

2018

Corporate Social Responsibility Report

CSG Lights up Every Household in Southern China



Message from the Chairman

The year 2018 marked the start to implement the guiding principles of the 19th CPC National Congress, the 40th anniversary of China's reform and opening-up, and a crucial year for building a moderately prosperous society in all respects and for the implementation of the 13th Five-Year Plan. Following the Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we fully implemented the major decisions and policies of the CPC Central Committee, actively fulfilled our political, economic and social responsibilities as a central SOE, and sped up to build a world-class enterprise with global competitiveness to provide strong electricity support for the sustainable and healthy social and economic development of the five provinces in southern China as well as Hong Kong and Macao. Keeping in mind President Xi's words that **"only wealth with a caring heart is meaningful, and only enterprises that are active in assuming social responsibilities are truly competitive and full of vigor"**, we spared no effort to create comprehensive optimal value in all respects for stakeholders. In 2018, we sold 970.3 TWh of electricity, representing a year-on-year increase of 9%, our revenue reached RMB 537.3 billion, up by 9.2% year on year, and the total assets at the end of the period reached RMB 816.7 billion, ranking 110th among the Fortune Global 500 companies.

We continued to strengthen Party leadership and building. We continued following Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era to guide our practice and improve our work. We kept firmly in mind the need to maintain political integrity, think in big-picture terms, follow the leadership core, and keep in alignment. We strengthened our confidence in the path, theory, system, and culture of socialism with Chinese characteristics. We resolutely upheld General Secretary Xi Jinping's core position on the CPC Central Committee and in the Party as a whole, and the CPC Central Committee's authority and its centralized, unified leadership. We formulated and carried out the *Implementing Measures on the Party Building Responsibility System* to advance and integrate Party building and core business at the same time. We also established a "double A" responsibility assessment system, under which performance can be evaluated as excellent only when the employee is rated A in both Party building performance and business performance. Adopting right approaches in selecting and appointing officials, we encouraged officials to take responsibility and make contributions, and increased the efforts in training and screening young officials. We devoted great efforts to building a clean Party and fighting corruption, and coordinated the rectification of problems found in internal and external auditing as well as inspection patrols over the years, thus fostering a healthy, honest and clean political climate.

Resolutely implementing the major decisions and policies of the CPC Central Committee, we served the overall vision of the Party and the government as a responsible central SOE. To help win the three tough battles of preventing financial risks, reducing poverty and tackling pollution, we maintained a good asset-liability ratio of 60.4% and provided direct help for 240 impoverished areas and 81,000 people getting out of poverty, thus being rated among the top performers in the targeted poverty alleviation evaluation of central SOEs. To promote green development, we transmitted 217.5 TWh power from the west to the east throughout the year, up by 7.2% and reaching a record high. We also formulated a special plan for clean energy utilization and non-fossil energy accounted for 51.5% of our total power generation. To serve the strategy of regional coordinated development, we made two versions of "26 measures" respectively for the Guangdong-Hong Kong-Macao Greater Bay Area and for Hainan, and met the latest rural grid transformation goals in Guangdong two years ahead of schedule. To carry out the innovation-driven development strategy, we started to build the Kunbei-Liubei-Longmen UHVDC transmission project, the world's first multi-terminal hybrid UHVDC project. Our "±800 kV UHVDC Demonstration Project (Yunnan-Guangdong)" won the China Grand Awards for Industry and we have totally obtained 17,300 valid patents. In active response to the Belt and Road Initiative, we promoted the grid connectivity with Hong Kong and Macao as well as neighboring countries. Our power transaction with Myanmar, Vietnam and Laos reached 3.405 TWh in 2018.

With the goals in mind, we accomplished all the tasks of the year. We effectively responded to challenges such as frequent natural disasters and profit decline caused by lower price, and accomplished all the goals of business performance evaluation. Earnestly carrying out President Xi's instructions on work safety, we always ensured the safe and stable operation of complex and large power grids. We improved the emergency response mechanism of "disaster prevention, mitigation, and relief" and effectively responded to natural disasters such as super typhoons. We sped up the progress of major projects, and put the Yunnan-Guangdong UHVDC transmission demonstration project, Shenzhen Pumped Storage Power Station and Qiongzong Pumped Storage Power Station into production. As a trailblazer, we made new progress in deepening reform and the power spot market in southern China (Start from Guangdong) was the first of its kind put into trial operation. We completed the assessment targets for separating water/power/air supply and property management functions and taking over power supply facilities. As one of the first pilot companies for the mixed-ownership reform and reform of incremental distribution network, Qianhai & Shekou Power Supply Co., Ltd. has basically achieved all the reform targets and gradually released its vitality.

