliers, with 694 of them with an annual procurement expense of RMB200 thousand. These include suppliers for raw materials, service providers and professional service consultants. Since we have a substantial number of suppliers, to continue to maintain the standardised management to make both parties attain the highest moral requirements, we strictly abide by relevant documents such as the GCL-Poly Power Open Tender Management Standards, Standards for Resource Management, Management Standards for Qualified Suppliers and Management Standards for Open Tender, to manage our supplier chain. This allows our suppliers and related employees to understand our social and environmental requirements on suppliers.

### In 2016,

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1,514 collaborating suppliers  
694 suppliers with procurement expense greater than RMB200 thousand

# GREEN PRODUCTION



## GREEN PRODUCTION

While being devoted to realising mutual benefits between the Company, shareholders and business partners, we proactively take on our responsibility towards environmental protection. GCL-Poly follows the idea of “**bringing green energy to life**”, and treats the provision of high-efficiency clean energy and continuous improvement on the living environment as its mission. In 2016, approximately **RMB122.67 million** was invested in work including upgrades and improvements for environmental performance enhancement, hazardous waste handling, and environmental monitoring and control, to reduce emissions and greenhouse gas production and increase energy efficiency. We mitigate the negative environmental impacts of the production and operation processes, and maximise the environmental cost-effectiveness for our green energy.

### ENVIRONMENTAL MANAGEMENT SYSTEM

We have strictly complied with the national and regional laws and regulations, and established and improved a three-tier environmental, health and safety (EHS) management system. The system covers aspects including the overall environmental management requirements, three-waste management system, environmental facility operation and maintenance system, pollutant monitoring system, environmental pollution incident contingency plan and training system. To further reinforce standardised management on the environment and energy, some of our subsidiaries have established ISO 14001 Environmental Management Systems and ISO 50001 Energy Management Systems.

leaks in  
2016 0

fines or  
penalties due to  
environmental  
non-compliance 0

### GCL-POLY'S ENVIRONMENTAL MANAGEMENT PRINCIPLES

- Establish a corporate culture that emphasises environmental protection and energy conservation;
- Provide environmental education and training to employees regularly;
- Assess potential environmental risk before merging with new corporates;
- Plan for possible environmental issues;
- Achieve the production and operation standards set by the environmental department, proactively explore new environmental protection measures;
- Adopt cleaner energy and more environmentally friendly equipment and procedures when conditions allow; and
- Respond to environmental damage proactively and in a responsible manner.

We actively integrate our environmental targets into every aspect of the product lifecycle and production and operation, and encourage employees to act in unison:

The total investment in environmental training was RMB77 thousand in 2016, with **17,077 participants trained;**  
**14,933** environmental training hours;  
**100%** coverage in environmental training.

We also focus on strengthening supply chain management. Some of our subsidiaries consider the past environmental performance when choosing new suppliers, which enhances environmental management standards in the overall industry chain.



## EMISSIONS REDUCTION

GCL-Poly is dedicated to advancing green energy popularisation and mitigating the harm caused on sustainable development by global climate change. The Company emphasises greenhouse gas management. Through management and technological improvement, we have reduced CO<sub>2</sub> emissions during the production and operation processes. We also have achieved carbon neutral status by connecting our solar farm business to the grid.

2016

Greenhouse gas emissions (tonnes CO <sub>2</sub> equivalent)	739,521
Solar farm's contribution to reach carbon neutral status (tonnes CO <sub>2</sub> equivalent)	Approximately 165,000
Greenhouse gas reduction (tonnes CO <sub>2</sub> equivalent)	15,524

Greenhouse gas reduction projects include: ingot workshop air-conditioning energy-saving transformation, cooling tower wind machine energy-saving transformation, workshop headlamp transformation, zero-loss compressed air adsorption dryer energy-saving technical improvement and ingot cutting technical upgrade.

## CASE SHARING

### Xuzhou GCL Solar Energy 10 MW Fishery-photovoltaic Project

The project area is 293 acres with expected annual electricity generation of 11 million kWh. Compared with thermal power plants with the same generation capacity, it is estimated to reduce annual consumption of coal and production of CO<sub>2</sub> and air pollutants including SO<sub>2</sub> and NO<sub>x</sub>.

The project not only can satisfy Xuzhou GCL Solar Energy's electricity demand for production but also meet the need of Dahuangshan Town's eco-agriculture tourism construction. It adopts double-glass power generation modules. The transparent module allows people to see the underwater conditions of the fish pond clearly. The frameless photovoltaic panel is visually attractive and also enhances the energy generation efficiency. Its outdoor-non-degradable and abrasion-resistant nature means it is significantly more able to resist corrosion, reducing the degradation in efficiency.



## CASE SHARING

### 1.2 MW University of San Diego Solar Power Project

The project is located in San Diego – a famous holiday destination in California. The total installed capacity is 1.2 MW scattered over rooftops of the beautiful campus of the University of San Diego. With 1.9 million Wh of energy generated annually, this large-scale solar panel project can effectively decrease greenhouse gas emissions.



We have implemented a Safety, Occupational Health and Environmental Management Responsibility System and a series of standards on managing air pollution, water pollution, solid waste and other waste to ensure that emissions from production and operation meet the standard. We strive to reduce discharges of pollutants through upgrading environmental facilities and technologies, enhancing pollution management and recycling waste during the production process to mitigate the environmental impact of our production and operation processes. In 2016, 664.5 tonnes of hazardous waste were generated, and 24,459 tonnes of total solid waste were recycled.

	2015	2016
Nitrogen oxides (tonnes)	68.782	55.512
Sulphur oxides (tonnes)	0.46	3.056
Wastewater (tonnes)	425	429.7

Note: Data include polysilicon units, ingot units, wafer units and Konca Wuxi.

## CASE SHARING

### Diamond Wire Cutting Technique

Introduction of the diamond wire cutting technique was a significant breakthrough in terms of lowering the cost of silicon products. Compared with the traditional cutting technique, this new method has the following benefits:

- High-efficiency cutting – Compared with the conventional free abrasive wire cutting technique, it increases the cutting efficiency by around 2-3 times
- Enhanced yield rate – It stabilises the precision of silicon cutting, reducing the metamorphic layer in processing
- Integrated cost-saving – reduce the integrated cost as compared with the traditional technique
- Energy-saving and environmentally friendly – It substantially reduced the production of waste saws and slurry: the slurry for cutting can be reused, whereas the cutting debris can be recycled.



## CASE SHARING

We have developed world-leading polysilicon manufacturing technology. On the basis of further enhancement of the Siemens method polysilicon production technology, we have created GCL polysilicon production technology. This method can effectively use trichlorosilane. Compared with the traditional Siemens method, it can improve environmental protection and reduce the pollution generated in the production procedure.

- Fully closed-loop polysilicon recovering technology to reduce the generation of pollutants at source;
- State-of-the-art and unique GCL polysilicon production technology;
- World-leading cold hydrogenation system with 100 thousand tonnes of single-set production capacity.



## ENERGY CONSERVATION

Our solar materials business emphasises energy conservation in the production process. By formulating and implementing the Management Standard on Energy Resource Use and other energy management systems, as well as technological improvement, we have continuously improved our energy conservation. In 2016, our energy intensity is 0.3557 tonne of standard coal equivalent (tce) per RMB10,000 production value.

	2015	2016
Total purchased energy consumption (10,000 tce)	130.81	107.77



## CASE SHARING

Suzhou GCL Photovoltaic has achieved fruitful results by transforming the frequency conversion and residual heat recycling of air compressors, suppressing harmonics, planning automatic controls and energy-saving systems in its cooling system. These save about 20 million kWh of energy consumption annually.

- Residual heat from air compressors – We have increased the number of residual heat recycling facilities to use the heat collected during cleaning. This measure reduces as much as 2.338 million kWh of electricity consumption annually.
- Automatic control and energy-saving systems in the cooling system – The technicians in Suzhou GCL Photovoltaic made use of frequency and flow conversion technology in the automatic control system to adjust cooling water and cooling water pump flow, responding instantly according to the cooling system load. This allows the system to optimise working conditions and improve energy conservation. The measure conserves up to 1.183 million kWh of electricity annually.



## CASE SHARING

### Ingot Cutting Structural Line Improvement

Through joint efforts by the technology department on technique improvement and the production department on strengthening on-site control and quality control process supervision in 2016, the passing rate rose by 1.6% from that in 2015. Each crucible's electricity consumption has been reduced by 0.8 kWh, with 57,779.2 Wh of electricity conserved during the year.

