





# Report Scope and Profile

This is JinkoSolar's Corporate Social Responsibility report, which elaborates on the company's CSR concepts, strategies and specific practices, including all manufacturing factories, global subsidiaries and office, downstream energy producing sectors and commercial & residential turnkey solution business units. It contains information related to the economy, environment, staff and community, and reports management methods, activities, measures and key indicators regarding the corporate social responsibility and sustainable development.

# Reference

This report is compiled based on the Global Reporting Initiative (GRI) G3.1 framework, and is self-declared as Level A inside the Company. A GRI Content Index is provided in the appendix in the report.

# Time

This report includes CSR related information from January 1, 2018 to December 31, 2018. It also includes additional pertinent information dating back to the founding of the company.

# Data Measurement and Report Assurance

The data in this report mainly comes from original records about the actual operation of the Company. The information provided will be subject to the internal audit of the Company. If you have any questions or comments regarding this report please do not hesitate to contact us by e-mailing: csr@jinkosolar.com



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The cutting-edge reliability and efficiency of our products continue to set us apart as we continuously meet and exceed customer expectations, and help them meet their own sustainability targets.

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# **Overview**

At JinkoSolar, we believe that corporate responsibility is simply good business. Doing the right thing the right way creates value for JinkoSolar and strengthens our position as a global leader for Solar PV products and a leading energy provider. Deeply embedding corporate responsibility and a commitment to ethical behavior in all that we do helps us mitigate risk, reduce costs, protect our brand value, and develop new market opportunities. We also believe that strong employee and supplier relations, corporate governance, business ethics, social contribution, and environmental protection are the cornerstones of JinkoSolar' s sustainable growth.

In 2012 JinkoSolar ranked #4 in the Global PV Sustainable Growth index published by PwC, which attests to the company's global reputation in sustainability and investment value over the long run. Through this Corporate Social Responsibility (CSR) Report, we would like to share with you our continuing efforts in sustainable development along the economic, environmental and social dimensions as well as our commitment to establish enterprise-wide sustainability strategy goals.

The Company has plans to develop a "Corporate Social Responsibility Committee", acting as an overall coordinator for all corporate CSR activities. It is comprised of representatives from our Customer Service, Human Resources, Investor Relations, Legal, Purchasing, Supply Chain Management, Production, Quality and Reliability, R&D, Corporate ESH, and Public Relation departments. The committee is expected to compile and mitigate stakeholders' concerns, and ensure implementation of appropriate initiatives and programs related.

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# Letter from the Chairman

Widespread use of solar PV energy has the potential to reduce the external social and environmental costs of fossil fuel combustion. For example, many cities are struggling with the dense smog or hazy street scenes of the Chinese breathing through surgical masks. This is a visible evidence of the gravity of the condition of China's air pollution, with fossil fuel combustion, cited as a major contributor.

There appears to be a general agreement that the unbridled economic growth of the past few decades has come at a heavy environmental cost that is no longer acceptable. The challenge, not only facing China but all other developed and developing countries, is to curb environmental degradation without halting the country's economic development, and it can only be addressed through a wide adoption of solar PV renewable energy.

At JinkoSolar, we believe that our solar PV business itself simply talks good social responsibility, which will play a fundamental role in addressing the world's toughest environmental and energy shortage challenges. As one of the world's largest solar panel manufacturers, JinkoSolar develops advanced solar PV technology to drive down the costs of solar electricity generation and makes it economically viable for millions of people to directly harness the sun's energy without having to rely on fossil fuel extraction and combustion. Our mission is to change the energy portfolio and to improve the way the planet is powered by providing everyone with the most abundant, reliable and economically clean energy resource.

Over the past 12 years, JinkoSolar has done more than just to strive for greater heights in its core business by creating values through outstanding operations. Through our daily actions, we have also built positive relationships with stakeholders such as employees, customers, shareholders, investors, communities, suppliers, and the government.

"Fairness and Responsibility" is the cornerstone of our culture. JinkoSolar's vision for society is one that works together towards sustainable development, equality and justice, responsibility and accountability, and a harmonious environment to live and work. Our company is founded on the fundamental values listed below.

# **Ethics**

Integrity is JinkoSolar's most important core value, and the key to our success. We oppose corruption, do not seek favor with

government officials, and insist on transparent operations. We practice good corporate governance. In fact, three of our seven-member Board of Directors are independent directors, and the Board is focused on balancing the interests of all company stakeholders including shareholders, and employees. We respect the rule of law and always obey the law. We hope to act as an example in raising the level of business ethics and discipline in societv

## Management

We comply with the law in spirit as well as in letter. Through innovation in fields including strategy, sales, management, technology, and manufacturing, we continue to reinforce our competitive strengths of technology leadership, manufacturing excellence, and customer trust. This ongoing improvement allows us to maintain our lead in the solar PV industry, and our growth provides a good return to shareholders, which in turn promotes economic development in society.

# Human Resources

"Fairness and Equity" is the guiding principle. We recruit talent in a fair, open, and just manner. We provide good and equal job opportunities with a safe, comfortable environment and with compensation above the industry average, and comprehensive training courses.

## Health and Safety

All of JinkoSolar's manufacturing facilities have gained OHSAS 18001 certification for occupational health and safety management systems. We actively promote employee work/life balance, and have established comprehensive policies for employee health and occupational disease prevention. We have also set strict standards for safety and health procedures, emergency response procedures and plans.

# Sustainability

As a leading photovoltaic manufacturer. JinkoSolar follows stringent environmental management standards in accordance toISO14001 (environmental management system standards). We implement strict environmental protection from raw material procurement, to waste recycling and all aspects of the SGS ISO 14001:2015 certification. In 2018, the company built a green factory, highly affirmed on a national level by the Ministry of industry and information technology of People's Republic of China's green factory assessment.

# Community

We proudly carry the responsibility to improve lives of our community. We not only strive to succeed in our core business, we also strive to support our community thought wide variety of public service activities such as non-profit donations, education programs, employee volunteerism, sponsorships, and scholarship programs.

Looking into the future, both China and the world is facing great challenges of environmental and sustainable growth. I am proud that JinkoSolar plays a key role in the progress of changing the situation for the better. It has been an honor to work with the employees of JinkoSolar, who every day move technology forward, empower people, and transform our world in ways we didn't expect. I have no doubt that their innovation and actions will continue to improve lives while sustaining our business-and the planet-in the years to come





# industry.

JinkoSolar (NYSE: JKS) is a global leader in the solar industry. JinkoSolar distributes its solar products and sells its solutions and services to a diversified international utility, commercial and residential customer base in China, the United States, Japan, Germany, the United Kingdom, Chile, South Africa, India, Mexico, Brazil, the United Arab Emirates, Italy, Spain, France, Belgium, and other countries and regions. JinkoSolar has built a vertically integrated solar product value chain, with an integrated annual capacity of 9.7 GW for silicon ingots and wafers, 7.0 GW for solar cells, and 10.8GW for solar modules, as of December 31, 2018.

JinkoSolar has over 12,000 employees across its 6 productions facilities globally, 15 oversea subsidiaries in Japan, Korea, Singapore, India, Turkey, Germany, Italy, Switzerland, United States, Canada, Mexico, Brazil, Chile, Australia and United Arab Emirates, and global sales teams in United Kingdom, France, Netherlands, Spain, Bulgaria, Greece, Romania, Ukraine, Jordan, Saudi Arabia, Tunisia, Egypt, Morocco, Nigeria, Kenya, South Africa, Costa Rica, Colombia, Panama and Argentina.

Jinko Solar provides high-quality solar PV products and supply chain for competitive pricing and maximum value. Our shipments and revenues have grown exponentially since 2010, with total shipments in 2018 being 11.4GW. This has lead the company to secure its position as the world' s #1 silicon PVmodule producer for the past three consecutive years.



# About JinkoSolar

JinkoSolar (NYSE: JKS) is a global leader in the solar

# **Key Figures**

# **Milestone**

|        |  | ► <b>2006</b> |
|--------|--|---------------|
| 12,000 | Over 12,000 employees globally                       | ► 2007        |
| 1      | The world #1 largest solar PV manufacturer           | ► 2008        |
| 35+    | Marketing network                                    | ► 2009        |
| 40+    | 40 GW of products deployed (as of December 31, 2018) | ► <b>2010</b> |
| 1      | Tier 1 in Bankability                                | ► 2011        |
| 6      | 6 plant facilities worldwide                         | ► 2012        |

# **Vision & Mission, Culture**

Vision : Take responsibility of enable a sustainable future

Mission : Provide one-stop solution of clean energy and become industry leader.

**Culture :** Equality & Justice Commitment & Accountability

| 2007 |
|------|
| 2008 |
| 2009 |
| 2010 |
| 2011 |
| 2012 |
| 2013 |

- ► 2014
- ► 2015
- ► 2016
- ▶ 2017
- ► **2018**

World's 1<sup>st</sup> company to pass PID Free test under 85°C/85% RH 1<sup>st</sup> PV company to restore profitability in Q2 World's 1<sup>st</sup> 1000-hour PID Free test under 85°C/85% RH Opens Factory in Malaysia

Becomes World's Largest Solar Module Manufacturer

2017 Top Solar Brand Used in Debt-Financed Projects and Most "Bankable" PV Manufacturer by Bloomberg New Energy Finance

#1 in Global Module Shipment Third Year in a Row 1st "All Quality Matters" Energy Yield Simulation Winner – Mono Group

Jinko Solar Co.,Ltd. is established

Launches ingot manufacturing

Launches wafer manufacturing

Operates the 1<sup>st</sup> fully automated PV module NPC production line in China

Successful IPO and listed on the NYSE. Shortest PV manufacturer from production to IPO

The only profitable PV manufacturer worldwide

# **Global Impact at A Glance**





# Innovation Management

Our success has been founded on innovation. Our global Research & Development (R&D) teams, with more than 400 full-time professionals, are developing advanced technology to drive down the LCOE of photovoltaics. JinkoSolar has steadily increased R&D investments each year, reaching 946 million RMB in 2018. Jinkosolar applied for 1067 patents and granted 576 patents. We have collaborated with solar research institutions all over the world, including Shanghai Jiaotong University, Tsinghua University, Zhejiang University, Tianjin University, The Australian National University, and the University of New South Wales (UNSW), etc.





R&D Expenditure: 946M RMB





Patent Applications : 1000+ Patents: 570+



12 Leading Universities, including Tsinghua University & UNSW,

# **2018 Financial Highlights**

The total shipment of solar modules is 11.4GW, increased 11.6% compared to 9.8GW in 2017, this has set a new record high. Net income for 2018 was up 189% from 2017, while operating income was up 98% from 2017. Gross margin for 2018 as a whole was 14.0%, compared with 11.3% in 2017.

Total solar module shipments in 2018

# R&D achievements

## High-power module:

The current maximum power of a 60-cell polycrystalline module in the lab is 373.8W, with the 60-cell mono-perc module listed at 378.6W; a new world record in the PV industry. Through the continuous commercializing of laboratory technology, we have realized mass-production of 60-cell PV modules with 340W+ output, reducing project LCOE for our customers.

## High-reliability module:

We improve the reliability of our PV modules relentlessly through material aging tests, and by commercializing our leading technology of PID free and anti-snail track developed by our RD achieved an increased energy output, and is ideal for desert areas

## New production:

We have developed our all-new mass-produced Cheetah series, opening up PV 4.0 Era with mainstream power output of 400W and ushering the industry towards grid parity. Meanwhile, the unique reduces the incidence of heat spot under outdoor environment and the linear degradation during the lifetime, improving the reliability of outdoor 5. Considering the demand of reducing manufacturing cell technology and HOT cell technology, we have independent intellectual property rights, achieving than 40% power generation gain if adopted tracking great application potential. technology

# New structure solar cell technologies:

With development and application in mass production pilot line, we have significantly accelerated the development of high efficiency cell with new structure.