We optimized the electricity-related business environment to serve the development of real economy. We lowered the electricity price for general industrial and commercial businesses by 10% as the government required, thus reducing the power costs of the manufacturing industry to benefit every business entity and user, saving RMB 22.3 billion of electricity expenses for customers throughout the year. We also vigorously promoted market-oriented power transactions, reducing customers' power costs by RMB 28.5 billion. We continued to extend the investment interface of power expansion projects to "customer red line" (the boundary of the land property where customers live or operate), saving customers RMB 23.5 billion of investment. To improve the quality and efficiency of our services, we promoted "Internet + power services". There were over 30 million registered users on our unified online service platform and online services accounted for 70% of the total. The average interruption duration in the core districts of Guangzhou, Shenzhen and six cities in the Pearl River Delta was less than one hour, reaching the world-class standards. And we came out top in local public service evaluation in the five provinces in southern China.

We insist on planning for long term development to explore a strategic path towards building a world-class company. With a highly responsible attitude towards the Party, the country, the Company and the employees, we further considered how to adapt to economic and social development and the development pattern of the industry in this new stage. We further planned the long-term development direction of the Company, and identified the major contradictions and their principal aspects. We clarified new ideas for development based on the reality of the new era, formulating and implementing a series of documents including the guidelines for continuously improving Party building quality and integrating Party building with reform, development, production and operation, CSG's overall development strategy outline, measures for promoting high-quality development and accelerating to build a world-class enterprise with global competitiveness, and the overall plan for deepening SOE reform. We sped up the transformation to a smart grid operator, a value chain coordinator in the energy sector, and an energy ecosystem service provider, and strive to pursue innovative, coordinated, green, opening and shared development, serve national strategies, promote the energy revolution, develop the power market and be a pioneer the SOE reform.

Committed to giving back to the society, we are active in fulfilling our social responsibilities by participating in donations, relief efforts and voluntary activities in addition to ensuring power supply and delivering customer services, thus lighting up and warming people in the five provinces of southern China with our concrete actions.

The year 2019 marks the 70th founding anniversary of the People's Republic of China and a crucial year for building a moderately prosperous society in all respects. Following the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, we will firmly grasp the strategic opportunity for development, and continue to seek progress while ensuring stability, pursue innovative, coordinated, green, opening and shared development and advance high quality development. We will focus on the supply-side structural reform to meet the requirements of "consolidating the existing results, strengthening the momentum of development, improving the level of the industrial chain and smoothing the cycle of the national economy", and promote the market-based reform and high-level opening up. We will resolutely implement the major decisions and policies of the CPC Central Committee, and coordinate the tasks of ensuring security, stabilizing growth, advancing reform, adjusting structure, promoting transformation, increasing vitality, and strengthening Party building. We will stride towards becoming a world-class enterprise with global competitiveness and make new contributions to the sustainable and healthy development of China's economy and society.

This CSR report reveals CSG's philosophy, practice and achievements in fulfilling its social responsibility in the past year. We hope it will solicit more understanding and support for our reform and development. We are looking forward to working with you to achieve win-win goals in the new journey of the new era, make new contributions to achieving the Two Centenary Goals and the Chinese dream of national rejuvenation, and add more glories to the 70th founding anniversary of the P.R.C.!

Board Chairman, Party Secretary



Leadership



Meng Zhenping
Board Chairman, Party Secretary



Cao Zhi'an
Board Director, General Manager, Deputy Party Secretary



Shi Zhengjiang
Board Director,
Deputy Party Secretary



Bi Yaxiong
Member of the Party Group,
Deputy General Manager



Wen Limin
Member of the Party Group,
Chief Accountant



He Xiqiang
Member of the Party Group,
Deputy General Manager



Yang Zhihong
Member of the Party Group,
Head of the Discipline
Inspection Group of the Party
Group