Optimising the technique:

- 1) To ensure that the fluidity, viscosity and density uniformity in every part of the slurry meet the standards, we have implemented a point-to-point pouring model for seamless connection between the moulding and slurry workshops.
- 2) Theoretical simulation guides the practice. We have adjusted particle size to the best ratio. By further increasing the compactness of the crucibles, we have enhanced their ability to withstand abrasion.
- 3) To reduce the possibility of defects and cracks in the crucibles, we have reinforced the control from the moulding source to adequately and effectively ensure the uniformity of the mould moisture. These allow the moulds to be delivered and used in the best conditions. The adoption of the pouring-two-and-resting-two model balances the moisture loss in the moulds.
- 4) After removing the mould, we apply special technical processes to key parts of the crucible to effectively control the moisture loss balance and reduce cracking.

Management Innovation:

- 1) Organise GPW and QCC activities to improve on defection and low efficiency and strengthen teamwork;
- 2) Adopt the production area's contracting responsibility system to link quality and cost directly with the bonus and performance review of the area's responsibility leader; strengthen assessment and enhance employees' sense of duty;
- 3) Establish on-site signage; erect eye-catching electronic billboards; display time of product measurement, funnel extraction and mould removal; reinforce the information function; carry out measurement of funnel depth, funnel extraction and mould removal according to the standard time set; strengthen operation standardisation and streamline work;
- 4) Allocate the responsibility for defects to individuals; establish an assessment and incentive mechanism to mobilise staff.

In 2016, our solar farm business sold 31,302 MWh and 498,420 MWh of electricity to overseas and domestic consumers respectively, fuelling the popularisation of renewable energy nationally and internationally.

## HIGH-EFFICIENCY USE OF RESOURCES

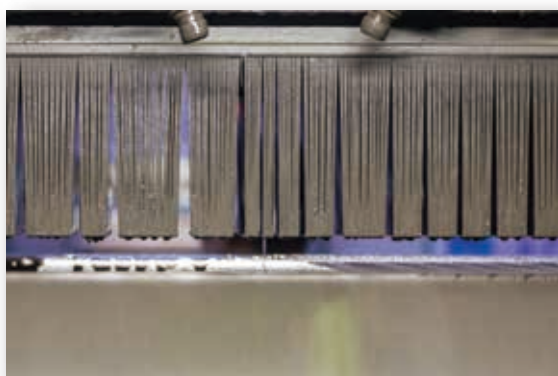
GCL-Poly highly values the protection of water resources. We employ a stringent water resource management system and formulate water-saving solutions. Our solar materials business' wastewater undergoes sedimentation, filtering and biological treatment, and is only discharged to the local wastewater treatment plants for further processing when it meets the national effluent standards. At the operating sites, we recover water, recycle rainwater and adopt other measures to enhance the utilisation of water resources and minimise the use of resources.

In 2016, we purchased 643.89 tonnes of recycled water for production to reduce the consumption of freshwater. The annual water recycling-reuse rate was 19.72%.

	2015	2016
Freshwater consumption (10,000 tonnes)	2,630	1,957
Amount of recycled water (10,000 tonnes)	113,292	146,691

## CASE SHARING

Suzhou GCL Photovoltaic has introduced advanced facilities for reclaimed water reuse. The wastewater discharged from the workshops is processed and reused twice. This realises water recycling and reuse in areas including degumming machines and cleaning rooms in the workshops.



Suzhou GCL Photovoltaic has transformed its cleaning machine into a ladder-type overflow system for recycling use. The water in the tanks can be recycled and reused, significantly reducing the consumption of freshwater. At the same time, this has reduced the electricity used for heating water. Through this transformation, the Company conserves 144 thousand tonnes of water annually; the daily water consumption of a single cleaning machine has been reduced by 42%.

## CASE SHARING

### Taicang GCL Photovoltaic Technology Co. Ltd.'s Online Slurry Recycling

Slurry is an important material in the cutting process. Every year, we spend a substantial amount of capital to purchase and also recycle the material through external service providers. Taicang GCL Photovoltaic recycles and reuses the used slurry. It uses the system to achieve automatic provision of sand and recycle and reuse. This increases the recycling rate of slurry while reducing material consumption and waste generation. This can save us tens of thousands of RMB every year.





# SAFETY AND HEALTH





## SAFETY AND HEALTH

Occupational health and safe production is one the core concepts of GCL-Poly. We have established a Safety, Health and Environmental Management Responsibility System, which designates the general manager of each project company as the first responsible person.

In accordance with the principle of "Safety first, Focus on Prevention, Comprehensive Management, Continuous Improvement, Be Proactive and Pursue Efficiency", GCL-Poly has established a people-oriented concept of safe and clean development. A full accountability safety system has been comprehensively implemented. We also comply with national laws and regulations as well as standards on safe production and occupational health. We proactively promote the implementation of the OHSAS18000 standard for our occupational health and safety system and continuously improve our systems and processes.

### SAFE PRODUCTION

We promote the risk management of safe production and staff training. In 2016, **RMB109 million** was invested in safe production, including the improvement of safe measures, labour protection equipment and safety training. **50,273** of our employees have participated in production safety training.

Every year, GCL-Poly sets safety targets and formulates action plans. All employees from the general manager to staff have signed the production safety liability form.

**In 2016:**  
**Work-related**  
**fatalities** **0**

**Severe**  
**accidents** **0**

**Injuries** **47**

**General**  
**accidents** **0**

**Loss of**  
**work**  
**days** **3016**

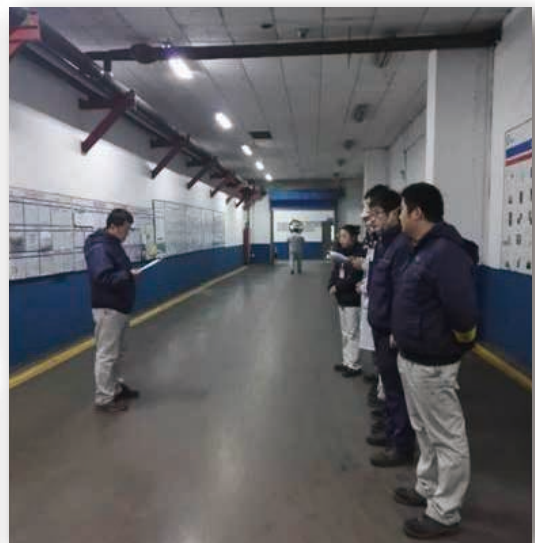
GCL-Poly implements the principles of "essential safety management" and "five essential supports" during production and management:

- There must be targets and measures for production safety in the production plans
- There must be requirements for production safety in setting and monitoring works
- There must be specific production safety sessions included in inspections
- There must be production safety clauses in rating schemes
- There must be production safety content included in summary reports

## Case Study

### Chemical Leakage Drill at Jiangsu GCL Silicon Material Technology Development Co., Ltd

A hydrochloric acid leak was simulated. Drill procedures for discovering, reporting, rescue organising, evacuating, blocking and investigation were performed and the performance was evaluated.



The staff are trained to follow the emergency response procedures which allows them to response quickly in similar emergency incidents. Additional emergency routes have been identified to safely guide the staff to the assembly point.

## OCCUPATIONAL HEALTH

We conscientiously implement the principle of "Prevention and Treatment", as well as the laws, policies and guidelines of labour protection enhancement and occupational diseases prevention issued by the state and local governments. We identify risk in the workplace and introduce corresponding prevention measures. Occupational health files have been set up for employees. Protection equipment is allocated to staff and utilisation is supervised.

**In 2016: 14,325 occupational health training participants** **14,325**

**new occupational disease cases** **0**

**health check-up coverage** **100%**

**occupational health file coverage** **100%**

### Case Study

#### Lifting Accident Drill at Xuzhou GCL Solar Materials Co., Ltd

A drill was held to test and improve the capabilities of site managerial staff to handle lifting accidents and minimise loss. During the drill, an accident was simulated in which snapping of a steel rope from the lifting machine and dropping hanging material onto an employee's leg.

The drill tested the full emergency process and the participating staff became more familiar with the emergency measures and escape route.