1.We have completed the R&D of new passivation structure, achieving the P-type cell efficiency of 23 95%

2.We have developed N-type cell product based on HOT high efficiency technology, achieving mass-production efficiency of above 23% and large-area N-type cell record of 24.2%.

department. Our new self-cleaning product also 3. The advanced technology developed in the pilot-test platform has been verified by mass production and can be rapidly applied and promoted, comprehensively improving the competitiveness of Jinko's product portfolio

4. Relying on JinkoSolar Research Institute, a leading scientific research platform with advanced equipment and outstanding talents, we have reserved a series of circuit configuration with low internal current technologies of tomorrow such as back junction batteries, and laminated batteries, etc.

operation and power generation. Based on bifacial cost and technical innovation, we have explored the application of new materials and new technologies in developed N-type bifacial modules with the solar PV field, such as advanced metals, high-efficiency conductive films, and light-transmissive 5%-30% rear-side power generation gain, and more dielectrics, which have excellent performance and

# High-efficiency Silicon Wafer:

With the upgraded continuous feeding system and continuous crystal pulling technology, the application of high-purity neodymium, high-purity thermal field and low-oxygen drawing technology, we effectively reduce crystal defects and oxygen content, continuously improving material performance, and achieving high-power and low light degradation

Meanwhile, the development and application of multi-stage thermal field technology has greatly improved the hardness and flexural strength of silicon wafers, laving solid technical foundation for silicon wafer thinning, cost saving and efficiency improvement.

We are the industry's first manufacturer to realize the mass production of 158mm large-size right-angle monocrystalline silicon wafers for high efficiency Cheetah modules

We have made technical breakthroughs in N-type monocrystalline continuous drawing technology and reached industry-leading level, significantly reducing the cost of N-type modules and promoting the adoption of advanced high efficiency silicon technology. Laboratory

Our world-leading testing laboratory provides high performance, high quality, fast and professional testing for global PV product testing

The lab has been recognized by CNAS China National Accreditation Laboratory for Conformity Assessment, Rhein-TMP Lab, TUV North Germany-CB Laboratory, UL Witness Laboratory and Intertek Satellite Lab.



Increase in net income comparing to 2017

# 14.0%

Gross margin for the full year 2018

# **Financial Highlights**



Increase in shipment comparing to 2017



Increase in operation income comparing to 2017



# **Green Business**

Our business itself is a big social responsibility. By the end of 2018, JinkoSolar had delivered more than 40 GW, to thousands of customers in more than 100 countries around the world. These products are having a profound impact on individuals and communities everywhere under the sun. Assuming an average annual solar irradiation of 1,600kWh/m<sup>2</sup>, all of the JinkoSolar panels in the world are capable of generating about 62.86million MWh of clean electricity each year.

In addition, climate change caused by greenhouse gas emissions presents an unprecedented challenge to life on earth. Our solar panels generate electricity without emissions, and are guaranteed to do so for 25 years. We expect the products will maintain strong power performance for even decades longer than that time span. Each year, the 62.86 million MWh of clean electricity generated by JinkoSolar panels can help our customers off set roughly 31.43 million tons of carbon dioxide, and avoid roughly 800 million pounds of sulfur dioxide emissions. This impact is similar to planting 3771 million trees or removing 12.57 million cars from the road.

The Asset Corporate Awards 2018-Gold Awards

2018Frost & Sullivan China New Economy Award for solar PV innovation

2017 B20 Berlin Energy, Climate, and Resource Efficiency Taskforce Co-Chair

Bloomberg New Energy Finance 2017 Most Bankable PV Modules

# **Awards**

# 2018

2018 Fortune China 500 - # 278

2018 World Brand Award

Best Companies to Work for in Asia 2018

2018 Globle challengers Awarded by The Boston Consulting Group





2017 Fortune China 500 - # 284

Fortune 100 Fastest Growing Companies - #16



# Stakeholder Engagement

JinkoSolar pursues sustainable operations and establishes multiple transparent and effective communication channels with stakeholders. These channels help Jinko Solar understand their needs and expectations, which serve as important references for our CSR policy and plans. In 2018, we plan to form a CSR committee which includes representatives from Customer Service, Human Resources, Investor Relations, Legal, Material and Supply Chain Management, Operations, Public Relations, Quality and Reliability, R&D, Corporate ESH. These representatives should participate in our CSR quarterly meeting and compile stakeholders' concerns through various channels, communicate with them, and ensure implementation of appropriate initiatives and programs responsive to those interests and concerns.

We identified that Jinko Solar's stakeholders include employees, customers, suppliers, shareholders and investors, non-profit and non-governmental organizations, communities, governments, external survey organizations, and media. We communicated with stakeholders through multiple channels to understand their expectation, listen to their recommendation and took effort to address to their economic, social and environmental concerns.

- · Environment, which will incorporate energy, greenhouse gas emissions, water, waste, and other emissions / effluents
- Chemicals and total product lifecycle stewardship that will include a plan for continuously minimizing impact of toxic substances with input from experts and stakeholders
- Supplier engagement, which will emphasize capacity building and transparency, utilizing best practices established in the industries
- Community engagement and employee volunteering programs

We believe that maintaining good communication with stakeholders can not only help us understand our economic, social and environmental challenges, obtain stakeholders' trust and respect, but also creates value for our company and society, and allows the company to continue sustainable growth.

JinkoSolar advocates and acts upon the principles of operational transparency and respect for shareholder rights. We believe that the basis for successful corporate governance is a sound and effective Board of Directors. JinkoSolar's Board delegates various responsibilities and authority to three Board Committees, Audit Committee, Compensation Committee, Corporate Governance and Nominating Committee

- JinkoSolar Corporate Governance at a Glance (as of December 31, 2018)
- Separate CEO and Chairman positions and independent lead-director position
- Four of our seven board members are independent directors
- Audit, Compensation, Corporate Governance and Nominating Committees are made up of at least one independent director
- Audit Committee is composed entirely of independent directors
- Corporate Governance Guidelines and committee charters are publicly disclosed
- Majority vote practices have been adopted voluntarily
- All directors attended 100% of the meetings of the Board and the committees on which they served in 2018
- Board self-assessment process and individual director annual performance reviews are in place
- Information on our director nomination process and approach to board diversity is publicly disclosed

# **Corporate Governance**





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# **Governance Structure**

Jinko Solar's governance structure is as follows:



# **Board of Directors**

# **Board Structure**

JinkoSolar's Board of Directors consists of seven distinguished members with a great breadth of experience as business experts or scholars. We rely on them for their diverse knowledge, personal perspectives, and solid business judgment. Four of the seven members are independent directors.

# **Board Responsibilities**

Under the leadership of Chairman Xiande Li, JinkoSolar' s Board of Directors takes a serious and forthright approach to its duties and is dedicated, competent, and independent. The Board meets at least once every quarter. In the spirit of Chairman' s approach to corporate governance, a board of directors' primary duty is to supervise. The Board should supervise the Company' s compliance with relevant laws and regulations; financial transparency; timely disclosure of material information, and maintaining of the highest integrity within the Company.

The second duty of the Board of Directors is to provide guidance to the management team of the Company. The management reviews the Company's business strategies with the Board, and updates Jinko Solar's Board on the progress of those strategies, obtaining Board guidance as appropriate.

The third duty of the Board of Directors is to evaluate the management' s performance. Jinko Solar' s management has maintained a healthy and functional communication with the Board of Directors, and is dedicated in running the business operations, all to achieve the best interests for its shareholders. The purpose of the Audit Committee is to oversee the accounting and financial reporting processes of the Company and the audits of the financial statements of the Company. The Committee' s oversight responsibilities relate to: the integrity of the Company' s financial statements and other financial information provided by the Company to its stockholders; the Company's compliance with legal and regulatory requirements; the related-party transactions and potential conflicts of interests involving executive officers, directors and/or controlling shareholders, the Company's retention of its independent auditor, including oversight of the terms of its engagement and its performance, qualifications and independence; the performance of the Company' s internal controls and disclosure controls. To the extent required by the SEC, the Committee shall prepare a report of the Committee to be included in the Company's annual report. In addition, the Committee provides an avenue for communication among the independent auditor. financial management and the Board.

**Audit Committee** 

# **Compensation Committee**

The Compensation Committee discharges the Board's responsibilities relationg to compensation of the Company's executives and directors. The Committee approves the design of, assesses the effectiveness of, and administers executive compensation programs in support of shareholder interests. The Committee shall ensure that the Company's compensation programs are designed to encourage high-performance, promote accountability and assure that employee interests are aligned with the interests of the Company's shareholders.



# Corporate Governance and Nominating Committees

The primary purposes of the Committee are to:

• Identify qualified candidates to become Board members;

· Select or recommend to the Board the

individuals to be nominated for election as directors at any meeting of shareholders called for such purpose and the persons to be elected by the Board to fill any vacancies on the Board;

- Oversee the evaluation of the Board;
- Make recommendations to the Board

regarding corporate governance matters and practices, including developing, periodically reviewing and recommending to the Board corporate governance guidelines for the Company to be adopted by the Board (the "Guidelines");

- · Review the orientation and training needs
- of directors and recommend action to the Board where appropriate.

# Directors and Committees Members' Attendance

Each director is expected to attend Board meeting and the committees meeting at least four times a year. In 2018, the average Board Meeting attendance rate was 100%.



the average Board Meeting attendance rate was 100%.

Code of Ethics and Business Conduct



# **Ethics Values**

Integrity, Fairness and Responsibility are important core values of Jinko Solar's culture. We are committed to acting ethically in all aspects of our business; constantly and vigilantly promoting integrity, honesty, fairness, responsibility, accuracy, and transparency in all that we say and do.

The foundation of our corporate governance is Jinko Solar's Code of Ethics and Business Conduct (the "Code") that applies to JinkoSolar and its subsidiaries, and this Code requires that each employee bears a heavy personal responsibility to preserve and to protect Jinko Solar's ethical values and reputation and to comply with various applicable laws and regulations. In so doing, each of us:

- must not advance our personal interests at the expense of, or in conflict with the Company;
- must refrain from corruption, unfair competition, fraud, waste and abuse; must not undertake any practices detrimental to the Company, the environment and to society;
- must procure all of our raw materials from socially responsible sources; must abide by both the spirit and letter of all applicable laws, rules and regulations;
- must avoid any efforts improperly to influence the decisions of anyone, including government officials, agencies, and courts, as well as our customers, suppliers, and vendors.

All employees, officers and Board members must wholeheartedly embrace and practice the Code. JinkoSolar' s management must set the best example of integrity and ethical conduct. Jinko Solar' s officers, especially our CEO, CFO, with oversight from our Board, are responsible for the full, fair, accurate, timely, and understandable financial accounting and financial disclosure in reports and documents filed by the Company with securities authorities and in all Jinko Solar public communications and disclosures.

# **Regulatory Compliance**

Jinko Solar marketing network covers more than 35 countries with local sales and technical support; in order to achieve compliance with governing legislation, applicable laws, regulations and regulatory expectations, we closely monitor domestic and foreign government policies and regulatory developments that could have a material impact on Jinko Solar's business and financial operations.

In addition to the Company's Code of Ethics and Business Conduct, we have also established policies, guidelines and procedures in other policy areas, including: Anti-bribery/corruption, Environment, Export Control, Financial Reporting/Internal Controls, Insider Trading, Intellectual Property, Privacy, Record Retention and Disposal, as well as procuring of raw materials from socially responsible sources and so forth.

JinkoSolar and our employees are expected to comply with all laws and regulations that govern our business. Training is a major component of our compliance program and is conducted throughout the year to refresh employees' commitment to ethical conduct. Some courses are mandatory to managers and certain employees depending on their role and the nature of the business activities they perform. Members of our legal team regularly attend outside training to receive legal updates and new developments in compliance and other areas.