Chen Yunpeng
Member of the Party Group,
Deputy General Manager



Liu Qihong
Member of the Party Group,
Deputy General Manager

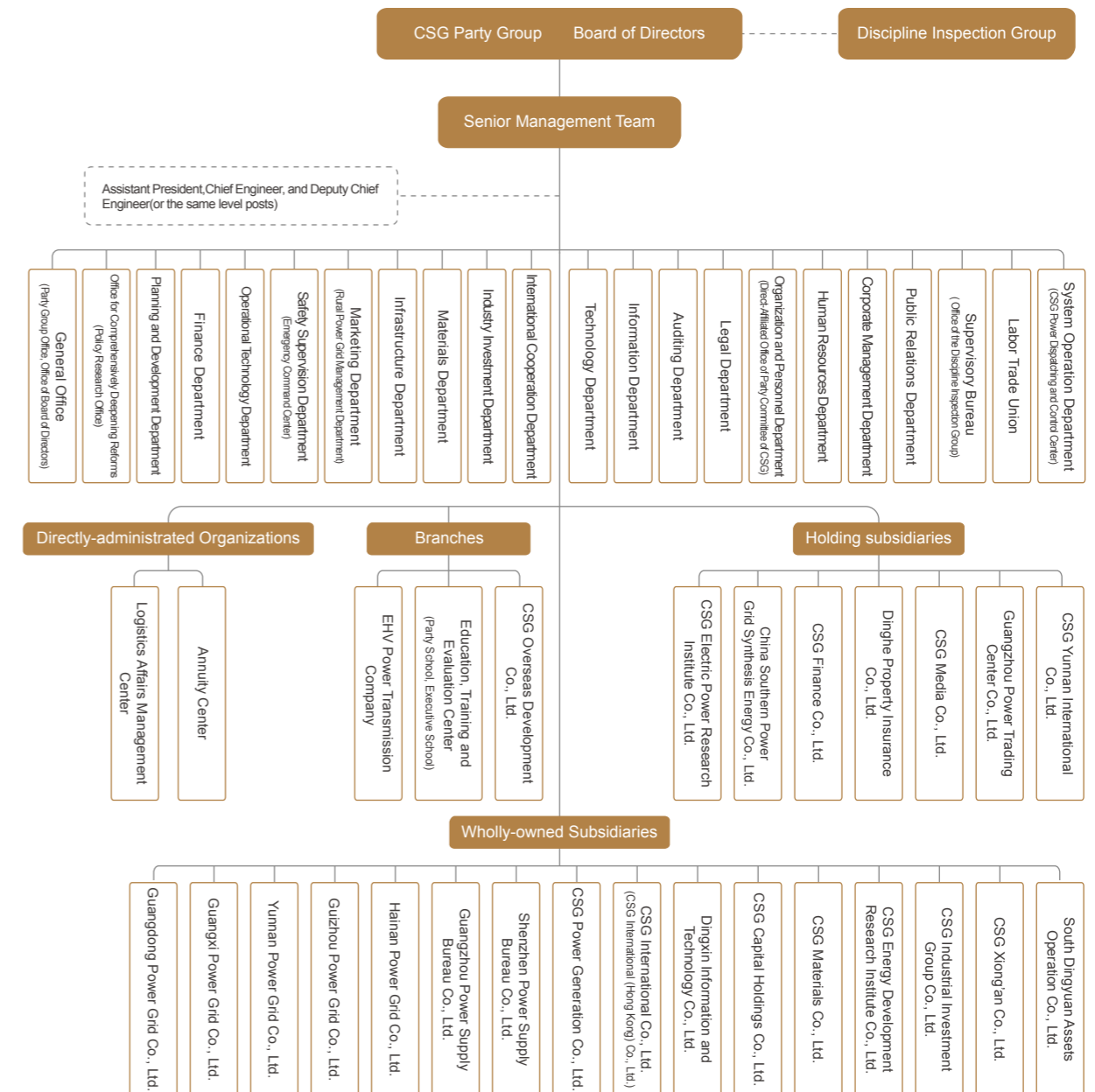
Corporate Governance

China Southern Power Grid is a state-owned "backbone" enterprise and in accordance with enterprise law and the requirements of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC), CSG has established a modern corporate governance structure consisting of a board of directors, Board of Supervisors and operational senior management team.

CSG strives to build a safe, reliable, green and efficient smart grid, commits to building a world-class enterprise with global competitiveness, and to be a smart grid operator, an energy industry value chain coordinator, and an energy ecosystem service provider with excellent performance and wide respect. The senior management team at CSG has defined its rights, responsibilities and decision-making procedures at all levels and departments in order to ensure that laws, regulations and efficient operations are implemented and realize the maintenance and substantial appreciation of state-owned assets. These and other actions work in tandem to create and improve the Company's corporate governance structure and with an established board of directors and board of supervisors in Guangdong, Guangxi, Yunnan, Guizhou and Hainan Power Grid Co., Ltd., and Guangzhou, Shenzhen Power Supply Bureau Co., Ltd., all work together to improve the Company-wide decision-making processes.

Organization Chart

Based in Guangzhou, CSG Headquarters has 22 functional departments and controls 2 directly-administrated organizations, 3 branches, 16 wholly-owned subsidiaries and 7 holding subsidiaries.