# OUR EMPLOYEES



## OUR EMPLOYEES

### HUMAN RESOURCE POLICIES

Talents have always been our most valuable resource. By implementing people-oriented management, we have built a healthy and safe workplace for our people. We constantly optimise our employment system and make good use of human resources management to build an ideal employment atmosphere. We heavily invest on our staff's development aiming at exploring their potential and encouraging them to discover and realise their value. The introduction of talents and continuous improvement of talent quality drives GCL-poly forward and creates value. As at 31 December 2016, we had 11,528 staff, 98% of them had signed labour contracts. There were 1,875 new employees and 1,729 employees had left. The proportion of local senior management employed at key operating locations is approximately 1%, the remaining 2% are retired people and interns who had signed employment or internship agreements.

We strive for a standardised, fair, and effective human resources system that will allow each employee to do their best. At GCL-Poly, a number of cultural activities also contributes to cultivate a harmonious atmosphere and increase employees' sense of belonging. In recruitment, we would screen candidates based on academic qualifications, experience, skills, potential and interview performances. Other factors such as gender, marital status or disability are not considered. We mainly introduce talents from two sources: high-end technical personnel from the same industry at home and abroad, and outstanding graduates as a supplement. Every employee who joins GCL-Poly is entitled to equal treatment. The salary structures for male and female employees are consistent, to achieve equal pay for equal work for men and women. We are committed to providing a safe and healthy working environment for our employees to respect human rights and to abide by relevant laws and regulations, such as the Labour Law. All employees are required to comply with the Sex Discrimination Ordinance (性別歧視條例), the Disability Discrimination Ordinance (殘疾歧視條例), the Family Status Discrimination Ordinance (家庭歧視條例) and all relevant codes. If any employee shows behaviour such as discrimination, slander or sexual harassment, he or she will be subject to disciplinary sanctions. During the reporting period, 35.7% of employees were covered by collective bargaining agreements. No discrimination, child labour or forced labour was found.

### NUMBER OF EMPLOYEES AT GCL-POLY 2014-2016

KPI	2014	2015	2016
No. of employees	18,326	17,705	11,528
No. of employees from ethnic minority groups	631	86	110
Female employees (%)	25.5	28.2	21.7%

GCL-Poly aims to ensure the competitiveness of its remuneration packages. The minimum salary we offer exceeds 180% of the local minimum salary standard at operating locations. In accordance with China's labour laws and related regulations, GCL-Poly provides pensions, health insurance, work accident insurance, maternity insurance, unemployment insurance, housing funds and commercial critical illness coverage as well as employer liability insurance. We offer maternity leave to all female employees who are pregnant as well as paternity leave to male employees. In 2016, a total of 487 employees took maternity/paternity leave and 473 of them remained with the Company 12 months after returning from their leave of absence. On top of government-mandated employment benefits and holidays, GCL-Poly also provides benefits such as allowances for meals, communication, transportation and high temperatures, and cash incentives for festivals, birthdays and other special occasions. All of our employees enjoyed equal opportunity in advancement; and our incentive system is based on the principles of fairness and equality. All employees underwent performance and development appraisal in 2016.

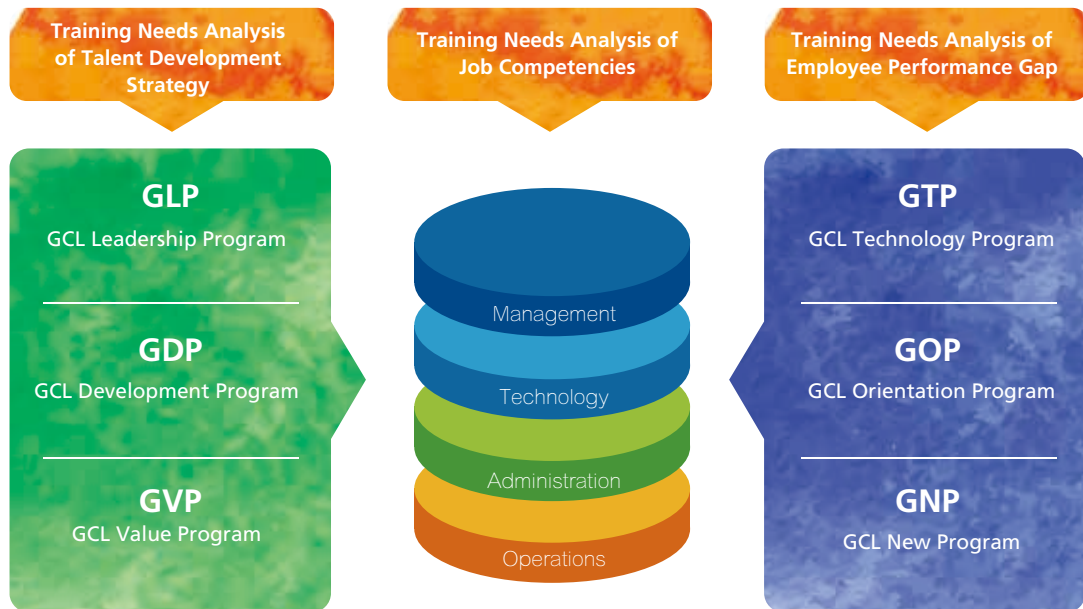
## STAFF DEVELOPMENT AND TRAINING



GCL-Poly has a comprehensive training management platform; employees have access to integrated online and offline training that will help them improve their management and professional skills, and help new employees to familiarise themselves with the Company, thereby improving its core competitiveness. The Course for New Employees of GCL-Poly helps new employees access training courses on the online platform, which cover management, technical and other topics. New employees of higher grades attend training courses. GCL-Poly places great emphasis on the cultivation of its corporate culture and seeks to create a work place where employees and the employer are able to grow and develop together.

Employees are required to undergo training regularly according to their job nature; employees with outstanding performance also have the opportunity to travel abroad to join exchange and training programs. For instance, production operators must undergo monthly technical training covering health and safety, ingot casting, slicing, maintenance and other technical areas. During the reporting period, GCL-Poly arranged 3,143 training courses to improve our employee's skills.

## EMPLOYEE TRAINING SYSTEM



## 2014-2016 GCL-POLY EMPLOYEE TRAINING INDICATORS

Indicator	2014	2015	2016
Average number of training hours per employee	33	23	75
Coverage of employee training (%)	95.9	100	100



## EMPLOYEES' LIFE

GCL-Poly values our people, who are the main driving force behind our development. After work, we also organise leisure activities beneficial to work-life balance.

### CASE STUDY

#### The Second GCL Cup Football Game

In November 2016, the second GCL Cup football game was announced at the football court in Suzhou Nano City. Since 15 October when the game began, 28 teams from Suzhou and Xuzhou have played 53 games for the football fans in the company. The games enhanced the friendship between employees, showcased our players' vibrant character, strengthened connections and reflected our joint development. Also, these games encouraged our teams and enriched their casual time. Xuzhou PV managed to defend their championship.



## CASE STUDY

### The Second Table Tennis and Badminton Tournament

In September 2016, GCL-Poly held the second ping pong and badminton tournament. This tournament held table tennis and badminton games for 12 subsidiaries of GCL-Poly and had the greatest number of participating companies in the Ten Years of PV Industry (光伏十年) series of GCL-Poly. As important members of the GCL family, Xinhua Semiconductor and GCL-Canadian Solar sent teams to participate the Ten Years of PV Industry series for the first time. The games were exciting and the audience was fully engaged in supporting their teams. The tournament was a great reflection of the energy and perseverance of our people.



## CASE STUDY

### Participating in the Yangzhou Jianzhen International Marathon

On 24 April 2016, the Yangzhou Jianzhen international half marathon was held. As a representative of the new energy industry, we organised the "Ten years of PV, outgrow ourselves, outperform" team and participated in the 10 km team race of more than an hour, and the GCL-Poly team completed the entire race. Participation in the team marathon showcased the spirit of youth, energy and health in the company's culture. It reflected our ten years in the PV industry, where we have outperformed at every step and achieved amazing results.



# COMMUNITY AND CHARITY





## COMMUNITY AND CHARITY

As a world leading corporation engaged in the clean energy business, GCL-Poly has an in-depth understanding of our responsibility in environmental protection and community investment. We ensure that our products meet the national environment standard, and we actively participate in charity activities. Over the years, we have established a three-pronged approach incorporating environmental features, education and disaster rescue in our charity work. Internally, we have established a well-designed voluntary service platform for our employees. Externally, we strive to build a harmonious community, especially in the charity business of environmental protection, educational sponsorship and disaster rescue. In 2016, we donated approximately RMB4.5 million, as well as books, daily necessities and relief supplies to people in need.