Furthermore, we established a special Whistleblower Hotline for use by employees, business partners and any other third parties with respect to issues related to purchasing, accounting, internal controls, auditing matters, or any behaviors questioned to be not in compliance with our Code. The hotline protects anonymity; retribution against whistleblowers is strictly forbidden. The Whistleblower Hotline is administered by the Anti-Fraud and Whistleblower Committee under the company's Audit Committee.

In addition to training and incident report system, we think actively promoting the right behavior is another key focus.

Over the past year, as we expanded into new markets and businesses, and ramped new factories, we continued to focus on assessing risk and executing training and ethics programs for current and new employees. Our senior managers held in-depth conversations with their staff on the importance of role-modeling ethical behavior related to the ethics and compliance risks of their business units.

# **Risk Management and Business Continuity**

Management is responsible for identifying risk and risk controls related to significant business activities; mapping the risks to company strategy; the balance of potential risk to potential reward, and the appropriate manner in which to control risk. The Board implements its risk oversight responsibilities by having management provide periodic briefing and informational sessions on the significant voluntary and involuntary risks that the company faces and how the company is seeking to control risk if and when appropriate.

As a global corporation with locations and suppliers all over the world, Jinko Solar must be prepared to respond to a wide range of disasters and keep the business running. Our programs are designed to provide quick response and help ensure the safety of our personnel, safeguard our facilities, and begin the return to "normal operations." In the event of a business disruption, our plans are designed to enable us to continue critical business functions, such as handling customer orders, overseeing production and deliveries, and managing our supply chain.

The Company's key investment and mergers and acquisitions process incorporates a screen that assesses environmental, governance and other additional criteria into its due diligence process to identify potential environmental, governance, and social risks in new investments.





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# Jinko Solar has set many key milestones since its establishment in 2006, and we contribute to a better life for all of society in collaboration with our customers and vendors. We are able to reach these achievements because of our competitive advantages of technology leadership, manufacturing excellence, and customer trust, which spring from the Company's clear vision, strong core values, effective strategies and powerful execution. The lynchpin of our success is our ability to continuously attract and develop talent who recognize our vision and values, and work together for our sustainable growth. Jinko Solar truly believes that talent is our most important asset.

# **Our Philosophy and Management Practices**

We invest significant resources to develop the talent we need, including building a strong talent pool, recruiting top performers, and offering career development and work/life programs to make Jinko Solar an employer of choice.

Our core values are integrity, commitment, and our principles for human resources originate from these core values. For example:

• The first thing we consider when hiring is the candidate' s character and capabilities, because integrity is our fundamental belief.

• Jinko Solar believes that all employees should be treated with dignity and respect. Jinko Solar respects and is committed to upholding local labor regulations. In addition, we are also devoted to providing career opportunities that offer above-average compensation. At the same time, we hope our employees will commit themselves to the Company as well, and do their best to contribute to the Company.

Based on these principles, all our human resources policies and practices have only one goal: to enhance the Company's overall productivity and effectiveness. Therefore, our employees can not only excel at their jobs, but can also balance their work and life, enjoying a fulfilling lifestyle.

# The Right People with Shared Vision and Values

To attract, retain and develop the right people has always been the focus of our efforts in recruiting, staffing, compensation, performance management, and also our training and development. By the right people, we mean people who share the same vision and values with the Company.

"People with shared vision" means people aimed in the same direction as the Company, while "people with shared values" means people who do things based on the same principles. Our vision is to "Change the energy portfolio, take responsibility to of ensuring a sustainable future". Our value is "Integrity, Commitment, Equality and Justice". Through various human resources practices, our employees can bring all their potential into full play in the right position, which contributes to a win-win situation for both the Company and our employees.

# **Stable and Healthy Workforce**

At the end of 2018, Jinko Solar had about 12,000 employees. The vast majority of our employees, more than 90% are located in China. Females comprised nearly 40% of all employees. We extend special benefits to our female employees, offering up to four months of maternity leave. Around the world, we prohibit unlawful discrimination based on race, color, creed, gender, religion, marital status, age, national origin, or any other consideration made unlawful by local laws. We have never hired and will not hire employees under 16 years old. In terms of age, employees in JinkoSolar.



The solar PV industry is a knowledge-intensive industry, and our leading position comes from the innovation and contribution of our employees. Among these, about 100% of our managers and professionals hold bachelor degree and 24% hold masters' degrees or above.

Considering the vitality of the Company as well as the external economic environment, we believe a healthy turnover rate should be around 10% to 15% and our average annual turnover rates of the past five years are all within this range. In 2018, the turnover rate for all employees was 8.5%.

We recruit talent in a fair and open way, considering an applicant according to his or her qualifications for the position, rather than race, gender, age, religion, nationality, or political affiliation. Although we faced many challenges in 2018, JinkoSolar's continuous growth outperformed our counterparts and recruited employees to support our business for future, creating job opportunities for our society at the same time.

> employees More than 90% of employees are in China 24% have master's degree or above.

Compensation and Rewarding People for Long-term

Growth

JinkoSolar provides relatively competitive compensation packages to attract and retain the talent. The total compensation of our employees is better than the industry average. Our total compensation includes base salary, bonus, which is based on individual expertise, KPI performance, and the Company's operational achievement. As a global company, the Company provides employees of overseas subsidiaries with a competitive localized salary plan in accordance with local regulations, industry practices and labor market status.

In order to maintain the competitiveness of our total compensation, JinkoSolar appropriately adjusts employees' salaries annually, taking the economic indices into consideration.



Salary adjustment is connected to the Company's financial, operational performance and future growth. A cash bonus is distributed quarterly or yearly to encourage our employees' continuous contribution or yearly to encourage our employees' continuous contribution.

# The Engine of Employee Growth

Solar PV is in a competitive industry and environment, and our employees' capabilities and knowledge have to be continuously enhanced to respond to our business challenges. The Company combines performance management and employee development, providing diversified learning resources to enhance our employees' capability.

# Performance Management and Development

Through KPI-setting and execution by the organizations and the employee, as well as quarterly and year-end performance evaluations, we assess the status of goal achievement and set each employee' s development focus.

# Learning Resources

In 2018, we provided almost 322,000 training hours, employees attended 26 hours of training on average. We offer courses, covering Engineering and Technical courses, Functional and Professional courses, Management courses, EHS course, new employee orientation course and others. We encourage employees to attend external training programs as well.

# **Internal Instructor Program**

To facilitate knowledge sharing and leverage internal knowhow, JinkoSolar cultivates internal instructors through a well-established new employee orientation training system an on-going internal instructor development system. The Company has established an Instructor Award and a series of activities to show our appreciation for internal instructors and to enhance our learning culture.

# Encourage a Balanced Life

To ensure a balanced life for our employees, JinkoSolar provides a work environment with a variety of social and cultural activities as well as services and benefits, which promote employee productivity, morale, and healthy family life.



Following the goal of "maximum 50 working hours per week," the Company took actions in the systems, work processes and employees' cognition. Through aforementioned efforts, we simplified the work processes, enhancing the efficiency and effectiveness of our employees which enable them to spend more time with their family.

JinkoSolar encourages team work. Our employees obtain support from their work environment, which acts as a positive influence. The company has established an Employee Welfare Committee and provides a platform for employees who have similar interests to form or attend clubs or sports team, such as football, badminton, cycling, running, mountain climbing, dance, photography, and others. Through this channel, our employees can cultivate interests after work, and gain opportunities to develop relationships with one another.

# A Convenient and High-quality Work Environment

All of JinkoSolar's production plants have employee canteens which provide employees free lunch meals with a great diversity of nutritional-balanced dining options and comfortable environments. We also provide healthy vegetarian and non-vegetarian dishes for our employees to choose from. According to employee's cognition, we make timely enhancements on food quality and service based on the results of irregular satisfaction survey.

To save energy, reduce carbon emissions and provide better service, the Shangrao and Haining Sites offer employees free regular ground transportation, in the form of shuttle busses, throughout nearly the entire city.

Accommodation service and dormitories is provided for employees free of charge who live far from the Company.

# Safeguarding Employees' Rights

In addition to the statutory Labor Insurance and National Health Insurance, JinkoSolar provides comprehensive insurance plans to employees, including occupational accident insurance, hospital insurance, and business travel insurance. JinkoSolar' s employee pension plan is set according to the local Labor Standards Act and Labor Pension Act. JinkoSolar provides flexible leave programs in compliance with local labor laws. Our employees are eligible for annual leave after completing three months of service at the Company. Our employees can also apply for leaves of absence for reasons such as childcare, and medical treatment with approval by an authorized supervisor. Our Employee Welfare Committee also provides financial assistance to help employees who encounter difficult circumstances, gifts for birthdays and major festivals, travel subsidies, etc.

All insurance plans, leave programs and other welfare benefits for the employees of our overseas subsidiaries all comply with local regulations to ensure a secure life for our employees worldwide.

# Reinforcing Employees' Sense of Belonging

JinkoSolar holds various sports competitions, to raise employees' cohesion and reinforce the spirit of teamwork. We are dedicated to providing the most appropriate path of development for our employees. To cope with the different needs of our diverse employee groups, we offer customized caring programs that cater to their necessities. With more and more international talent joining JinkoSolar, we have rolled out a customized communication and care program that aims to reduce the stress of moving to a foreign country, as well as to shorten the time needed in adjusting to a new environment. In turn, these efforts encourage them to stay at JinkoSolar for a lengthy career.

The Company is committed to maintaining open and transparent

communication channels between transparent communication channels between the management level and their subordinates, as well as among peers, which in turn fosters harmonious labor relations, including:

• Regular communication meetings held for various levels of managers and employees.

• Various employee voice channels, periodic employee satisfaction surveys and follow-up actions base on survey findings.

• Labor Union is available in Haining and Shangrao fab.

•Website posts: corporate messages, Executive interviews, employee activities, etc. are posted on the Company's intranet for employees' timely reference.

• Town Hall Meeting and Webcast: Irregular town hall meeting to provide dialogue chance between senior management and employees, important talks from the Chairman are broadcasted via the Company's intranet.

• Internal publication is circulated in all fabs and subsidiaries worldwide, with its content ranging from work to fun updated on a quarterly basis

Our employees can honestly and promptly voice their opinions and suggestions via above-mentioned channels, and related owners are responsible to reply and take actions. The labor-management meetings are held every quarter to ensure that employee opinions and voices are heard, and their issues are addressed and solved.

## **Recognizing Employee Dedication**

JinkoSolar sponsors various award programs to recognize our employees' outstanding achievements, both as a team or on the individual level, aiming to encourage sustainable development of employees that in turn adds to the Company's competitive edge, includes:

• Outstanding Contribution Award of the Year, presented exclusively by the Chairman for those who contribute greatly to the Company's business performance.

• Outstanding Engineer Award for each Fab, and Total Quality Excellence Conference Award to recognize employee continuous efforts in creating value for the Company.

# **Employee Well-being**

JinkoSolar prioritizes safety and strives to provide employees with a safe place in which to work. We also work hard to protect employee health. Our goal is an injury-free workplace. Achieving this goal requires top management support, and employee involvement. Our Human Resources VP is responsible for ensuring worker safety and worker rights, as well as standardizing workplace ethics and practices across our organization.

We focus on occupational safety and health management, and emergency response which are issues that JinkoSolar has addressed for a long time.Detailed measures are as follows:

# Safety and Health Management











The cutting-edge reliability and efficiency of our products continue to set us apart as we continuously meet and exceed customer expectations, and help them meet their own sustainability targets. Since the very nature of our business is fundamentally linked to minimizing environmental impact, we are especially motivated by the fact that our solar systems deliver sustainability solutions and help shrink our customers' carbon footprint.