Introduction

This Corporate Social Responsibility Report 2018 focuses on the CSR concepts, initiatives, practices and performances of China Southern Power Grid Co., Ltd. in 2018. It is hoped that you will appreciate our sincerity and, as always, understand and support the Company's ongoing reform and development activities.

Listening

CSG actively listens to the voice of stakeholders through the service hotlines, questionnaires, expert discussions, exchange visits and other ways and channels, and timely understands the real expectations and demands of stakeholders.

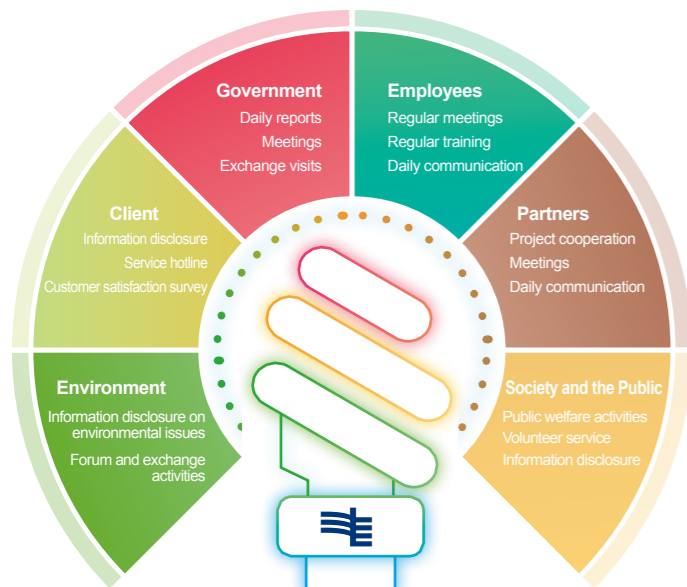
Evaluation

CSG comprehensively considers the new requirements for enterprise development in the new era, the new situation of the Company's reform and development, the new expectations of stakeholders and other factors, screens and evaluates the CSR topics, and identifies 12 material topics most concerned by stakeholders, which are highlighted in the report.

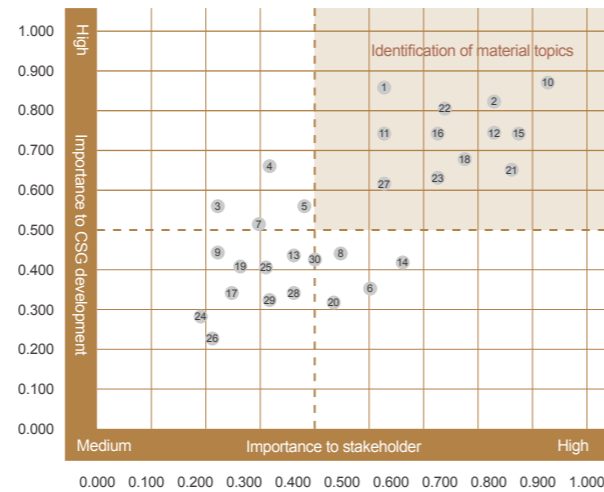
Report

This year's Corporate Social Responsibility Report consists of five parts: Overview, Spotlight, Main Body, Management and Performance Evaluation. The Main Body section is divided into four chapters: power supply, environmental protection, operating efficiency and social harmony. Key material topics are disclosed in different chapters of this Report.

The main ways we communicate with our stakeholders



Identification of Material Topics



Material topics

- | | | |
|--|--|---|
| ① Expediting development in the Guangdong-Hong Kong-Macao Greater Bay Area | ② Improving the electricity-related business environment | ⑩ Winning the tough battle against pollution |
| ⑪ Clean energy transmission | ⑫ Supporting new energy development | ⑮ Comprehensive energy services |
| ⑯ Coordinating the value chain of the energy industry | ⑰ Deepening reform in all respects | ⑲ Taking targeted measures to forestall and defuse major risks |
| ⑳ Practicing the Belt and Road Initiative | ㉑ Winning the tough battle of targeted poverty alleviation | ㉒ Carrying out the reform for building the workforce in the new era |

General issues

- | | | |
|--|--|--|
| ③ Improving power quality | ④ Reducing power outage time | ⑤ Fair measurement and compliant billing |
| ⑥ Digitalization of customer services | ⑦ Steady system operation | ⑧ Occupational health and safety |
| ⑨ Transformation and application of technological achievements | ⑬ Building green substations | ⑭ Reducing line loss |
| ⑰ Information construction | ⑲ Promoting anti-corruption and enhancing integrity | ⑳ Containing electricity violations |
| ㉔ The new round of rural grid renovation and upgrading | ㉕ The quality of power supply services in minority areas | ㉖ Transparent recruitment |
| ㉘ Unimpeded employee career development channel | ㉙ Helping and caring for special groups | ㉚ Public welfare practice |