### ACTIVE RESCUE

We have demonstrated GCL-Poly's spirit of bravery when facing natural disasters through mutual support and sharing of praise or criticism. Our actions serve as proof of GCL-Poly's culture of "spreading love and warmth wherever we are". We cannot prevent disasters, but we can minimise the harm brought from them.

### Case Sharing – Bringing Warmth and Love to Funing

On 23 June 2016, Jiangsu Funing County suffered from storms and severe weather. Our local corporations were also impacted by the disaster. Mr. Zhu Gongshan, the Chairman of GCL-Poly convoked an administrative meeting and directed the immediate formulation of a rescue action plan. Relief supplies were first to arrive in the stricken region, bringing timely help to victims in Funing. GCL-Poly donated RMB2,725,000 to the Funing County Government under the company's name. Our company's swift response helped care for people impacted by this disaster. Moreover, GCL-Poly organised a three-level unit, incorporating the management centre, business department and subsidiaries, and launched fundraising activities at various levels. As at 27 June 2016, we had collected a total of RMB651,906, which was mainly from our employees in various levels.





## CARING FOR THE SURROUNDING COMMUNITY AND ENVIRONMENT

Some of the operation sites of GCL-Poly are located in remote areas. GCL-Poly is concerned with not just business development but also community and environment development in the surrounding areas. Our employees also bear share the responsibility for caring for the community, and are proactively engaged in community activities.

### Case Sharing – Sponsored a College Environmental Society to Prevent Forest Degradation in Inner Mongolia

On 25 July 2016, the Company financed social activities to prevent forest degradation in Inner Mongolia, in cooperation with the New Century No Plastic Bags Alliance and Environmental Association (新世紀限塑同盟環保社團), a volunteer organisation for environmental protection founded by Jiangsu Normal University (江蘇師範大學). During the activities, the volunteers donated seedlings to prevent forest degradation and investigated the ecological environment of the Yellow River, paid visits to rural families and the elderly to convey greetings along with local government workers. Further, they held informal discussions with local peasants, herdsmen and environmental protection volunteers to promote solar new energy and raise the environmental awareness of local residents.



## CARING FOR CHILDREN

Children are our future, and therefore we have organised child caring activities in various operating locations. In line with our principle of lend a helping hand to those in need we seek out the children that are most in-need in our operating community, poor mountainous areas and remote areas, and provide our love and care to them.

### Case Sharing – “GCL Flame, Warming the Hearts” Caring Activities Organised by Taicang Solar Power Group Committee

Putting the caring spirit of GCL Sunshine into practice, we help students from poor families to stay warm in winter. On 18 November 2016, the Taicang GCL Group Committee organised a group of young volunteers in our company to deliver resources to Yiaohua Primary School. Yiaohua Primary School is a typical impoverished school with 80 primary school students from poor families in the surrounding area. The beneficiaries include left-behind children, children from single-parent families and orphans, who lack food and clothing and urgently need love and care from society. During the activity, we could see the obvious effect of our donations on the children – even a plain coat brought them great happiness. Although our contributions were of trifling importance to most people, they were of great importance and utility to the needy.



### Case Sharing – “Dream Book Shelf” Caring Resource Donation Project of Yangzhou Solar Labour Union

In March 2016, the large-scale charity activity “Dream Book Shelf”, which was co-organised by the Communist Youth League, Yangzhou government officials and the Yangzhou Times, was opened during the Yangzhou City Zhu Ziqing Reading Festival. Yangzhou Solar Power participated in this activity series as the caring corporation representative. Reading can enrich the daily lives of many left-behind children and also provide them with a spiritual journey during the summer holiday. During the activity, employees of Yangzhou Solar Power visited Jiangdu Fanzhou Town Wing On Primary School under the invitation of the organiser and brought more than 500 books. More than 300 employees donated books in total.



# HONOURS AND RECOGNITIONS





## HONOURS AND RECOGNITIONS

- On January 1<sup>st</sup>, Xuzhou Solar was honoured as an “Energy Measurement Model Entity in Jiangsu Province”
- On February 3<sup>rd</sup>, Solar wafers under the GCL brand of Yangzhou Solar were honoured as a “Jiangsu Famous-Brand Product”.



- On February 14<sup>th</sup>, Changzhou Solar was honoured as a “Municipal Industrial Five-Star Enterprise”

- On April 8<sup>th</sup>, Solar wafers under the GCL brand of Suzhou GCL Photovoltaic were honoured as a “Jiangsu Famous-Brand Product”
- On December 29<sup>th</sup>, Changzhou GCL Photovoltaic was honoured as a “Grade AA Enterprise of Quality Credit in Jiangsu Province”



- On May 26<sup>th</sup>, GCL-Poly won a number of awards in the 10th Anniversary of the SNEC PV Power Expo in Shanghai. The Company won the “Technological Leading Company of PV Industry” award, Mr. Zhu Zhanjun, the CEO of the Company, won the “Industrial Leader of PV Industry” award, and Dr. Wan Yuepeng, technology research and development leader of the Company, and Mr. You Darong, the Vice President of the Ingot Growing Segment, won the “Technological Leader of PV Industry” award. GCL-Poly’s “Sapphire Series” High Efficiency Module technique won the Terawatt Diamond Award, the highest level award of the “Top 10 Highlights” of this Expo.

- On July 12<sup>th</sup>, two subsidiaries of GCL-Poly were listed on the “Top 100 Chinese Electronic Information Enterprises 2016 (the 30th)” list published by the China Information Technology Industry Federation.
- On July 13<sup>th</sup>, GCL-Poly was listed in the annual list of China’s top 500 companies published in Fortune magazine (Chinese version).
- On July 15<sup>th</sup>, Capital Magazine under Hong Kong South China Media hosted the 11th “CAPITAL China’s Outstanding Enterprise Awards”, and GCL-Poly Energy Holdings Limited won “CAPITAL China’s Outstanding New Energy Company” award for the 5th consecutive year.





- On November 2<sup>nd</sup>, in the “Solar Energy Cup” CREC Annual Awards Ceremony 2016, Mr. Zhu Gongshan, the Chairman of the Board of Directors of GCL-Poly, was honoured as an “Annual Solar Leader”. President Zhu Zhanjun and Vice President Lu Jinbiao won the “Annual Management Innovation People Award”, Jiangsu wafer resource general engineer Dr. You Da under GCL-Poly won the “Solvay PV Science All Star Award 2016” and our company won the “PV Industry Promotion Award”.
- On November 17<sup>th</sup>, honoured as “Best PV Material Supplier in China” at OFWeek’s PV Industry Award Ceremony 2016.



- On November 23<sup>rd</sup>, won the “Listed Company with Best Growth Potential” award in the 6th China Securities Golden Bauhinia Awards Ceremony.

On December 13<sup>th</sup>, the invention patent, GCL polysilicon Production Method, won the 18<sup>th</sup> Chinese Outstanding Patented Invention Award in 2016.

- On December 28<sup>th</sup>, won the “China’s Good Solar” Most Influential Solar Leader Enterprise Award in the Annual Ceremony of 2016 “China’s Good Solar” Brands 2016 held by INEN.com.



## OUTLOOK

Despite the challenging environment, we have successfully achieved excellent results for 2016. In the future, we will uphold our commitment to green energy and development of new products and technologies for PV materials. We will continue to maintain close contact with our stakeholders, providing regular updates on our corporate policies, plans and products.

During the 13th Five-year Plan covered period, the PV industry in China is expected to overcome core technical difficulties with the expansion of industry scale and promotion of diversified application of PV products, further reduction of costs and improvement of efficiency will be achieved. Meanwhile, the growth of various forms of projects such as photovoltaic poverty alleviation and photovoltaic agriculture will be emerged significantly. As a result, we will continue to insist in improving the core competitiveness of our products, improving product quality, deepening cooperation with financial institutes and promoting innovation in all forms of financial cooperation. We will also accelerate the pace of smart manufacturing and information construction to improve the automation level of existing production capacity for the purpose of industry upgrade.

In 2017, we will reinforce our “simple” and “high efficiency” management philosophy, based on our corporate culture framework of “leading by value, driven by competition, united as a family”. We will strive for improvement in all aspects of CSR, and maintain our cooperation with government departments in support of national policies while exploring more business models. We hope to work closely with our peers globally in advancing technology innovation. We endeavour to contribute to sustainable energy development for China and the whole world.