# Solar Products and Technology

Our solar cell technology starts with crystalline ingots. These ingots are sawed into wafers, which are processed into solar cells in our manufacturing facility in Shangrao, Haining and new fab in Malavsia. Finished solar cells are assembled into panels at our facilities located in Shangrao, Haining, USA, and Malaysia. Jinko Solar manufactures solar panels in 72-cell, 60-cell configurations.





# Solar for the Utility

**Global Renewable** 

JinkoSolar maintains a global solar plants operation center in its headquarter building in Shanghai, to support and deliver a comprehensive

staffed by trained technicians

and provides extensive

monitoring on a 24x7 basis.

**Operations** Centers

coverage of service operations. This facility is

> The JinkoSolar offers utilities flexible options to incorporate renewable energy into their existing portfolios. We work with customers to craft a program that considers design and impact, capacity valuation, energy valuation, grid integration value, transmission and distribution system cost avoidance, and asset ownership. We have worked with some leading utilities to help them meet their generation and compliance needs, and we apply that experience to deliver best practices for other customers. With our experience and flexibility, customers can be assured that we make integrating solar into their portfolio fast, cost-effective and environmental-friendly.

# Solar for the Home

JinkoSolar offers complete, dependable residential offerings designed to make it easy for homeowners to take a bold step toward energy independence. Each kit provides everything needed to get started, including high-efficiency modules, inverters, and racking. Our state-of-the-art solutions are installed by trained solar professionals, come with professional support services, such as online monitoring, and are backed by a full warranty. With flexible finance options, acquiring solar has never been easier. Now homeowners can enjoy the same reliable products and services our commercial and utility customers have been for years.



# Our Business



# Solar Asset Management

Successful management of a solar installation starts with a holistic, end-to-end view of local plants and utility networks, backed by in-depth analysis, expertise, and best practices. Providing much more than simply monitoring and support services, JinkoSolar assumes a proactive role as an asset manager. Our scope of responsibilities and coverage includes data acquisition, monitoring, alerts and response, field service, analysis, reporting, financial management, vendor management, and other processes affecting the operation and financial performance of the assets in our solar portfolio.

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At JinkoSolar, customers come first. JinkoSolar has a track record of advancing our technology and expanding our capacity in order to fulfill customers' needs. We strive to build deep and enduring relationships with our customers, who trust and rely on us to be part of their success over the long term. Our goal is to maintain its position as one of the most advanced and largest provider of photovoltaic products and solutions. We believe that achieving this goal will help retain existing customers, attract new customers, and further strengthen customer trust. "



# **Customer Service**

JinkoSolar has over 12,000 employees across its 6 productions facilities globally, 15 oversea subsidiaries, localized raw materials and spare parts, recruited local engineers and talents, in order to enhance supply chain agility and ensure prompt quality service to customers as well as reduce carbon generation and transportation cost. The unique ecosystem enhance R&D to Manufacturing capabilities, therefore reduce time-to-market and speed up R&D enablement for customers.

# **Customer Satisfaction**

JinkoSolar regularly conducts surveys and reviews to ensure that customers' needs and wants are adequately understood and addressed. Continual improvement plans supplemented by customer feedback are an integral part of our business processes. The findings and analysis of customers' feedback are presented to the Company's senior management and executive team. Appropriate details are shared with relevant teams in JinkoSolar. In addition, a management team is assigned to draw up corresponding improvement actions and policies, which are executed by all the related functional teams and monitored closely.

# Customer Serv

# **Customer Use**

End customers utilize our products for a variety of purposes. In some cases, our photovoltaic panels sit atop a residential home, providing power for the residents therein. In other cases, they are set up in arrays for businesses, utilities, or municipalities.

Across the board, we set aside approximately 1% of all module revenues to fund warranty claims on our products. We provide customers a 10 year product warranty and 25 year performance warranty. We carefully analyze warranty claims and if significant trends emerge, we research new strategies to improve product quality and reduce defects.

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Global companies are integrally linked with suppliers in execution and reputation alike. For Jinko Solar, this means a critical part of the social responsibility equation.

# Material inputs

Jinko Solar sources a number of materials for our silicon solar modules. Anytime we source chemicals we require suppliers to provide us with a Material Safety Data Sheet (MSDS) that outlines the chemical properties of the material at hand. We procure silicone, non-silicon materials, equipment, tools, can other key components from a variety of suppliers around the world, such as from Germany, China, Japan, and the United States. At the same time, many of our component suppliers are based in China, in the area surrounding Shangrao and Haining. This proximity to our pants facilitates flexibility and creates a scenario where we can order components on an as-needed basis. It also reduces the carbon intensity of the product lifecycle.

# Suppliers

Jinko Solar has a close relationship with suppliers—a global group of companies that has grown over time. With the rapid growth of the company, our supplier base has expanded to701in 2018, up from 302 in 2014. In 2018, we had 420 suppliers on our Approved Vendor List (AVL) for silicon materials (silicon, silicon carbide powder, crucible, graphite, argon gas, etc.) and non-silicon ones (EVA, aluminum, glass, Tinned copper strip, sealant, etc.)



# Supplier Code of Conduct

When we contract with suppliers, they become trusted partners in our business. Sustainability is always a factor in supplier selection. We have developed our own "Supplier Code of Conduct" that requires suppliers to implement environmental management systems, including ISO9000 and ISO14000 certifications, and to meet our expectations for ethical behavior. Administration of our supplier qualification program is managed by the Global Quality department. In the event that one of our suppliers violates EHS standards, we have a system in place to rectify the situation with sanctions, penalties and—in worst-case scenarios—relationship termination.

# Supplier Management

Jinko Solar has brought together department of procurement, quality, production, technical, R&D in an internal committee dedicated to managing our supply chain. This committee is focused on risk mitigation and enhancing supply chain agility.

# Supplier Management

Jinko Solar has brought together department of procurement, quality, production, technical, R&D in an internal committee dedicated to managing our supply chain. This committee is focused on risk mitigation and enhancing supply chain agility. The steering team directs annual goals and reviews progress each quarter. The committee's working team tracks the effectiveness of continuous improvement projects and assists suppliers to improve product quality, environmental protection, regulatory compliance, certification acquisition, and industrial safety assurance. At the same time, we monitor changes in demand and supply through regular communication with suppliers or public information, monitor supply chain inventory, and draft backup plans. The working team periodically holds meetings to monitor progress. Furthermore, we actively address supply chain issues and manage potential supply chain risks.

# **Quarterly Business Review and Audit**

Currently, our supply chain management department, which reports to our Chief Executive Officer, evaluates our suppliers quarterly and scores reviews in five main areas: cost, time and delivery, quality, technology, management system and sustainable performance. The review process includes a questionnaire-based investigation, a quality assessment, an on-site audit and a business-term negotiation. If any score is less than 50%, the suppliers are required to provide rectification plans in 48 hours, and immediately stop supplying it (If there is a quality problem, its supply will be immediately terminated.) or reduce its supply. If the improvement cannot meet the target within the required time, the supplier will be excluded from the list of qualified ones.

# Collaborates with Suppliers to Reduce Product Environmental Impact Footprints

Jinko Solar's products take both quality and environmental impact into account. We believe that green products need to consider the entire product life cycle, including raw material mining, transportation, product manufacturing, use, and waste disposal to thoroughly evaluate environmental impact.

The product carbon footprint, water footprint, or other environmental impact footprints are important indicators in the environmental performance of products. Therefore, we require good hazardous substance management, pollution prevention, energy saving, waste reduction and other clean production measures in our own factories. We also require and assist suppliers to do so in order to establish a green supply chain.

# Supplier Event

Jinko Solar holds its "Supplier Day" event every two years, and the theme of the event is "Win Together". To show appreciation for the support and contributions of its suppliers during the past year, Jinko Solar recognized and awarded several outstanding silicon and non-silicon materials





suppliers. Over 500 suppliers around the world in the fields of equipment, materials, packaging, testing, facilities, IT systems and services, export/import services, and environmental and waste management services participated in the event.

Jinko Solar's mission is change the energy portfolio, and our supplier partners play a key role in helping us fulfill this mission. We believe that by joining with our supplier partners to find sustainable new modes of collaboration, we will reap even greater rewards together as we continue to drive grid parity.

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"Jinko Solar is proud of its ability to rapidly ramp capacity in response to customer demand, and this year's drive to provide higher efficiency, better reliability, and lower cost process is an excellent example of our commitment to customers," said Kangping Chen, Jinko Solar's CEO. "We are deeply grateful to the supplier partners that made this achievement possible, and we look forward to even greater success together in the future".

# **Product Lifecycle** Management

We also are committed to managing our product lifecycle responsibly, and minimizing the environmental impact of our silicon solar modules at every step of the production process, from design to fabrication to disposal and, eventually, recycling.

Since the lifespan of a typical solar module is 25 to 40 or more years, we haven' t yet had to deal with end-of-life products in a substantial way. In anticipation of when our products do begin to reach their end-of-life, we have crafted policies to help customers safely and responsibly dispose of their modules. We want to ensure our products are returned to Jinko Solar for proper handling, reuse and recycling.

JInko Solar has joined the European PV CYCLE association, which is engaged in establishing a voluntary take-back and recycling program for end-of-life solar modules. None of our products are close to end-of-life, but involvement in this organization has helped Jinko Solar EHS leaders sharpen our own policy for the years ahead; currently we offer a 25-year product warranty and bear the liability to take back the products in line with warranty claims. As we expand internationally, we will develop additional systems to help and incentivize our customers to dispose of end-of-life products responsibly.

# **Environmental Protection**

Together, we are working to ensure that today's solar solutions to climate change don't create a waste management problem tomorrow.

Our products themselves speak to environmental responsibility. We produce solar modules to drive a global transition towards a cleaner and more sustainable way of energy generation. At the same time, we continuously improve energy efficiency, reduce emissions, and conserve resources throughout our operations. JinkoSolar's strategies to achieve our environmental goals are to comply with regulations, strengthen recycling and pollution prevention, manage environmental risks, instill an environmental culture, build a green supply chain, and fulfill our corporate social responsibilities. We also focus on improving the energy-efficient performance of our products, and collaborate with others to develop innovative ways that technology can address long-term sustainability challenges.

Being vertically integrated through the silicon solar products and solar energy manufacturing supply chains, Jinko Solar is able to carefully examine every stage of the PV product life cycle, from ingot casting, wafer slicing, cell facilityrication, and even module assembly, system installation, product utilization, and finally end-of-life treatment in the future. And identify areas in which we can make improvements, and continue improving our productive efficiency to reduce energy and resource consumption as well as our environmental impact.

# Highlights of 2018 achievements

- The CO2 emission per MW module production in 2018 reduced by 60.19% compared with that in 2014.
- The electricity consumption per MW module production in 2018was declined by 27.82% compared with that of 2014.
- The water consumption per MW module in 2018 was decreased by 15.51% compared to that in 2014.
- The wastewater discharge per MW module in 2018 was decreased by 21.21% compared to that in 2014.

# Management Approach

We integrate environmental considerations into our entire business, including our governance and compensation practices, facilities design and manufacturing processes, and product design and development. As a result, we place a strong emphasis on driving environmental sustainability within our global manufacturing operations



## R&D

During research and development process, we take the environment into account, mini mize negative impact from the modules and production.

## Supply Chain

We set environmental expectations and goals to our suppliers, and help them in environmental performance with us.

## Manufacturing and facilities

Our environmental footprint mainly comes from manufacturing. We continue to our environmental practice, such as large-scale process improvement, tec improvement, equipment update, install renewable energy and energy saving eq and invest high-efficiency recycle equipment.

## Operation

Since solar energy itself is an alternative to traditional fossil fuel energy, gree gas emission has been significantly reduced. We focus on producing higher ef more reliable, more durable and more cost-effective solar products, encouraging indi commercial and government to implement solar energy and reduce carbon emis

## Product recycle

We have participated in PV Cycle, monitoring the recycling of panels at the end of its life cycle.