Overview

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Spotlight

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- 13-15 Adding New Impetus to the Green Development of the Guangdong-Hong Kong-Macao Greater Bay Area
- 16-18 Optimizing the Business Environment to Serve the High-quality Development of the Five provinces in Southern China

Main Body



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Following the Strategy

Based on its role as an SOE that is also an industrial leader, a platform and a value chain coordinator, CSG implements the new development visions, carries out national strategies, promotes the energy revolution, develops the power market and pioneers the SOE reform, so as to make the transformation to a smart grid operator, an energy industry value chain coordinator, and an energy ecosystem service provider.

Strengthening the Bonds with Shared Values

We incorporate CSG's Corporate Culture Philosophy into our strategy as value goals, integrate it into management as a value orientation, include it into the business as a value pursuit, and embed it in behaviors as a value criterion. Asking all our employees to truly understand and stick to these principles, we build their awareness of the corporate values and make sure these values are widely recognized and followed across CSG.

Driving New Development with Management Innovation

We have established a modern management system to pursue better balanced and greater efficiency in more areas. We follow the law of enterprise development, further promote the philosophy of lean management, vigorously advocate instrumental rationality and professionalism, and continue to foster management innovation.

CSG's Corporate Culture Philosophy

CSG's Corporate Culture Philosophy specifies the efforts needed to implement Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era. Upholding the core socialist values, it represents CSG's corporate strategy and the set of values all our employees shall enshrine and follow in the new era.

 **Corporate Mission**

Best Electricity Service for the People

 **Corporate Positioning**

National Backbone Enterprise
Platform-Based Enterprise
Coordinator for the Energy Industry Value Chain

 **Corporate Vision**

Building a World-Class Enterprise with Global Competitiveness

 **Management Philosophy**

Law-Based, Innovation-driven and Strict Enterprise Management

 **Operation Philosophy**

Integrity, Thrift, Growth, Total employee involvement

 **Safety Philosophy**

Every Accident is Preventable

 **Service Philosophy**

Create Value for Customers

 **HR Philosophy**

The Primary Resource of the Enterprise and the Foundation for Market Competition

 **Team Philosophy**

Team Leaders
Be Loyal to the Party, Be Bold to Innovate, Be Good at Management, Be Able to Make the Company Thrive, and Be Honest and Upright

Talent
Resolutely Contribute to the Country, and Be Bold to Make Innovations

Employees
Dedication, Optimization, Team Work, Efficiency, Honesty

 **Work Philosophy**

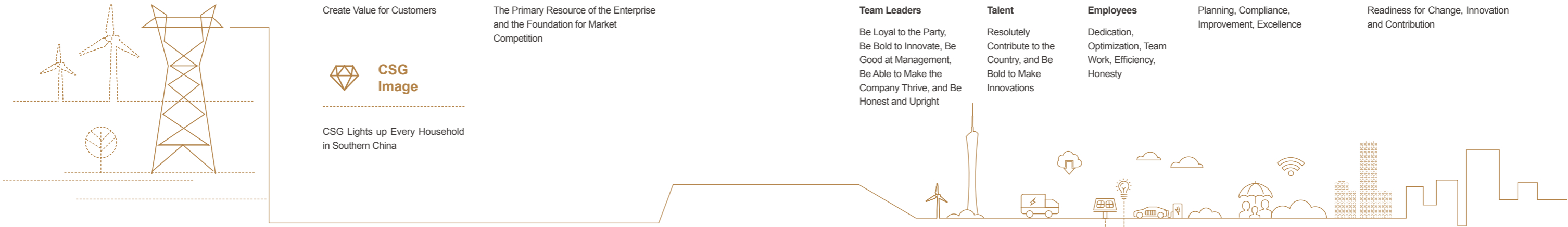
Planning, Compliance, Improvement, Excellence