## KEY STATISTICS

### OPERATION PERFORMANCE

	2014	2015	2016
Polysilicon production (tonnes)	66,876	74,358	69,345
Wafer Production (MW)	13,098	14,968	17,327
Domestic sales of electricity of solar power plants (MWh)	494,148	503,435	498,420

### CUSTOMER RELATIONSHIP

	2014	2015	2016
Customer satisfaction rate (%)	83%	88%	90%

### EMISSION PERFORMANCE

	2015	2016
Nitrogen oxides (tonnes)	68.782	55.512 <sup>1</sup>
Sulphur oxides (tonnes)	0.46	3.056 <sup>1</sup>
Wastewater (tonnes)	425	429.7

### ENERGY CONSUMPTION

	2015	2016
Total purchased energy consumption (10,000 tce)	130.81	107.77

### WATER CONSUMPTION

	2015	2016
Freshwater consumption (10,000 tonnes)	2,630	1957
Amount of recycled water (10,000 tonnes)	113,292	146,691

<sup>1</sup> The total nitrogen oxides and sulphur oxides emissions were provided by qualified independent monitoring unit using instant pollutant concentration and exhaust gas emissions level for calculation.

**RECYCLING RATE OF MATERIALS**

	2015	2016
Ingot	2.5%	2.14%
Silicon Carbide	68.45%	81.63%
Dicing Solution	100%	98.50%

**EMPLOYMENT INDICATORS**

	2014	2015	2016
Total number of employees	18,326	17,705	11,528
Number of employees from ethnic minority groups	631	86	110
Female employment (%)	25.5	28.2	21.7%
Average training hours completed per employee	33	23	75
Employee training coverage rate (%)	95.9	100	100



## APPENDIX A GRI G4 CONTENT INDEX



Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>GENERAL STANDARD DISCLOSURES</b>		
<b>STRATEGY AND ANALYSIS</b>		
G4-1	Statement from the most senior decision-maker of the organization	Chairman's Statement
<b>ORGANIZATIONAL PROFILE</b>		
G4-3	Name of the organization	About this report
G4-4	Primary brands, products and/or services	Company Overview – Business Overview
G4-5	Location of the organization's headquarters	Company Overview – Business Overview
G4-6	Number of countries where the organization operates, and names of countries where the organization has significant operations	Company Overview – Business Overview
G4-7	Nature of ownership and legal form	Company Overview – Business Overview
G4-8	Markets served (including geographic breakdown, sectors served, and types of customers and beneficiaries)	Company Overview – Business Overview
G4-9	Scale of the organization	Our Employees – Human Resource Policies
G4-10	Workforce information	Our Employees – Human Resource Policies
G4-11	Percentage of total employees covered by collective bargaining agreements	Data not available. We will consider gathering such information in next report.
G4-12	Organization's supply chain	Product and Services – Supply Chain Management
G4-13	Significant changes during the reporting period regarding the organization's size structure, ownership, or its supply chain	Company Overview – Business Overview
G4-14	Report whether and how the precautionary approach or principle is addressed by the organization	Company Overview – Risk Management
G4-15	List externally developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes or which it endorses	We have not subscribed or endorsed any externally developed economic, environmental and social charters, principles, or other initiatives.
G4-16	List memberships of association and national or international advocacy organizations	Company Overview - Proactively participate in industry activities

Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES</b>		
G4-17	Entities included in the organization's consolidated financial statements or equivalent documents. Report whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	About this Report (Inside cover)
G4-18	Process for defining the report content and the Aspect Boundaries, and how the organization has implemented the Reporting Principles for Defining Report Content	Sustainability Management – Materiality Assessment (p.24)
G4-19	Material Aspects identified in the process for defining report content	Sustainability Management – Materiality Assessment (p.25)
G4-20	For each material Aspect, report the Aspect Boundary within the organization	Sustainability Management – Materiality Assessment (p.25)
G4-21	For each material Aspect, report the Aspect Boundary outside the organization	Sustainability Management – Materiality Assessment (p.25)
G4-22	Report the effect of any restatements of information provided in previous reports and the reasons for such restatements	No restatements of information provided in previous report.
G4-23	Report significant changes from previous reporting periods in Scope and Aspect Boundaries	No significant change from previous reporting periods in Scope and Aspect Boundaries.
<b>STAKEHOLDER ENGAGEMENT</b>		
G4-24	List of stakeholder groups engaged by the organization	Sustainability Management – Stakeholder Engagement (p.22)
G4-25	Basis for identification and selection of stakeholders with whom to engage	Sustainability Management – Stakeholder Engagement (p.21)
G4-26	Organization's approach to stakeholder engagement	Sustainability Management – Stakeholder Engagement (p.22)
G4-27	Key topics and concerns that have been raised through stakeholder engagement	Sustainability Management – Materiality Assessment (p.22 & 23 )
<b>REPORT PROFILE</b>		
G4-28	Reporting period for information provided	About this Report
G4-29	Date of most recent previous report	About this Report
G4-30	Reporting cycle	About this Report
G4-31	Contact point for questions regarding the report or its content	About this Report
G4-32	A. Report the 'in accordance' option the organization has chosen	About this Report
	B. Report the GRI Content Index for the chosen option	About this Report
	C. Report the reference to the External Assurance Report	About this Report
G4-33	Organization's policy and current practice with regard to seeking external assurance for the report	About this Report

Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>GOVERNANCE</b>		
G4-34	Governance structure of the organization, including committees of the highest governance body	Company Overview – Corporate Structure
<b>ETHICS AND INTEGRITY</b>		
G4-56	Describe the organization's values, principles, standards and norms of behaviour such as codes of conduct and codes of ethics	Company Overview – Business Overview
<b>SPECIFIC STANDARD DISCLOSURES</b>		
<b>Category: ECONOMIC</b>		
<b>Aspect: Economic Performance</b>		
G4-DMA	Disclosures on Management Approach	Company Overview – Business Overview
G4-EC1	Direct economic value generated and distributed	Company Overview – Business Development
G4-EC2	Financial implications and other risks and opportunities for the organization's activities due to climate change	Chairman's Statement
G4-EC3	Coverage of the organization's defined benefit plan obligations	Our Employees – Human Resource Policies
<b>Aspect: Indirect Economic Impacts</b>		
G4-DMA	Disclosures on Management Approach	Community and charity
G4-EC7	Development and impact of infrastructure investments and services supported	Community and charity
G4-EC8	Significant indirect economic impacts, including the extent of impacts	Community and charity

Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>Category: ENVIRONMENTAL</b>		
<b>Aspect: Material</b>		
G4-DMA	Disclosures on Management Approach	Green Production – High-efficiency Use of Resources
<b>Aspect: Energy</b>		
G4-DMA	Disclosures on Management Approach	Green Production – Energy Conservation
G4-EN3	Energy consumption within the organization	Green Production – Energy Conservation
<b>Aspect: Water</b>		
G4-DMA	Disclosures on Management Approach	Green Production – High-efficiency Use of Resources
G4-EN8	Total withdrawal by source	Green Production – High-efficiency Use of Resources
<b>Aspect: Emissions</b>		
G4-DMA	Disclosures on Management Approach	Green Production – Emissions Reduction
G4-EN15	Direct Greenhouse Gas Emissions (scope 1)	Green Production – Emissions Reduction
G4-EN16	Energy indirect greenhouse gas emissions (scope 2)	Green Production – Emissions Reduction
G4-EN19	Reduction of Greenhouse Gas (GHG) emissions	Green Production – Emissions Reduction
G4-EN21	NOx, SOx and other significant air emissions	Green Production – Emissions Reduction
<b>Aspect: Effluents and Waste</b>		
G4-DMA	Disclosures on management approach	Green Production – High-efficiency Use of Resources
G4-EN24	Total number and volume of significant spills	Green Production – Environmental Management System
<b>Aspect: Products and Services</b>		
G4-DMA	Disclosures on Management Approach	Green Production – Environmental Management System
G4-EN27	Extent of impact mitigation of environmental impacts of products and services	Green Production – Environmental Management System
<b>Aspect: Compliance</b>		
G4-DMA	Disclosures on Management Approach	Green Production – Environmental Management System
G4-EN29	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations	Green Production – Environmental Management System



Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>Category: SOCIAL</b>		
<b>Sub-Category: LABOR PRACTICES AND DECENT WORK</b>		
<b>Aspect: Employment</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-LA1	Total number and rates of new employee hires and employee turnover by age group, gender and region	Our Employees – Human Resource Policies
G4-LA2	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by significant locations of operation	Our Employees – Human Resource Policies
G4-LA3	Return to work and retention rates after parental leave, by gender	Our Employees – Human Resource Policies
<b>Aspect: Occupational Health and Safety</b>		
G4-DMA	Disclosures on Management Approach	Safety and Health - Safe Production
G4-LA6	Type of injury and rates of injury, occupational diseases, lost days and absenteeism, and total number of work related fatalities, by region and by gender	Safety and Health - Safe Production
<b>Aspect: Training and education</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Staff Development and Training
G4-LA9	Average hours of training per year per employee by gender, and by employee category	Our Employees – Employee Training System
G4-LA10	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings	Our Employees – Staff Development and Training
G4-LA11	Percentage of employees receiving regular performance and career development reviews, by gender, and by employee category	Our Employees – Human Resource Policies
<b>Aspect: Diversity and equal opportunity</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-LA12	Composition of governance bodies and breakdown of employees per employee category, according to gender, age group, minority group membership, and other indications of diversity	Our Employees – Human Resource Policies
<b>Aspect: Equal remuneration for women and men</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-LA13	Ratio of basic salary and remuneration of women to men by employee category, by significant locations of operation	Our Employees – Human Resource Policies

Indicator	Description	Relevant chapters in CSR Report 2016 or other reference/explanation
<b>Sub-Category: HUMAN RIGHTS</b>		
<b>Aspect: Non-discrimination</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-HR3	Total number of incidents of discrimination and corrective actions taken	Our Employees – Human Resource Policies
<b>Aspect: Child Labour</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-HR5	Operations and suppliers identified as having significant risk for incidents of child labour, and measures taken to contribute to the effective abolition of child labour	Our Employees – Human Resource Policies
<b>Aspect: Forced or Compulsory Labour</b>		
G4-DMA	Disclosures on Management Approach	Our Employees – Human Resource Policies
G4-HR6	Operations and suppliers identified as having significant risk for incidents of forced or compulsory labour, and measures taken to contribute to the elimination of all forms of forced or compulsory labour	Our Employees – Human Resource Policies
<b>Sub-Category: SOCIETY</b>		
<b>Aspect: Local Communities</b>		
G4-DMA	Disclosures on Management Approach	Community and charity
G4-SO1	Percentage of operations with implemented local community engagement, impact assessments, and development programs	Community and charity
<b>Aspect: Anti-corruption</b>		
G4-DMA	Disclosures on Management Approach	Company Overview
G4-SO3	Total number and percentage of operations assessed for risks related to corruption and the significant risks identified	Company Overview – Corporate Governance and Risk Management
G4-SO4	Communication and training on anticorruption policies and procedures	Company Overview – Corporate Governance and Risk Management
G4-SO5	Confirmed incidents of corruption and actions taken	Company Overview – Corporate Governance and Risk Management
<b>Aspect: Anti-competitive Behaviour</b>		
G4-DMA	Disclosures on Management Approach	Company Overview
G4-SO7	Total number of legal actions for anti-competitive behaviour, anti-trust, and monopoly practices and their outcomes	Company Overview – Corporate Governance and Risk Management
<b>Aspect: Compliance</b>		
G4-DMA	Disclosures on Management Approach	Sustainability Management
G4-SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations	Sustainability Management – Corporate Governance and Risk Management
<b>Sub-Category: PRODUCT RESPONSIBILITY</b>		
<b>Aspect: Compliance</b>		
G4-DMA	Disclosures on Management Approach	Our People
G4-PR5	Results of surveys measuring customer satisfaction	Products and Services – Customer Service

## APPENDIX B THE STOCK EXCHANGE OF HONG KONG LIMITED (SEHK) ESG REPORTING GUIDE CONTENT INDEX

Subject Areas, Aspects, General Disclosures and KPIs		Relevant chapter(s) in ESG Report 2016 or other references/Explanation
<b>A. Environmental</b>		
<b>Aspect A1 Emission</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to air and greenhouse gas emissions, discharges into water and land, and generation of hazardous and non-hazardous waste.	Green Production-Environmental Management System/Emissions Reduction
<b>KPI A1.1</b>	The types of emissions and respective emissions data.	Green Production-Emissions Reduction
<b>KPI A1.2</b>	Greenhouse gas emissions in total (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Green Production-Emissions Reduction
<b>KPI A1.3</b>	Total hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Green Production-Emissions Reduction
<b>KPI A1.4</b>	Total non-hazardous waste produced (in tonnes) and, where appropriate, intensity (e.g. per unit of production volume, per facility).	Green Production-Emissions Reduction
<b>KPI A1.5</b>	Description of measures to mitigate emissions and results achieved.	Green Production-Emissions Reduction
<b>KPI A1.6</b>	Description of how hazardous and non-hazardous wastes are handled, reduction initiatives and results achieved.	Green Production-Emissions Reduction
<b>Aspect A2 Use of Resources</b>		
<b>General Disclosure</b>	Policies on the efficient use of resources, including energy, water and other raw materials. Note: Resources may be used in production, in storage, transportation, in buildings, electronic equipment, etc.	Green Production-Environmental Management System/Energy Conservation
<b>KPI A2.1</b>	Directed and/or indirect energy consumption by type (e.g. electricity, gas or oil) in total (kWh in '000s) and intensity (e.g. per unit of production volume, per facility).	Green Production -Energy Conservation
<b>KPI A2.2</b>	Water consumption in total and intensity (e.g. per unit of production volume, per facility).	Green Production -High-Efficiency Use of Resources
<b>KPI A2.3</b>	Description of energy use efficiency initiatives and results achieved.	Green Production -Energy Conservation
<b>KPI A2.4</b>	Description of whether there is any issue in sourcing water that is fit for purpose, water efficiency initiatives and results achieved.	Green Production -High-Efficiency Use of Resources
<b>KPI A2.5</b>	Total packaging material used for finished products (in tonnes) and, if applicable, with reference to per unit produced.	Not Applicable

Subject Areas, Aspects, General Disclosures and KPIs		Relevant chapter(s) in ESG Report 2016 or other references/ Explanation
<b>Aspect A3 Environment and Natural Resources</b>		
<b>General Disclosure</b>	Policies on minimizing the issuer's significant impact on the environment and natural resources.	Green Production-Environmental Management System
<b>KPI A3.1</b>	Description of the significant impacts of activities on the environment and natural resources and the actions taken to manage them.	Green Production-Environmental Management System/ Emissions Reduction
<b>B. Social</b>		
<b>Aspect B1 Employment</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to compensation and dismissal, recruitment and promotion, working hours, rest periods, equal opportunity, diversity, anti-discrimination and other benefits and welfare.	Our Employees-Human Resource Policies/ Employees 'Life
<b>KPI B1.1</b>	Total workforce by gender, employment type, age group and geographical region.	Our Employees-Human Resource Policies
<b>KPI B1.2</b>	Employee turnover rate by gender, age group and geographical region.	Our Employees-Human Resource Policies
<b>Aspect B2 Health and Safety</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to providing a safe working environment and protecting employees from occupational hazards.	Safety and Health
<b>KPI B2.1</b>	Number and rate of work-related fatalities.	Safety and Health – Safe Production
<b>KPI B2.2</b>	Lost days due to work injury.	Safety and Health – Safe Production
<b>KPI B2.3</b>	Description of occupational health and safety measures adopted, how they are implemented and monitored.	Safety and Health – Safe Production/ Occupational Health
<b>Aspect B3 Development and Training</b>		
<b>General Disclosure</b>	Policies on improving employees' knowledge and skills for discharging duties at work. Description of training activities. Note: Training refers to vocational training. It may include internal and external courses paid by the employer.	Our Employees – Staff Development and Training
<b>KPI B3.1</b>	The percentage of employees trained by gender and employee category (e.g. senior management, middle management).	Our Employees – Staff Development and Training
<b>KPI B3.2</b>	The average training hours completed per employee by gender and employee category.	Our Employees – Staff Development and Training
<b>Aspect B4 Labour Standards</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to preventing child and forced labour.	Our Employees-Human Resource Policies
<b>KPI B4.1</b>	Description of measures to review employment practices to avoid child and forced labour.	Our Employees-Human Resource Policies
<b>KPI B4.2</b>	Description of steps taken to eliminate such practices when discovered.	Our Employees-Human Resource Policies