## **Environment Policy**

Our commitment to environmental sustainability is embodied in the Jinko Solar's Code of Conduct and EHS Policy. We also establish clear environmental expectations for our suppliers and have initiated a number of sustainable purchasing actions.



# **Climate Change Policy**

| ınt, mini                                     | Direct emissions reductions<br>Reduce industry emissions generated from direct production.   |
|---|--|
| mprove  | <b>Solar panel installations</b><br>All of our facilities are or will be installed with solar pv arrays<br>and increase usage rate of green power. |
| improve<br>hnology<br>quipment                | <b>Energy efficiency improvements</b><br>Continue to Invest in projects aimed at improving the energy<br>efficiency of our production facilities.  |
|   | Continue to promote company-wide greenhouse gas inventor and reduction.  |
| enhouse<br>fficiency,<br>lividuals,<br>ssion. |  |

# **EHS Policy**

- We will comply with all applicable regulatory and the Corporate's Environmental Health & Safety (EHS) requirements wherever we operate.
- We are committed to provide a safe, injury-free workplace by integrating safety into our daily business decisions and processes.
- We strive to conserve natural resources through innovative processes and continuous improvement methodologies with the goal of reducing, reusing, recycling, and identifying safer material substitutes or alternatives for our operations and reducing waste generation. We will continue to invest in energy conservation, we will work to reduce our emissions over time.
- We are committed to designing and manufacturing products that are safe, energy efficient and minimize impact to the environment.
- We will be a responsible member of the communities in which we live and work.

# Water Policy

- Safety. Commit to preserve the quality of water resources we utilize in the communities where we operate.
- Sufficiency. Strive to operate in a manner that minimizes impact from our operations on the availability of community water resources.
- Accessibility. Work to ensure that our operations do not adversely impact physical accessibility of community members to water resources.
- **Responsibility.** Consider the impact on water throughout all stages in our operations, including: reviewing access to sustainable water sources as a criterion when selecting a site for a new Intel facility, incorporating water conservation elements into the design of our facilities, and establishing specific water goals for new process technology changes in an effort to support a safe, consistent, adequate and affordable water supply in line with local practices.

# **Environment Management System and Certifications**

All Jinko Solar facilitys adopted the ISO 14001 Environmental Management System and OHSAS 18001 Occupational Health and Safety Management Systems in early stages of their operation. We implement a P-D-C-A (Plan, Do, Check, Action) model together with annual audits to promote continuous improvement for environmental protection.

# Description of facility types

As a global leading solar PV company, Jinko Solar currently has 6 manufacturing facilities across the world with annual capacity of 8000MW. Without question, our largest presence are in Shangrao and Haining, in China, and about 85% of our photovoltaic wafer, cell and module production occurs in these two plants. In addition to these sites, we operate one module facility in USA; one combined cell and module facility in Malaysia.

# EHS Management Structure and Priorities

At Jinko Solar, EHS management system can be divided into two levels: headquarters and the factories. Historically, the EHS function was managed as part of the manufacturing operation. Since 2012, we formed a corporate EHS committee which is directly overseen by CEO. All of our EHS operations have fallen under the purview of this headquarter EHS committee. Committee members came from various business units, including Manufacturing, Purchasing, Finance, HR, Site Design and Construction, R&D, Product Management, Supply Chain Management, Administration, etc. They will be responsible for developing environmental safety strategies, assessment protocols, compliance processes, and reporting.





## The function of on-site EHS is to keep below priorities under control:

- Air and water pollution prevention and control
- Waste reduction and recycling
- Greenhouse gas reduction (energy efficiency and CO2 emission reduction)
- Resource conservation (water savings and chemical substance use reduction)
- Energy-saving products and restriction of hazardous Substances

On-site EHS directly report to Vice President, to make sure factories are doing their part. Each key department has an on-site EHS coordinator; all coordinators report directly to the department leader. Founding constituents are asked to determine management issues by studying local laws and regulations, interviewing stakeholders, and benchmarking international practices and standards.

Across the globe, Jinko Solar's global sites have been certified with OHSAS18001, ISO14001 and ISO9001 . or are in the process of pursuing certification.

# **Reducing Greenhouse Gas Emissions and Energy Conservation**

Jinko Solar believes reducing GHG emissions is a key method for mitigating global warming and climate change, and conducting an inventory provides supporting data for reduction. An accurate inventory allows us to set priorities and reduction goals, raise the efficiency of the reduction process, and confirm reduction results. In 2018, JinkoSolar's total GHG emissions is 84 MT/MW, a 60.19% reduction comparing to 211 MT/MW in 2014.

- Improve energy efficiency of the facility and process tools in existing facilitys, we adopt the best-known energy-conserving designs for new facility construction. At the same time, we purchase energy-efficient equipment by adjusting procurement specifications.
- Optimized manufacturing process to increase unit productivity per machine and per hour to reduce energy consumption relatively.
- Shifted from manual soldering to fully automatic to avoid fugitive emissions from soldering tools.

- Switch to diamond wire slicing machine, as a result to reduce consumption of slurry and increase wafer vields.
- Less electricity is consumer per MW thanks to optimizing lamination time.
- Installed process cooling water (PCW) Free Cooling system, utilizing pumps, heat exchangers and cooling towers to cool PCW during cooler months, reducing annual energy consumption. Retrofitted chilling pumps' flow control to be frequency adjustable from original constant and full flow design.
- Installed inverters to optimize cooling tower fan speed for weather conditions.
- Installed cooling tower ventilation trunks to reduce spatter loss.
- Makeup Air Units' air washing pumps changed to control-by-air-quality mode.
- Shut down or minimized the utility requirements of standby local scrubbers.
- An adjustment on the ratio between fresh-air and returned-air supply for the HVAC (HVAC: Heat, Ventilation and Air Condition) system.
- · Replaced low-efficiency water pumps with high efficiency pumps.
- Replaced LC filter with filter compensation device of monocrystalline silicon furnace power supply to reduce energy consumption.

| Emissions                         | 2014 | 2015 | 2016 | 2017 | 2018 |     |
|-----------------------------------|------|------|------|------|------|-----|
| Metric tons CO2                   |      |      |      |      |      | 200 |
| emissions per MW<br>(metric tons) | 211  | 123  | 102  | 90   | 84   | 100 |

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- The variable frequency drives were added into electric air blowing dryer, centrifugal pump, air compressor for power conservation by managing flow rate or delivery pressure.
- Three vacuum pump with one controller to reduce electricity use.
- Applied inner wall and the insulation material to monocrystaline and polycrystalline furnace.
- Optimized the thermal conductivity in graphite to increase its efficiency.
- Replacedsilicone controlled rectifier to DC heating power supply for monocrystalline furnace to reduce power loss.
- Installed 8.7MW solar rooftop arrays at our Shangrao sites which generate about 7.5 million kWh in 2018; while 4.5 MW solar arrays at Haining sites which produced over 3.7 million kWh in 2018, reducing approximately 8548 tons of CO<sub>2</sub> emission.
- Factory fluorescent and LED lighting renovation, reduce lighting power consumption.

Overall, we reduced energy consumption for cell production by 27.82% to 122MWh/MW in 2018 down from 169MWh/MW in 2014.

| Year   | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|------|------|------|------|------|
| Electricity consumption per MW<br>module production (MWh/MW) | 169  | 110  | 151  | 138  | 122  |





↓27.82%

We also work to reduce our carbon footprint in aspects of indirect generation of GHS, including our portfolio of employee-driven carbon reduction projects across all of our manufacturing sites. For example, we provide shuttle bus, replace truck-only transportation with partially or mostly rail or water transportation, adopt remote IT communication system, promote webcast or web-based meeting to reduce business trip, smart commuting initiatives in Shangrao and Haining, and localize supply to cut product and raw material transportation.

In an effort to more systematically manage GHG emissions, we've created a series of protocols which we soon will implement to measure byproducts and identify opportunities to reduce GHG emissions. In 2014, we obtained the Product Carbon Footprint Assessment from TÜV Rheinland, a highly respected worldwide provider of technical services in the solar industry. TÜV Rheinland's assessment was conducted in accordance with the international carbon footprint standard PAS 2050:2011, a publicly available and universally applied specification that provides a method for assessing the lifecycle greenhouse gas emissions of various goods and services.

# Water Conservation

Considering the shortage of fresh water around the globe, the water footprint of solar production, and China's impending water scarcity, Jinko Solar is sensitive to the issues surrounding water use. These developments have highlighted the importance of water resource management, water saving and water shortage emergency response programs. JInko Solar proactively collects water inventory data in our manufacturing plants to establish a water footprint, and to provide a specific water saving and water resource management plan.



According to the result of water footprint data collection, we found that there are two of our processes represent the majority of our water use: our air-conditioning systems, and our cell manufacturing process. Therefore, our water resource management policy is to promote water savings to reduce water usage per unit of production. Our daily water management is first to save water in the production process, followed by water reclamation and recycling measure, reduce water usage and treat and reuse wastewater whenever possible.

## Our major water saving measures are as follows:

Water Use Reduction

1.Our manufacturing process uses a lot of ultrapure water in the WCM workshop. About 30% of tap water is rejected by the Reverse Osmosis membrane, called ROR water in ultrapure water producing process. Facility team setup a water reused project to collect ROR water from ultrapure water plant and use ROR water for cleaning and cooling purpose for the processes such as grinding, wafer slicing etc in the wafer workshop.

2. Rain water retention ponds for environmental protection and water recycling.

3. Recycle Makeup Air Units' air washing water through a circulation-and-treatment system.

4. Optimization of water usage for process tools, air pollution control wet scrubbers, and cooling towers.

5. Change dosing chemical system for cooling towers, which greatly improves water quality and lowers water makeup frequency to reduce the quantity of makeup water.

6. Select low water consumption process tools, implement process water drainage segregation, set up process water reclamation systems in new factory construction, and continue promoting water-saving measures after mass production.

7. Use of water-saving faucets for employee hand-washing.

8. 100% use of recycled water for toilet flushing.

9. Control water use for external wall cleaning, landscaping and irrigation to avoid unnecessary consumption.

10. Via remote control and smart monitoring system of solar plant, our O&M team can clean the module in case of necessity, as a result, it reduces the water usage significantly.

# Water Recycling

1. Recycle rinse water for secondary water use.

2. Reclaim industry wastewater through an immersion ultra filter system, a chemical-free process to recycle and reuse treated effluent water.

3. Installation of organic/acid water recycling systems, separated collection according to water quality, recycling water to ultrapure water systems or secondary uses such as cooling towers.

4. Recycling of air conditioning condensation for cooling tower use.

5. Add more reclaiming bath besides the rinsing and cleaning pool

6. Establishment of rainwater storage system on roofs to supply plant irrigation systems, toilets, and wet scrubber water use.

These initiatives have helped us reduce water consumption considerably. We reduced water use for cell production by 15.51% to 1559 ton/MW in 2018 down from 1845 ton/MW in 2014. We reduced waste water generation by 21.21% to 741ton/MW in 2018 down from 941 ton/MW in 2014.



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## Chemicals

Because our production process uses certain chemicals, we create products with chemical byproducts. Most of the chemicals we use are in the cell production processes. Internally, we optimize our process recipe for chemical usage, which can not only reduce production cost but also reduce the generation of pollutants and wastes. For example, due to high level of automation, we have shifted manual soldering process to automatic lines, therefore significantly reduced the number of employees who engage in soldering. Jinko Solar has eliminated the use of hazardous chemicals still used by many other companies in the photovaltaic industry. We also reduced the chemical inputs and byproducts associated wafer cleaning and solar cell texturing process, such as hydrochloric acid, Nitric acid, mixed acid, and even we gradually replace mixed acid with Sodium Hydroxide via process optimization.