 **CSG Spirit**

Readiness for Change, Innovation and Contribution

 **CSG Image**

CSG Lights up Every Household in Southern China

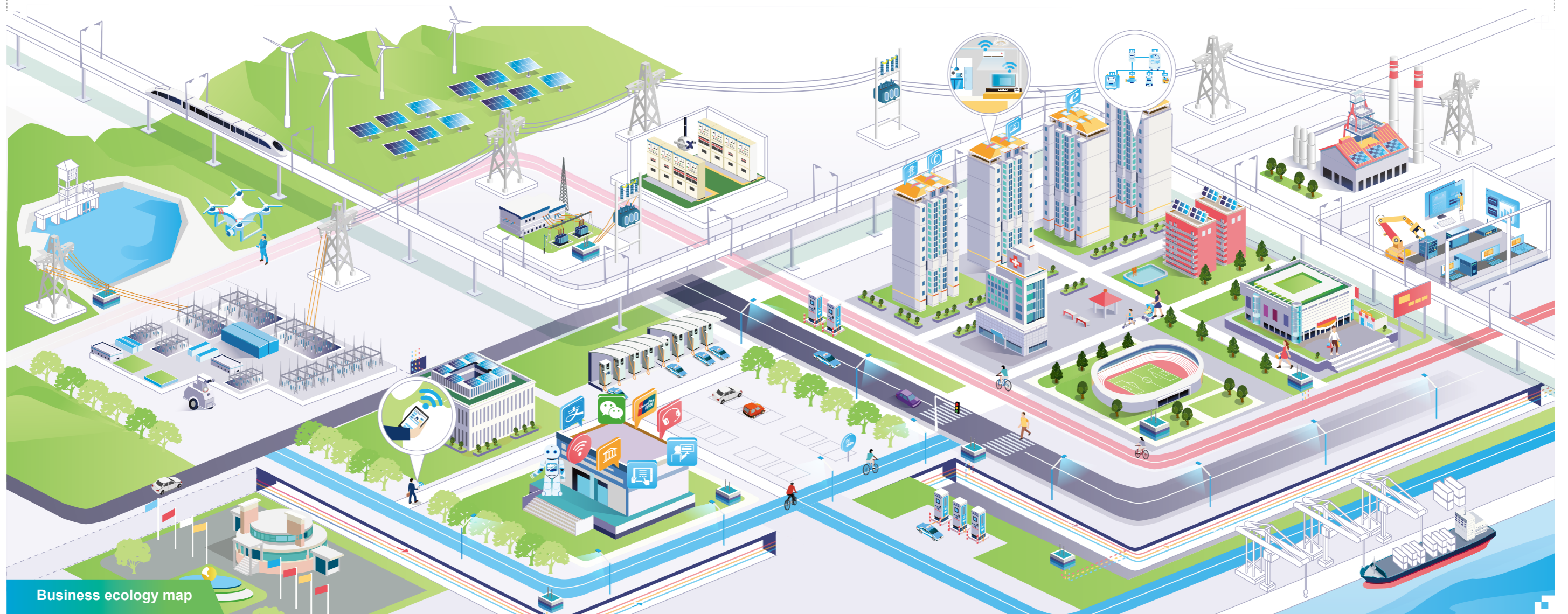


About Us

★ National Backbone Enterprise

☁ Platform-Based Enterprise

🔗 Coordinator for the Energy Industry Value Chain



Business ecology map

China Southern Power Grid Co., Ltd. (CSG), was established at the end of 2002. The Company is under the management of Central Government and the State-owned Assets Supervision and Administration Commission of the State Council fulfills the responsibility as its primary investor. CSG constructs and operates power networks throughout Guangdong, Guangxi, Yunnan, Guizhou, Hainan, Hong Kong and Macao, with a total service area spanning one million square kilometers and a population base of more than 254 million people and 87.41 million households.

Economic Values

- Provided quality electricity services with electricity sales of 970.3 TWh
- Provide electric support for economic and social development with RMB 13.47 of GDP output per kWh in the five provinces in southern China
- Paid taxes and operated its business in accordance with the law while realizing profits and taxes of RMB 43.69 billion
- Ensured the maintenance and appreciation of state-owned assets' value and has earned a Class A rating by the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) for its exceptional performance for 12 consecutive years

Social Values

- Provided quality electricity services to more than 254 million people in its designated power supply areas of southern China
- Provided impetus to the development of agriculture, rural areas and rural people with an investment of RMB 40.3 billion in rural grid renovation and upgrading
- Dedicated to public welfare and charities, carried out 6,642 volunteer service activities throughout the year
- Promoted targeted poverty alleviation, provided direct help for 81,000 people getting out of poverty

Environmental Values

- Encouraged non-fossil energy power generation, and electricity generated from non-fossil energy accounted for 51.5%
- Carried out energy-saving power generation dispatch with 142.2g standard coal/kWh consumed for per unit electricity generation and electricity received from other areas
- Reduced operational losses with 6.31% of comprehensive line losses
- Provided energy-saving services to help customers save more than 1.34 TWh of electricity cost in 2018

Spotlight

Guiding and Supporting the Building of a First-class Enterprise with First-class Party Building

Following the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, CSG Party Group has firmly safeguarded Xi's status as the core of the CPC Central Committee and the whole Party, as well as the authority and centralized, unified leadership of the CPC Central Committee. We comprehensively implemented the overall Party building requirements and organizational policies in the new era, and unwaveringly upheld the Party leadership and strengthened Party building to fully improve the Party building quality, so as to guide and support the building of a first-class enterprise with first-class Party building.