Subject Areas, Aspects, General Disclosures and KPIs		Relevant chapter(s) in ESG Report 2016 or other references/Explanation
<b>Operating Practices</b>		
<b>Aspect B5 Supply Chain Management</b>		
<b>General Disclosure</b>	Policies on managing environmental and social risks of the supply chain.	Product and Service-Supply Chain Management
<b>KPI C5.1</b>	Number of suppliers by geographical region.	Product and Service-Supply Chain Management
<b>KPI C5.2</b>	Description of practices relating to engaging suppliers, number of suppliers where the practices are being implemented, how they are implemented and monitored.	Product and Service-Supply Chain Management
<b>Aspect B6 Product Responsibility</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to health and safety, advertising, labelling and privacy matters relating to products and services provided and methods of redress.	Product and Service
<b>KPI B6.2</b>	Number of products and service related complaints received and how they are dealt with.	Product and Service-Customer Service
<b>KPI B6.4</b>	Description of quality assurance process and recall procedures.	Product and Service-Quality Control
<b>Aspect B7 Anticorruption</b>		
<b>General Disclosure</b>	Information on: (a) The policies; and (b) compliance with relevant laws and regulations that have a significant impact on the issuer relating to bribery, extortion, fraud and money laundering.	Company Overview – Corporate Governance and Risk Management
<b>KPI B7.1</b>	Number of concluded legal cases regarding corrupt practices brought against the issuer or its employees during the reporting period and the outcomes of the cases.	Company Overview – Corporate Governance and Risk Management
<b>KPI B7.2</b>	Description of preventive measures and whistle-blowing procedures, how they are implemented and monitored.	Company Overview – Corporate Governance and Risk Management
<b>Community</b>		
<b>Aspect B8 Community Investment</b>		
<b>General Disclosure</b>	Policies on community engagement to understand the needs of the communities where the issuer operates and to ensure its activities take into consideration the communities' interests.	Community and Charity
<b>KPI B8.1</b>	Focus areas of contribution (e.g. education, environmental concerns, labour needs, health, culture, sport).	Community and Charity
<b>KPI B8.2</b>	Resources contributed (e.g. money or time) to the focus area.	Community and Charity

## APPENDIX C CASS CSR3.0 INDICATOR INDEX

Indicator System 3.0		Relevant chapter(s) in ESG Report 2016 or other references
Level 1 Indicator	Level 2 Indicator	
Aspect A: Report Preface (Series P)		
(P1) Reporting Specification	P1.1 Report information description	About this Report
	P1.2 Report boundary	About this Report
	P1.3 Report system	About this Report
	P1.4 Contact information	About this Report
(P2) Reporting Process	P2.1 Materiality selection process	Sustainability Management
(P3) Management Statement	P3.1 Opportunities and challenges for Corporate Social Responsibility	Chairman's Statement
	P3.2 A summary of achievements and deficiencies of the Annual Social Responsibility work of Company	Chairman's Statement
(P4) About the Company	P4.1 Company name, the nature of ownership, and headquarter location	Company Overview – Business Overview
	P4.2 Major brands, products and services	Company Overview – Business Overview
	P4.3 Operation regions, including operating companies, subsidiaries and joint ventures	Company Overview – Business Overview
	P4.4 Service market divided by industry, customer type and geography	Company Overview – Business Overview
	P4.5 The total number of the employees according to the employment contracts (both formal and informal) and gender	Our Employees – Human Resource Policies
(P5) Annual Progress	P5.1 Annual major works related to social responsibility	Highlights in 2016
	P5.2 Annual responsibility performance	Highlights in 2016
	P5.3 Annual responsibility honour	Honours and Recognitions

Indicator System 3.0		Relevant chapter(s) in ESG Report 2016 or other references
Level 1 Indicator	Level 2 Indicator	
<b>Aspect B: Responsibility Management (Series G)</b>		
<b>(G1) Responsibility Strategy</b>	G1.1 Social responsibility concept, vision and values	Company Overview
	G1.2 Identify the core social responsibility issues of the company	Sustainability Management
<b>(G2) Responsibility Governance</b>	G2.1 Social responsibility leadership	Sustainability Management
	G2.2 Responsibility and division of labour in social responsibility organization system	Sustainability Management
<b>(G4) Responsibility Performance</b>	G4.1 Channels and procedures for the communication between stakeholders and the highest governing body of the enterprise	Green Production – Environmental Management System
<b>(G5) Responsibility Communication</b>	G5.1 Stakeholders' concerns and response measures	Sustainability Management
	G5.2 Internal Social Responsibility Communication Mechanism	Sustainability Management
	G5.3 External Social Responsibility Communication Mechanism	Sustainability Management
	G5.4 Corporate Social Responsibility communication and exchange activities	Sustainability Management
<b>Aspect C: Market Performance(Series M)</b>		
<b>(M1) Responsibility of the stakeholder</b>	M1.1 Policies and mechanisms of shareholders' participation in corporate governance	Business Overview – Corporate Governance and Risk Management
	M1.2 Protect the interests of small and medium investors	Company Overview – Corporate Governance and Risk Management
	M1.3 Standardize information disclosure	Company Overview – Corporate Governance and Risk Management
	M1.4 Growth	Company Overview – Business Development
	M1.5 Profitability	Company Overview – Business Development
	M1.6 Safety	Company Overview – Business Development
<b>(M2) Customer responsibility</b>	M2.1 Customer relationship management system	Product and Service – Customer Service
	M2.4 Loss-cut and compensation	Product and Service – Customer Service
	M2.5 Product quality management system	Product and Service – Quality Control
	M2.6 Qualified rate of products	Green Production – Energy Conservation
	M2.7 Support system of product and service innovation	Company Overview – Investment in Scientific Research
	M2.8 Customer satisfaction survey and customer satisfaction	Product and Service – Customer Service
	M2.9 Actively deal with customers' complaints and the resolution rate of customers' complaints	Product and Service – Customer Service
<b>(M3) Partner Responsibility</b>	M3.2 The security idea and system of Integrity Management	Sustainability Management

Indicator System 3.0		Relevant chapter(s) in ESG Report 2016 or other references
Level 1 Indicator	Level 2 Indicator	
Aspect D: Society Performance (Series S)		
(S1) Government Responsibility	S1.2 Compliance training	Green Production; Our Employees
	S1.3 Prohibit commercial bribery and commercial corruption	Company Overview
	S1.4 Total tax payment	Company Overview
	S1.5 Respond to national policies	Chairman' s Statement; Overlook
	S1.6 Policies or measures to ensure employment and (or) to promote employment	Our Employees – Human Resource Policies
	S1.7 Absorption of employment during the reporting period	Our Employees – Human Resource Policies
(S2) Employee Responsibility	S2.1 Labor contract signing rate	Our Employees – Human Resource Policies
	S2.2 Democratic management	Our Employees – Human Resource Policies
	S2.3 Percentage of minimum wage and local minimum wage divided by operating area	Our Employees – Human Resource Policies
	S2.4 Social insurance coverage	Our Employees – Human Resource Policies
	S2.5 Welfare System divided by nature of employment (formal or informal)	Our Employees – Human Resource Policies
	S2.6 Proportion of female management	Our Employees – Human Resource Policies
	S2.7 Occupational disease prevention and control system	Safety and Health – Occupational Health
	S2.8 Occupational safety and health training	Safety and Health – Occupational Health
	S2.9 Annual increase in occupational diseases and accumulated occupational diseases in company	Safety and Health – Occupational Health
	S2.10 Physical examination and health file coverage	Safety and Health – Occupational Health
	S2.11 The occupational development channel of employees	Our Employees – Staff Development and Training
	S2.12 Staff training system	Our Employees – Employee Training System
	S2.13 Staff training performance	Our Employees – Employee Training System
	S2.14 Investment in helping the needy employees	Our Employees – Human Resource Policies