Regarding to the treatment of chemical waste, Jinko Solar's EHS department developed a strategy that involves gualified third parties to conduct professional chemical capture and recycling. Before the materials are transferred, they are to be handled only by staff members who have been trained. So far, the company recorded zero work-time injuries related to chemical processing.

## Waste: Reduce, Reuse, Recycle

Our waste management practices, including release, collection, storage, transportation, disposal, and recycling are performed at all our manufacturing facilities in compliance with legal requirements and also our «Waste Management Guidelines» (JKS-WI-EH-003).

At Jinko Solar, we prioritize managing waste in an ethical and environmentally responsible fashion. Waste comes from four main streams: wafering, cell and module production, and is divided into three categories: recyclable (including packaging, which will be recycled by suppliers), unrecyclable (mainly "home scrap," which will be handled by local treatment factories), and hazardous waste (which is transferred by a qualified third party to the department designated by the local municipal environmental department). All aspects of hazardous waste transportation are closely regulated and observed by state and local regulations. Since foundation of the company, there's zero healthy and safety incident case at all sites associated to waste transportation.

Overall, our facilities produce three main kinds of waste: acidic waste water and air generated from silicone rinse process; waste water from ingot cutting and slicing process, effluent and residue in the form of sludge from wastewater processing. Regarding to supplier management, JinkoSolar had re-qualified existing outsource suppliers of treatment of solid waste and strengthened specialized audit to evaluate their treatment capability, encourage them to be transparent and disclose their environmental performance, make routine and thorough inspection of the water treatment facility and wastewater discharge method, and reviewed all available wastewater and solid monitoring records against the applicable national or local standards.

## **Treatment of Waste Gas**

To treat acid and base exhaust, organic compounds, Jinko Solar has installed local scrubbers behind process tools, for example we invest 5 million RMB to install oxide tower after cell printing steps, in order to treat toxic, flammable and PFC gases. First, high temperatures or other physical and chemical measures are used to significantly reduce the concentration of pollutants in tool exhaust. The gas is then inducted to central waste gas treatment equipment for example acid fog purification tower, organic tower, silane combustion tower for endpoint treatment. Endpoint treatment includes zeolite-rotary-wheel absorbing equipment for volatile organic compounds (VOC) treatment and wet scrubber equipment for acid or base gases. Air pollutant concentrations in our exhaust must be below the standards required by state and local Environment Protection Bureau.

- Nitrogen Oxides < 50mg24mg/m3</li>
- Chloride < 8.0mg/m3
- Ammonia < 14kg/h
- Toluene < 40mg/m3
- Fluoride < 8.0mg/m3
- Chlorine < 5.0mg/m3
- Benzene < 12mg/m3

The performance of all Jinko Solar facilities is fully compliant or exceeds the air pollutant emissions standards in the areas where they operate. We have deployed high performance air pollution online control system to continue waste gas control 24 hours a day, 365 days a year. Operational status of all of air pollution control systems is monitored 24 hours a day by shift personnel. Data collected by system efficiency monitoring have been classified as an important tracking item in order to ensure air exhaust quality. We also receive irregular inspection of air pollutant concentrations by local Environment Protection Bureau.

# Solid Waste

Manage solid waste associated with onsite production activities, in complying with applicable state and local laws, regulations, standards and requirements. Site EHS team is responsible for the overall implementation of management involved in the generation, transportation, handling, storage, disposal of solid waste material on the facility sites. EHS department should also oversee these activities that are actually performed by the third party suppliers/contractors.

We strive to recycle as much solid waste as possible. Whether it's through sending scrap pieces of components such as EVA and chemical containers back, packaging materials to their original manufacturers for recycling, we are fully focused on maximizing use of material inputs. We've taken steps to optimize cell processing and printing in ways that both improve cell efficiency and reduce the amounts of precious metals (silver and aluminum) required.

Additionally, all hazardous materials are securely stored, for example we invested and built a slurry storage warehouse with capacity of 600 tons and comply local environmental protection requirements and standards to manage the warehouse. We committed the third party contractors designated by I local municipal government to transport, reuse, recycle, and dispose of slurrv



# Waste Water Treatment

1. JinkoSolar's major water-using process is an ultra-pure water system which turns raw water into ultra-pure water, mainly used in process tools for cleaning chemical residue on wafer surfaces. To reduce total water usage, the effluent water from ultrapure water systems and process tools are graded by purity. The cleanest is reused in the manufacturing process; the second grade taken from the recycling treatment is employed in secondary uses such as cooling-tower water. Wastewater that cannot be recycled is discharged to treatment facilities for final wastewater treatment.

2. JinkoSolar adopts a strict front-end wastewater categorization strategy to improve treatment efficiency. Wafer facilities' wastewater can be divided into fluoride, NH3-N, general acid, and various polishing wastewaters. All types of wastewater are strictly categorized at process tools, and collected to wastewater treatment facilities through separated drainage piping which are carefully operated and maintained by professional teams to comply with local law and regulation standards. The water is then discharged to the assigned wastewater treatment plant for further treatment. The treated wastewater is discharged to rivers from the government assigned wastewater treatment plants in compliance with river discharge standards.

3. All Jinko Solar facilities are equipped with continuous monitoring equipment to monitor and record changes in water quantity and quality, such as acidity, COD, and fluoride ion concentration, in order to take appropriate responses when abnormal situations occur. We also conduct offsite sampling and analyze wastewater effluent quality at least four times a year, which provides a calibration reference for online analyzers, ensuring that the Company complies with water quality standards. In 2018, the discharge water quality of each manufacturing plant implements the indirect standard of solar cells in Table 2 of the Battery Industry Pollutant Emission Standard (GB30484-2013), fluoride ion concentration <8mg/L, chemical oxygen demand <150mg/L, ammonia nitrogen concentration <30 mg/L. The annual discharge is up to standard.

4. Since 2012, each facility is equipped with effective wastewater treatment systems, including complete backup systems such as emergency power supplies, to reduce the likelihood of abnormal discharge. Operating status of all of Jinko Solar's wastewater treatment systems are online monitored 24 hours a day by shift personnel. If operating conditions diverge from the preset limits, a warning signal is sent and wastewater discharge is halted. Data gathered for monitoring system effectiveness have been designated an important tracking item to ensure effluent quality.

JinkoSolar has established requirements and instructions to manager the generation, collection, dispose,

discharge or transportation of wastewater and storm water in compliance with state, and local laws, regulations, standards. We obtain required permission or country-specific equivalent plan must be in place prior to the start of production.

- · Upgrade the wastewater and storm water drainage systems to ensure complete separation of these systems in order to completely eliminate the mix wastewater with stormwater.
- Combine existing storm water discharge outlets into one single outlet.
- Install a collection to account for both the first 30-minute rainwater and the emergency accident wastewater
- · Install an emergency wastewater retention tank

Both Shangrao and Haining facilities are equipped with continuous monitoring equipment to monitor and record changes in water quantity and quality, such as further confirmation: PH and chemical oxygen demand, in order to take appropriate responses when abnormal situations occur. We also conduct offsite sampling and analyze wastewater effluent quality at least four times a year, which provides a calibration reference for online analyzers, ensuring that Jinko Solar complies with water quality standards. In 2014, Jinko Solar wastewater effluent quality indicates good stability in all facilities.

| Crystalline Silicon |       |      |        |  |  |  |
|---------------------|-------|------|--------|--|--|--|
| Polysilicon         | wafer | cell | module |  |  |  |
| 0                   | 0     | 0    | 0      | Greenhouse gases/C02e                              |  |  |
| 0                   | 0     | 0    | 0      | Perfluorocarbons, SF6/NF3, CHF3, CF4, C2F6         |  |  |
| 0                   | 0     | 0    | 0      | Air emissions: SOx, NOx, VOCs, PM10                |  |  |
| 0                   | 0     | 0    | 0      | Hazardous landfill disposal by weight              |  |  |
| 0                   | 0     | 0    | 0      | Weight of hazardous waste released and transferred |  |  |
| 0                   | 0     | 0    | 0      | Total heavy metal emissions                        |  |  |
| 0                   | 0     | 0    | 0      | Other chemical waste (HCI, HF, Cl2)                |  |  |

# Safety and Health

Since 2012, Jinko Solar's CEO Mr. Kangping Chen has set zero accidents as a new safety and health goal. To meet this goal, the Company practices strict safety and health management procedures, maintains stringent standards for facility and hardware operations, and promotes continuous improvement programs. We believe that good safety and health management is an important part of the company's commitment to take care of employees and their families, and a way of giving back to society and the community. Both Shangrao and Haining facilities passed OHSAS 18001 certification.

The Company's current safety and health management operations can be divided into several dimensions as below:

# Hardware Safety and Health Management

1. The effectiveness of a facility's hardware safety and health performance is largely determined in the design phase. Jinko Solar follows local regulations, international codes, and internal standards when planning, designing, and building new facilities or rebuilding existing facilities for production, IT, general services, or other purposes.

2. All new tools and chemicals meet international codes as well as local regulations. In order to reduce risks before operation, the designed committee not only reviews tool safety, but also evaluates the related safety issues of location, accessory equipment, safety interlock, and facility system connections.

3. All production-related tools and new facility systems must follow a three-phase safety sign-off procedure before operation. Phase 1: The tool sponsor must confirm interfaces between facility systems and the new tool are under safe conditions before turning on. Phase 2: The tool sponsor must verify hazardous gases and chemical supply systems, fire protection, toxic gas monitoring, tool safety interlocks, the tool's local gas or chemical delivery system, and exhaust abatement before turning on the tool. Phase 3: The tool sponsor must remedy any shortcomings found in phase 1 and phase 2, execute IR scans for electrical utilities, and put all safety requirements into the new tool's regular maintenance procedures.



# **Operation Safety and Health Control**

In Jinko Solar's daily operations, we not only prevent accidents through strict controls on chemical safety controls, and routine audits, but also maintain emergency response plans and hold regular drills to minimize the impact of potential accidents on the environment, society, employees and property.

- . We define work as level-1 high-risk operations and assign such work for priority management.
- · We define fab high-risk areas and developed related management procedures to prevent accidents.

# **Production Environment Safety and Health**

Dust and noise are major occupational health risks at Jinko Solar, we promote health and safety in a number of ways, including:

- Utilizing isolated operation and automatic controls to limit workers' exposure to hazardous materials.
- Employing both wet and closed suction operations to reduce the amount of dust in the air.
- · Continuously monitoring noise levels to ensure that workers are not exposed to high decibel levels for unsafe amounts of time, and by installing noise-absorbing materials wherever possible. We conduct occupational health examinations every year to monitor our employee's health condition.

# Emergency Response – Reduce the Impact of Accidents

The first priority of Jinko Solar's disaster response policy is to ensure the safety of personnel and neighboring residents, followed by avoiding pollution of the environment, and finally to reduce property losses and maintain normal production. We believe that when natural disasters or accidents occur, proper treatment in the incipient stage of the event not only minimizes the probability of personnel injury and environmental pollution, but also significantly reduces losses and lowers the difficulty of resuming production. Jinko Solar therefore pays considerable attention to emergency response. From emergency equipment setup, creation of emergency procedures, training, drills, and other preparations, the Company follows the process of "planning, implementation, evaluation and improvement" .

In 2018, to ensure the quality of annual emergency response drills, the Company drew on past experience to compile a standard exercise to serve as a reference for units with different equipment and facilities to hold drills for earthquakes, fires, gas leaks, chemical spills, power dips, and other accidents. These standard exercises help each facility put key response procedures in place.







All Jinko Solar facilities maintain an emergency response center. If any accident or abnormal event occurs. ERC staff on duty will be informed immediately through monitoring systems. An emergency response team will be promptly and effectively assembled by staff on duty to handle the event.