State-owned enterprises (SOEs) serve as an important material and political basis for socialism with Chinese characteristics, and also a major pillar and force for our Party to govern and rejuvenate the country. It is the glorious tradition as well as the root and soul of SOEs to follow the Party leadership and strengthen Party building.

Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee, Chinese President and Chairman of the Central Military Commission



Meng Zhenping, Chairman and Secretary of CSG Party Group, made a speech at the Party building review and assessment meeting for reporting on duty of Party committee secretaries of secondary subsidiaries in 2018.

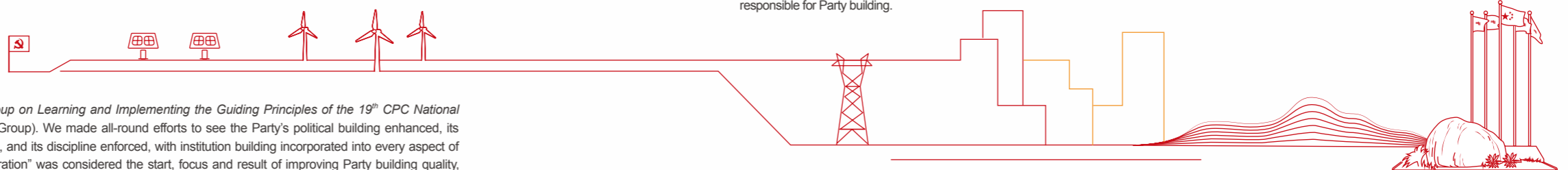
Nurturing the root and soul to build the modern SOE system with Chinese characteristics

The CSG Party committee insists on and strengthens the overall Party leadership, and insists that the Party should exercise effective self-discipline and strict Party governance. The Party leadership is secured in every link of corporate governance, and Party organizations are embedded in the corporate governance structure. We have defined and established the statutory status of the Party organization in the legal-person governance structure of the Company, so as to comprehensively promote the building of the modern SOE system with Chinese characteristics.

- We gave full play to the role of the Party Group in guiding the direction, managing the overall situation, and ensuring the implementation effects. We improved the rules for decision-making of the Party Group, and made sure that the Party Group meets before the board and the management meet to decide on major issues. We integrated the strengthening of the overall Party leadership with corporate governance improvement, so as to enhance the leading group's scientific and democratic decision-making in accordance with the law.
- We improved the leadership system of "two-way personnel exchange and cross appointment". Our subsidiaries at all levels have basically adopted the practice of "two-way personnel exchange and cross appointment". In all the secondary subsidiaries with the board of directors, the secretary of the Party committee and the board chairman shall bear the overall responsibilities and there should be one full-time deputy Party secretary responsible for Party building.
- We promoted subsidiaries to include overall requirements for Party building into their articles of association. In 2017, we completed the revision of the articles of association of all domestic subsidiaries. Based on that, we updated the Party building provision template in accordance with the underlying principles of the 19th CPC National Congress, and promoted subsidiaries at different levels to update relevant provisions in the articles of association.
- We comprehensively promoted the implementation of the Party building responsibility system. We formulated the *Implementing Measures for CSG Party Building Responsibility System*, revised the *List of CSG Leading Group's Responsibilities for Strict Party Governance*, and explored to build a "double A" assessment system that integrates Party building and business performance of subsidiaries.

Laying a solid foundation to continuously improve the Party building quality

CSG has formulated and implemented the *Opinions of CSG Party Group on Learning and Implementing the Guiding Principles of the 19th CPC National Congress to Further Strict Party Governance* (NO.1 [2018] CSG Party Group). We made all-round efforts to see the Party's political building enhanced, its theory strengthened, its organizations consolidated, its conduct improved, and its discipline enforced, with institution building incorporated into every aspect of Party building, and furthered the fight against corruption. "In-depth integration" was considered the start, focus and result of improving Party building quality, which gave full play to the role of the Party organizations and members, and thus strongly supported the building of a world-class enterprise with global competitiveness.