Indicator System 3.0		Relevant chapter(s) in ESG Report 2016 or other references
Level 1 Indicator	Level 2 Indicator	
(S3) Safe Production	S3.1 Safety Production Management System	Safety and Health – Safe Production
	S3.2 Safety Emergency Management Mechanism	Safety and Health – Safe Production
	S3.3 Safety emergency drill performance	Safety and Health – Safe Production
	S3.4 Safety education and training	Safety and Health – Safe Production
	S3.5 Safety production investment	Safety and Health – Safe Production
	S3.6 Number of safety production accidents	Safety and Health – Safe Production
	S3.7 Number of casualties	Safety and Health – Safe Production
(S4) Community Responsibility	S4.1 Employee localization policy	Our Employees – Human Resource Policies
	S4.2 Enterprise public interest policy or the main public welfare areas	Community and Charity
	S4.3 Total amount of donations	Community and Charity
	S4.4 Policies and measures of the enterprise to support volunteer activities	Community and Charity
	S4.5 Employee volunteer activity performance	Community and Charity
Aspect E: Environment Performance (Series E)		
(E1) Green Operations	E1.1 The establishment of environmental management organization system and institution	Green Production – Environmental Management System
	E1.2 Enterprise environmental impact assessment	Green Production
	E1.3 Total investment in environmental protection	Green Production
	E1.4 Environmental training and publicity	Green Production – Environmental Management System
	E1.5 Environmental protection training performance	Green Production – Environmental Management System

Indicator System 3.0		Relevant chapter(s) in ESG Report 2016 or other references
Level 1 Indicator	Level 2 Indicator	
<b>(E2) Green factory</b>	E2.1 Energy saving policies and measures	Green Production – Energy Conservation
	E2.2 Annual total energy consumption	Green Production – Energy Conservation
	E2.4 Policies, measures or techniques to reduce waste gas emissions	Green Production – Emissions Reduction
	E2.5 Waste gas emissions and emissions reductions	Green Production – Emissions Reduction
	E2.6 Regulations, measures or techniques to reduce waste water discharges	Green Production – High – Efficiency Use of Resources
	E2.7 Waste water discharges and discharges reductions	Green Production – High – Efficiency Use of Resources
	E2.8 Regulations, measures or techniques to reduce waste emissions and discharges	Green Production – Emissions Reduction
	E2.9 Waste emissions and discharges, and the reductions	Green Production – Emissions Reduction
	E2.10 Policies/measures to develop circular economy	Green Production – High – Efficiency Use of Resources
	E2.11 Recycling utilization rate of renewable resources	Green Production – High – Efficiency Use of Resources
	E2.12 Build a water-saving enterprise	Green Production – High – Efficiency Use of Resources
	E2.13 Annual fresh water consumption/fresh water consumption per unit of industrial added value	Green Production – High – Efficiency Use of Resources
	E2.14 Recycled water usage amount	Green Production – High – Efficiency Use of Resources
	E2.15 Plan of reducing greenhouse gas emissions and its achievements	Green Production – Emissions Reduction
<b>(E3)Green products</b>	E3.2 Measures and performance of recycling of waste and used products	Green Production – Emissions Reduction
<b>Aspect F: Report Postscript (Series A)</b>		
<b>(A1) Future Plan: Corporate plan for social responsibility</b>		Outlook
<b>(A2) Value of the report: Social responsibility experts or industry experts, stakeholders or professional organizations to evaluate the report</b>		Appendix D
<b>(A3) Indicator reference: The use of this indicator is required for disclosure of indicators</b>		Appendix C

## APPENDIX D RATING REPORT ON THE GCL-POLY 2016 ENVIRONMENTAL, SOCIAL AND GOVERNANCE REPORT



中国企业社会责任报告  
评级专家委员会  
Chinese Expert Committee on CSR Report Rating

### Rating Report on the GCL-Poly 2016 Environmental, Social and Governance Report

Upon the request of GCL-Poly Energy Holdings Limited, the “Chinese Expert Committee on CSR Report Rating” invited experts to form rating team to rate the “GCL-Poly Energy 2016 Environmental, Social and Governance Report” (hereinafter referred to as “the Report”).

#### I. Rating Criteria

Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 3.0) and Rating Standard on Corporate Social Responsibility Reporting for Chinese Enterprises (2014).

#### II. Rating process

- (1) The panel for process appraisal makes interview to key members of the Report preparation team and examines materials related to the preparation process;
- (2) The rating group draws up the rating report based on its appraisal made toward the preparation process and information disclosure of the Report.
- (3) The rating report is submitted to and signed by both the vice-chairman of the Expert Committee and head of the rating group.

#### III. Rating results

##### Process Management (★★★★)

The Investor Relations Department of the Company takes the lead in setting up the report preparation team, and the chief financial officer and the vice president are responsible for the preparation and overall direction of the report; the preparation team identifies stakeholders, and collects opinions and suggestions by conducting questionnaire survey, interview, and so on; the substantive issues are identified in accordance with major corporate matters, national policies, industry benchmarking analysis, stakeholder survey, and so on; the Company plans to release the report through its official website, and to present electronic version of report (in both Chinese and English), achieving outstanding performance in the aspect of process.

##### Materiality (★★★★★)

The report systematically discloses key industrial issues relating to product quality management, innovation in products and services, occupational health management, work safety assurance, supply chain management, R&D of environmentally-friendly products, R&D and application of environmentally-friendly technologies and equipment, energy-saving and resource conservation, reduction of “three wastes,” and so on, achieving excellent performance in the aspect of materiality.

##### Completeness (★★★★☆)

The main contents of the Report disclosed 82.4 percent of core indicators of the industry from the aspects of “Sustainability Management”, “Products and Services”, “Green Production”, “Safety and Health”, “Our Employees” and “Community and Charity” achieving leading performance in the aspect of completeness.



#### **Balance (★★★★☆)**

The Report disclosed detailed negative indicator information such as the “number of leak accidents”, “number of injuries”, “number of work-related fatalities”, “number of severe accidents”, “number of new occupational disease cases” and “ratio of total product return”, achieving leading performance in the aspect of balance.

#### **Comparability (★★★★☆)**

The Report disclosed 9 key indicators including “domestic sales of electricity of solar power plants,” “total number of employees,” “female employment” and “employee training coverage rate” for three years in a row, and conducted horizontal comparison on “the scale of polysilicon products,” “the scale of wafers”, achieving good performance in the aspect of comparability.

#### **Readability (★★★★★)**

Centering on stakeholders and taking the theoretical model of social responsibility as framework, the contents of the report are concise and easy-to-understand; the creation of the report cover highlights main business of the Company, and the featured design of each chapter and corresponding corporate pictures enhances the features of the report and improves the readability; and the report uses plenty of case stories to elaborate the Company’s social responsibility performance, achieving outstanding performance in the aspect of readability.

#### **Innovativeness (★★★★☆)**

Centering on ESG issues, the report conducts extensive questionnaire survey and interview, strengthening stakeholder engagement internally and externally, and effectively improving the scientific integrity and accuracy of the identification of substantive issues; according to the standards and guidelines including G4, ESG, CASS-CSR3.0 and DJSI, the report effectively responds to the expectation of stakeholders both in China and abroad; and the introduction of GRI Materiality Disclosures Service and the third-party report rating service significantly enhances the content compliance and preparation standardization of the report, achieving leading performance in the aspect of innovation.

#### **Overall rating (★★★★☆)**

According to the assessment of the rating team, the “GCL-Poly Energy 2016 Environmental, Social and Governance Report” was awarded a rating of four and a half -star. It is a leading CSR report.

#### **IV. Suggestions for improvement**

1. To further disclose information relating to KPIs of three consecutive years, improving the comparability of the report.
2. To optimize the overall layout design, further improving the readability of the report.

#### **Rating team**

Team leader: Zhong Hongwu, director of the Research Center for Corporate Social Responsibility of the Economics Division of Chinese Academy of Social Sciences.

Team Members: Deng GuoSheng, Vice president of the Charity Research institute of Tsinghua university





中国企业社会责任报告  
评级专家委员会  
Chinese Expert Committee on CSR Report Rating

Process evaluator: Wang Zhimin

魏紫川

Vice-chairman of Chinese Expert  
Committee on CSR Report



钟宏武

Head of the rating group

Scan QR code to view rating files of GCL-poly

Date of issuance: July 18, 2017





**GCL-Poly Energy Holdings Limited**  
保利協鑫能源控股有限公司

### Report Release

This report is released in both Chinese and English versions,  
Further information can be found on the GCL-Poly website  
(<http://www.gcl-poly.com.hk>) °

[www.gcl-poly.com.hk](http://www.gcl-poly.com.hk)