Jinko Solar has detailed emergency response organizations, handling procedures, and business continuity plans for a variety of unexpected situations such as earthquakes, fires, chemical spills, gas leaks, natural disasters and sudden interruption of utilities. Each fab also designates emergency response commanders and team duty officers each day to respond with unexpected situations at any time. Emergency response team members are trained in communications, disaster relief operation, factory systems, on-site control, rescue, and logistic support. Types of training include the following:

- ERT training: includes basic and advanced ERT (Emergency Response Training) training, and incident commander training;
- · Fire-fighting training: Professional fire fighting skill training;
- · Annual full evacuation drill: Chiefly focused on responding to an earthquake;

· Quarterly ERT drill: A quarterly drill is requested for each production-related department to build familiarity with emergency response skills, equipment and factory surroundings.

# **Environmental Compliance Record**

JinkoSolar had no significant chemical leaks, environmental penalties, or fines in 2018.

# Green Promotion and Ecological Preservation

environmental ideas that are reflected in our employees' actions, and lead many departments to seek opportunities to actions, and lead many departments to seek opportunities to conserve energy, save water, and reduce waste. External promotion activities not only include green supply chain

# Social Participation



Solar

A PROUD PARTNER OF

Caring for the earth and future generations is an important and undisputable part of Jinko Solar's corporate social responsibility. In 2017, in addition to continuing its existing plans and projects, Jinko Solar has combined the company's resources with its employees' love and wisdom to work together, show compassion, bring warmth and care.

Funding for our social impact activities is aligned with our strategic focus areas of education and supporting local community needs. Strategic giving includes charitable giving (cash and in-kind ) as well as other investments, such as programs that empower employee giving and service, and adoption of solar energy to create positive impact. We also collaborate with other organizations, leveraging additional giving and resources to further scale our initiatives.

GRID

- Recently, cooperating with Schneider, JinkoSolar donated a 55kW off-grid solar project in Abu the power load demand.
- 5,000 individuals.
- living in their darkest hour.
- ▶ Jinko Solar donates 500 solar chargers to Puerto Rico. Puerto Rico was devastated by hurricane in 85 years, and after two months still leaves much of the country without power.
- JinkoSolar donates 19.5 kW to the headquarter of committee on the shelterless, providing clean energy to homeless adults and families.
- JinkoSolar, collaborated with Casa Hogar Corazon Valiente, an organization aiming to promote care for abandoned children, donated solar systems to a community at San Miguel de Allende in Mexico.
- > JinkoSolar donated 30 kW PV modules to Complexe de Sante Hosanna in Kollo, a clinic in Niger, Africa.
- different kinds of endangered.
- Jinko donated \$1500 to support children of low-income families purchase school supplies.
- ▶ JinkoSolar' s CEO Chen Kangping donated 245,815 RMB to build Xingyuan school library in Shangrao Economic Development Zone.
- ▶ JinkoSolar donated 225,000 RMB to Shaoyang Secondary School to set up 'JinkoSolar Pearl Class' .
- ▶ JinkoSolar Donated 100,000 RMB to earthquake effected area in Ludian, Yunnan Province. The amount was used to fix the Qingjiaoyuan Elementary School in Ludian.

# **Donation and Charity**

Redis, South Sinai, Egypt. The completed off-grid solar power system covers power load for the village which comprises 35 families, Mosque, a school, a small medical center and three farms for 20 hours per day, significantly improving the life quality of the residents of the village. Prior to completion of the project, the only electricity source of the village has been three 30 kW diesel generators feeding the village for merely 8 hours per day, which could have not sufficiently met

JinkoSolar donated over 620 kW of high-efficiency solar modules to support GRID Alternatives' work bringing solar power and job training to low-income communities across the country. JinkoSolar's has helped GRID Alternatives meet its goal of providing solar to an estimated 1,600 families and multifamily affordable housing providers in 2017, saving them millions of dollars in energy costs over the system lifetimes while giving hands-on installation training to

▶ The United Nations refugee agency recently constructed a solar farm at the Azrag refugee camp in Jordan with JinkoSolar's high efficiency modules, lighting up the lives of refugees currently

maria, a powerful category 4 storm. This was the strongest storm to make landfall on the country

► JinkoSolar donated its high efficient solar modules to Frankfurt Zoological Society' s office building located in Ruaha National Park, the second biggest park in Tanzania, where lives



# Eco

# The Summary of JKS CSR 2018 Achievements

| Key Performance | e Index  | 2016  | 2017  | 2018  |
|-----------------|--|-------|-------|-------|
| Economy         | Number of Plants   | 6     | 8     | 6     |
|                 | Shipments ( MW )   | 6656  | 9807  | 11400 |
|                 | Sales Revenues<br>(CNY 1,000,000)  | 21400 | 26470 | 25040 |
|                 | Gross Profit (%)   | 18.1% | 11.3% | 14%   |
|                 | Net Income (loss) ( CNY 1,000,000 )  | 182.7 | 141.7 | 406.5 |
| Environment     | Carbon Emission per unit Production (MT/MW)                                    | 102   | 90    | 84    |
|                 | Electricity Consumption per unit Production (MWH/MW)                           | 151   | 138   | 122   |
|                 | Water Consumption per unit Production(T/MW)                                    | 1658  | 1527  | 1559  |
|                 | Wastewater discharge per unit Production ( T/MW )                              | 846   | 760   | 741   |
| Employee        | Number of Employees  | 15000 | 12000 | 12000 |
|                 | Proportion of female employee (%)  | 43%   | 40%   | 41%   |
|                 | Turnover Rate  | 6.5%  | 8.2%  | 8.5%  |
|                 | Total Recordable Rate (TRR)  | 0.21% | 0.22% | 0.04% |
|                 | Percentage of employees whose salary is higher than the stipulated minimum (%) | 100%  | 100%  | 100%  |
|                 | Averange Training hours per person   | 23    | 20    | 26    |
| Supplier Chain  | Number   | 205   | 518   | 701   |

| Indicator<br>Number      | Description  | Status | Report Section(s)   | Page           | Explanatory<br>Notes |  |  |
|--------------------------|--|--------|---|----------------|----------------------|--|--|
| 1. Strategy and Analysis |  |        |   |                |                      |  |  |
| 1.1-1.2                  | Statement from the most senior decision maker; Description of Key impacts, risks, and opportunities.   | ٠      | Letter from the<br>Chairman<br>and CEO  | 08             |                      |  |  |
| 2. Orgar                 | nization Profie  |        |   |                |                      |  |  |
| 2.1-2.9                  | Name of the organization; Primary brands, products, and/or services; Operational structure of the organization; Location of headquarters; Nature of ownership; Markets served; Scale of reporting organization; Significant changes during the reporting period.   | ٠      | Company Profile   | 10             |                      |  |  |
| 2.10                     | Awards received in the reporting period  | ٠      | Awards  | 18             |                      |  |  |
| 3. Repo                  | rt Parameters  |        |   |                |                      |  |  |
| 3.1-3.4                  | Reporting period; Date of most previous report; Reporting cycle;<br>Contact point for questions regarding the report or its contents   | •      | Overview  | 06             |                      |  |  |
| 3.5                      | Process for defining report content  | ٠      | Overview  | 06             |                      |  |  |
| 3.6-3.8                  | Boundary of the report<br>Limitations on scope and/or report boundary<br>Basis for reporting on joint ventures, subsidiaries, etc.   | •      | Overview  | 06             |                      |  |  |
| 3.9                      | Data measurement techniques and the bases of calculations  | ٠      | Overview  | 06             |                      |  |  |
| 3.10 -<br>3.11           | Explanation of the effect of any restatements of information provided in earlier reports;<br>Significant changes from previous reporting periods   | •      | Overview  | 06             |                      |  |  |
| 3.12                     | Table identifying the location of standard disclosures in the report   | ٠      | GRI Index   | 62             |                      |  |  |
| 3.13                     | Policy and current practice with regard to seeking external assurance for the report   | 0      |   |                |                      |  |  |
| 4. Gove                  | rnance, Commitments, and Engagement  |        |   |                |                      |  |  |
| 4.1-4.4                  | Governance structure of the organization, including committees under the highest<br>governance body;<br>Indication of whether the chair of the highest governance body is also an executive<br>officer;<br>Number of members of the highest governance body that are independent and/or<br>non-executive members | ٠      | Corporate<br>Governance   | 20             |                      |  |  |
| 4.5                      | Linkage between compensation for members of the highest governance body, senior managers, and executives, and the organization's performance   | 0      |   |                |                      |  |  |
| 4.6                      | Processes in place for the highest governance body to ensure that conflicts of interests are avoided   | •      | Corporate<br>Governance   | 22             |                      |  |  |
| 4.7                      | Process for determining the qualifications and expertise of the members of the highest governance body on economic, environmental, and social (EE&S) topics  | ٠      | Corporate<br>Governance   | 22             |                      |  |  |
| 4.8                      | Internally developed statements of mission or values, codes of conduct, and principles.  | •      | Letter from the<br>Chairman<br>and CEO<br>Overview<br>Corporate<br>Governance | 08<br>06<br>20 |                      |  |  |

4. Governance, Commitments, and Engagement Procedures of the highest governance body for overseeing the 4.9 identification and management of EE&S performance Processes for evaluating the highest governance body's own pe 4.10 with respect to EE&S performance. Explanation of whether and how the precautionary approach or 4.11 by the organization 4.12 Externally developed EE&S charters, principles subscribed to 4.13 Memberships in associations and/or advocacy organizations List of stakeholder groups engaged by the organization; Basis for and selection of stakeholders; Approaches to stakeholder engage 4.14 and concerns that have been raised through stakeholder engage 4.17 organization has responded to those key topics and concerns, i reporting 5. Economic Performance Indicators EC1 Direct economic value generated and distributed. (Core) Financial implications and other risks and opportunities for the o EC2 due to climate change.(Core) EC3 Coverage of the organization's defined benefit plan obligations. EC4 Significant financial assistance received from government. (Core Range of ratios of standard entry level wage compared to local EC5 significant locations of operations. (Additional) Policy, practices, and proportion of spending on locally based su EC6 locations of operations. (core) Procedures for local hiring and proportion of senior management EC7 local community at significant locations of operation. (Core) Development and impact of infrastructure investments and servi EC8 for public benefit through commercial, in-kind, or pro bono engage Understanding and describing significant indirect economic impa EC9 of impacts. (Additional) 6. Environmental Performance Indicators EN1 Materials used by weight or volumn. (Core) EN2 Percentage of materials used that are recycled input materials. EN3 Direct energy consumption by primary energy source. (Core)

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|  | Status | Report Section(s)  | Page           | Explanatory<br>Notes |
|--|--------|--|----------------|----------------------|
|  |        |  |                |                      |
| organization's   | •      | Gorporate<br>Governance<br>Risk Management   | 20<br>26       |                      |
| erformance, particularly   | •      | Corporate<br>Governance  | 20             |                      |
| principle is addressed   | •      | Corporate<br>Governance  | 20             |                      |
|  | •      | Environmental<br>Protection<br>Environment<br>Management<br>System and<br>Certifications | 42<br>22<br>42 |                      |
|  | 0      |  |                |                      |
| or identification<br>gement; Key topics<br>ement and how the<br>ncluding through its | ٠      | Stakeholder<br>Engagement  | 20             |                      |
|  |        |  |                |                      |
|  | ٠      | Invester<br>Engagement<br>Social<br>Participation  | 19<br>56       |                      |
| organization's activities  | 0      |  |                |                      |
| (Core)   | 0      |  |                |                      |
| e)   | 0      |  |                |                      |
| minimum wage at  | •      | Right People with<br>Shared Vision<br>and Values   | 26             |                      |
| uppliers at significant  | •      | Supplier Chain<br>Management   | 38             |                      |
| nt hired from the  | •      | Safeguarding<br>Employees' Rights<br>Recognizing<br>Employees' Dedication                | 28             |                      |
| ices provided promarily<br>gement. (Core)  | ٠      | Social Participation   | 56             |                      |
| acts, including the extent   | ٠      | Letter from the<br>Chairman and CEO  | 08             |                      |
|  |        |  |                |                      |
|  | 0      |  |                |                      |
| (Core)   | •      | Environmental<br>Protection  | 42             |                      |
|  | •      | Key Performance  | 62             |                      |

| Indicator<br>Number                     | Description  | Status | Report Section(s)   | Page     | Explanatory<br>Notes           |  |  |  |
|---|--|--------|---|----------|--------------------------------|--|--|--|
| 6. Environmental Performance Indicators |  |        |   |          |                                |  |  |  |
| EN4                                     | Indirect energy consumption by primary source. (Core)  | •      | Key Performance<br>Index                                    | 62       |                                |  |  |  |
| EN5 -<br>EN7                            | Energy saved due to consrervation and efficiency improvements. (Additional)<br>Initiatives to provide energy-efficient or renewalbe energy-based products and services. (Additional)<br>Initiatives to reduce indirect energy consumption and reductions achieved. (Additional)                    | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN8 -<br>EN10                           | Total water withdrawal by source. (Core)<br>Water sources significantly affected by withdrawal of water. (Additional)<br>Percentage and total volumn of water recycled and reused. (Additional)  | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN11 -<br>EN12                          | Location and size of land owned, leased, managed in, or adjacent to protected areas<br>and areas of high biodiversity value. (Core)<br>Description of significant impacts on activities, products, and services on biodiversity in<br>protected areas and areas of high biodiversity value. (Core) | 0      |   |          |                                |  |  |  |
| EN13                                    | Habitats protected or restored. (Additional)   | 0      |   |          |                                |  |  |  |
| EN14                                    | Strategies, current actions, and future plans for managing impacts on biodiversity. (Additional)   | 0      |   |          |                                |  |  |  |
| EN15                                    | Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk. (Additional)  | 0      |   |          |                                |  |  |  |
| EN16 -<br>EN18                          | Total direct and indirect greenhouse gas emissions by weight. (Core)<br>Other relevant indirect greenhouse gas emissions by weight. (Core)<br>Initiatives to reduce greenhouse gas emissions, and reductions achieved. (Additional)  | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN19                                    | Emissions of ozone-depleting substances by weight. (Core)  | ٠      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN20                                    | NOx, SOx, and other significant air emissions by type and weight. (Core)   | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN21                                    | Total water discharge by quality and destination. (Core)   | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN22                                    | Taotal weight of waste by type and disposal method. (Core)   | •      | Environmental<br>Protection                                 | 42       |                                |  |  |  |
| EN23                                    | Total number and volumn of significant spills. (Core)  | 0      |   |          | No such<br>incedent in<br>2018 |  |  |  |
| EN24                                    | Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I,II,III, and VIII, and percentage of transported waste shipped internationally. (Additional)   | 0      |   |          |                                |  |  |  |
| EN25                                    | Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organization's discharges of water and runoff. (Additional)  | 0      |   |          |                                |  |  |  |
| EN26                                    | Initaitives to mitigate environmental impacts of products and services, and extent of impact mitigation. (Core)  | ٠      | Supplier Chain<br>Management<br>Environmental<br>Protection | 38<br>42 |                                |  |  |  |
| EN27                                    | Percentage of products sold and their packaging materials that are reclaimed by category. (Core)   | 0      |   |          | No such<br>fine in<br>2018     |  |  |  |
| EN28                                    | Monetary value of significant fines and total number of nonmonetary sanctions for non-conpliance with environmental laws and regulations. (Core)   | 0      |   |          |                                |  |  |  |

| Indicator<br>Number  | Description  | Status | Report Section(s)  | Page     | Explanatory<br>Notes |  |
|--|--|--------|--|----------|----------------------|--|
| 6. Envir   | ronmental Performance Indicators   |        |  |          |                      |  |
| EN29   | Significant environmental impacts of transporting products and other goods and materials used for the organization's operations, and transporting members of the workforce. (Additional)             | 0      |  |          |                      |  |
| EN30   | Total environmental protection expenditures and investments by type. (Additional)  | 0      |  |          |                      |  |
| 7. Socia   | al Performance Indicators: Labor Practices   |        |  |          |                      |  |
| LA1 -<br>LA2   | Total workforce by employment type, employment contract, ad region. (Core)<br>Total number and rate of employee turnover. (Core)   | ٠      | Right People with<br>Shared Vision and<br>values<br>Key Performance<br>Index | 26<br>62 |                      |  |
| LA3  | Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major perations. (Additional)   | 0      |  | 28       |                      |  |
| LA4  | Percentage of employees covered by collective bargaining agreements. (Core)  | 0      |  |          |                      |  |
| LA5  | Minimum notice period(s) regarding significant operational changes, including whether it is specified in collevtive agreements. (Core)   | 0      |  |          |                      |  |
| LA6  | Percentage of total workforce represented in formal joint management worker health<br>and safety committees that help monitor and advise on occupational health and safety<br>programs. (Additional) | •      | A Great Place<br>to Work   | 26       |                      |  |
| LA7  | Rates of indury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region. (Core)  | •      | A Great Place<br>to Work<br>Key Performance<br>Index                         | 26<br>62 |                      |  |
| LA8  | Education, training, counseling, prevention, and risk control programs in place to assist workforce members, their families, or community members regarding serious diseases. (Core)                 | •      | Employees'<br>Well-being   | 28       |                      |  |
| LA9  | Health and safety topics covered in formal agreements with trade unions. (Additional)  | ٠      | Employees'<br>Well-being   | 28       |                      |  |
| LA10 -<br>LA11   | Average hours of training per year per employee, by employee category. (Core)<br>Programs for skills management and lifelong learning that support continued<br>employability. (Additional)          | •      | Employees'<br>Well-being<br>A Great Place<br>to Work                         | 28<br>62 |                      |  |
| LA12   | Percentage of employees receiving regular performance and career development reviews. (Additional)   | ٠      | A Great Place<br>to Work   | 26       |                      |  |
| LA13   | Composition of governance bodies and breakdown of employees by category according to gender, age group, minority group membership, and other indicators of diversity. (Core)                         | 0      |  |          |                      |  |
| LA14   | Ratio of basic salary of men to women by employee category. (Core)   | ٠      | A Great Place<br>to Work   | 26       |                      |  |
| LA15   | Return to work and retention rates after parental leave. (Core)  | 0      |  |          |                      |  |
| 8. Social Performance Indicators: Human Rights   |  |        |  |          |                      |  |
| HR1  | Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening. (Core)   | 0      |  |          |                      |  |
| HR2  | Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken. (Core)  | ٠      | Supplier Chain<br>Management   | 38       |                      |  |
| HR3  | Total hours of employee training on policies and procedures concerning aspects of<br>human rights that are relevant to operations, including the percentage of employees<br>trained. (Additional)    | ٠      | A Great Place<br>to Work   | 26       |                      |  |
| HR4  | Total number of incidents of discrimination and actions taken. (Core)  | •      | A Great Place<br>to Work   | 26       |                      |  |
| HR5  | Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights.(Core);                  | •      | Supplier Chain<br>Management   | 38       |                      |  |
| <ul> <li>included in the report</li> <li>partially included in the report</li> <li>o not included in the report</li> </ul> |  |        |  |          |                      |  |

| nents that include human<br>J. (Core)                | 0 |                              |    |  |
|--|---|------------------------------|----|--|
| undergone screening on                               | • | Supplier Chain<br>Management | 38 |  |
| oncerning aspects of<br>centage of employees         | • | A Great Place<br>to Work     | 26 |  |
| (Core)   | ٠ | A Great Place<br>to Work     | 26 |  |
| association and collective port these rights.(Core); | ٠ | Supplier Chain<br>Management | 38 |  |

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| 8. Social Performance Indicators: Human Rights            |  |        |                                 |      |                                |  |
| HR6 -<br>HR7  | Operations identified in which the right to exercise freedom of association and collective bargaining may be at significant risk, and actions taken to support these rights.(Core); Operations identified as having significant risk for incidents of child labor, or forced or compulsory labor, and measures taken to contribute to the elimination of child labor. (Core) | ٠      | Supplier Chain<br>Management    | 38   |                                |  |
| HR8   | Percentage of security personnel trained in the organization's policies or procedures concerning aspects of human rights that are relevant to operations. (Additional)   | 0      |                                 |      |                                |  |
| HR9   | Total number of incidents of violations involving rights of indigenous people and actions taken. (Additional)  | 0      |                                 |      |                                |  |
| HR10 -<br>HR11  | Percentage and total number of operations that have been subject to human rights assessments and number of grievances resolved.(Core)  | 0      |                                 |      |                                |  |
| 9. Socia  | al Performance Indicators: Society   |        |                                 |      |                                |  |
| S01   | Nature, scope, and effectiveness of any programs and practices that assess and manage the impacts of operations on communities, including entering, operating, and exiting.(Core)  | •      | Social<br>Participation         | 56   |                                |  |
| S02 -S03  | Percentage and total number of business units analyzed for risks related to corruption. (Core);<br>Percentage of employees trained in organization's anti-corruption policies and procedures. (Core)   | ٠      | Corporate<br>Governance         | 22   |                                |  |
| S04   | Actions taken in response to incidents of corruption. (Core)   | ٠      | Corporate<br>Governance         | 22   |                                |  |
| S05-S06   | Public policy positions and participation in public policy development and lobbying. (Core);<br>Total value of financial and in-kind contributions to political parties, politicians, and<br>related institutions by country. (Additional)   | ٠      | Social<br>Participation         | 56   |                                |  |
| S07-S08   | Total number of legal actions for anti-competitive behavior, antitrust, and monopoly practices<br>and their outcomes.<br>(Additional); Monetary value of significant fines and total number of non-monetary<br>sanctions. (Core)   |        |                                 |      |                                |  |
| S09-S10   | Operations with significant potential or actual impact on local communities and prevention/mitigation activities. (Core)   | •      | Social<br>Participation         | 56   |                                |  |
| 10. Social performance Indicators: Product Responsibility |  |        |                                 |      |                                |  |
| PR1   | Life-cycle stages in which health and safety impacts of products and services are assessed for improvement. (Core)   | ٠      | Product Lifecycle<br>Management | 40   |                                |  |
| PR2   | Total number of incidents of non-compliance with regulations and voluntary codes concerning health and safety impacts of products and services during their life cycle, by type of outcomes. (Additional)  | 0      |                                 |      | No such<br>incedent in<br>2018 |  |
| PR3   | Type of product and service information required by procedures, and percentage of significant products and services subject to such information requirements. (Core)   | 0      |                                 |      |                                |  |
| PR4   | Total number of incidents of non-compliance with regulations and voluntary codes concerning product and service information and labeling, by type of outcomes. (Additional)  | 0      |                                 |      | No such<br>incedent in<br>2018 |  |
| PR5   | Practices related to customer satisfaction, including results of surveys measuring customer satisfaction. (Additional)   | ٠      | Customer Service                | 34   |                                |  |
| PR6   | Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. (Core)  | 0      |                                 |      |                                |  |

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| 10. Social performance Indicators: Product Responsibility  |   |        |                   |      |                                |
| PR7  | Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes. (Additional) | 0      |                   |      | No such<br>incedent in<br>2018 |
| PR8  | Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. (Additional)   | 0      |                   |      |                                |
| PR9  | Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services.(Core).  | 0      |                   |      | no such<br>fine in<br>2018     |
| <ul> <li>included in the report</li> <li>partially included in the report</li> <li>O not included in the report</li> </ul> |   |        |                   |      |                                |