- | | | | | | | |
|---|--|--|--|---|---|---|
| <p>1 Political building</p> <ul style="list-style-type: none"> ● We kept firmly in mind the need to maintain political integrity, think in big-picture terms, follow the leadership core, and keep in alignment. We strengthened our confidence in the path, theory, system, and culture of socialism with Chinese characteristics. We resolutely upheld General Secretary Xi Jinping's core position on the CPC Central Committee and in the Party as a whole, and resolutely upheld the CPC Central Committee's authority and its centralized, unified leadership. And we closely followed the CPC Central Committee in terms of our thinking, political orientation, and actions with Comrade Xi Jinping at its core. ● We strictly carried out the reporting system so as to make sure that the CPC Central Committee knows and decides for major issues. In 2018, CSG Party Group reported to the CPC Central Committee six times. ● CSG Party Group took the lead to organize the meetings of Party democracy. The CSG top management attended and guided these meetings in companies such as Guangxi Power Grid Company. | <p>2 Theory strengthening</p> <ul style="list-style-type: none"> ● Focusing on learning, advocating and implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as well as the guiding principles of the 19th CPC National Congress, we persistently armed the mind with theories by deploying the whole process, full-scope learning, all-media publicity, and comprehensive implementation. ● We adopted the mode of "themed studies + key remarks + discussion", organized seven group study activities for the central group, and conducted full-coverage, mobile and on-site inspections at different levels. ● We innovatively developed a publicity base (Shenzhen) of "Four Confidences" and organized over 1,800 outstanding Party members and young officials to visit for on-site education. This practice was included into the <i>Selected Innovative Cases in Political and Ideological Building of SOEs in the New Era</i> jointly compiled by the Publicity Department of the CPC Central Committee and the SASAC. | <p>3 Organization consolidation</p> <ul style="list-style-type: none"> ● We insisted on building organizations, appointing officials, establishing systems and conducting evaluation both for the Party and business development. We have set up Party organizations in all subsidiaries, and guided and urged the secondary subsidiaries to set up Party committee and departments for Party affairs in new organizations. ● We comprehensively promoted the building of "one Party committee for one power supply bureau", "one Party branch for one power supply station", "station-based Party branch", etc. ● Our Party organization and work can be found wherever our project is. We set up Party branches in units (projects) overseas in a timely manner, thus achieving full coverage of Party management. | <p>4 Conduct improvement</p> <ul style="list-style-type: none"> ● We acted in accordance with the central Party leadership's eight-point decision on improving Party and government conduct, and revised 29 policies about business hospitality, salaries for the top management, and the use of company-subsidized vehicles, etc. ● We kept up efforts to address formalities performed for formalities' sake, bureaucratism, hedonism, and extravagance, especially new forms of formalities and bureaucratism. We have established a mechanism integrating "research and investigation, supervision and inspection, collection of clues, exposure, warning and education". | <p>5 Discipline enforcement</p> <ul style="list-style-type: none"> ● The CSG Party Group improved discipline education by focusing on the publicity and implementation of the newly revised <i>Regulations on Disciplinary Punishment</i>, and held themed seminars in the form of enlarged group study activities of the central group. ● Emphasizing early handling of minor violations, we often had talks with employees in question and used letters and admonition to serve as a wake-up call. | <p>6 Institutional building</p> <ul style="list-style-type: none"> ● "Three meetings and one class" have become an important part of the Party day of the Party branches each month. ● We adjusted the grassroots-level sites for Party building conducted by the leading group, and set up four working mechanisms. ● We vigorously promoted standardized and regulated development of Party organizations at the grassroots level and continuously supported grassroots-level Party branches to fully reach relevant standards. | <p>7 Anti-corruption</p> <ul style="list-style-type: none"> ● We maintained a tough stance that deterred people from committing corruption, and continued to consolidate the achievements in rectifying the problems identified by the central leading group on disciplinary inspection and promote the full coverage of internal discipline inspections. ● We continued to tighten the institutional "cage" by actively promoting the institutional building in key areas to eradicate any loophole for corruption. ● We continued to raise employees' awareness of anti-corruption, and held the eighth annual anti-corruption workshop for the top management. |
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Spotlight Adding New Impetus to the Green Development of the Guangdong-Hong Kong-Macao Greater Bay Area

The development of the Guangdong-Hong Kong-Macao Greater Bay Area is a major decision of the CPC Central Committee and the State Council, and a national strategy formulated, planned, and promoted by President Xi Jinping. China Southern Power Grid earnestly carries out the policies and decisions of the CPC Central Committee, and implements the vision of green development. Based on the platform of West-to-East power transmission, we increase the supply of clean and low-carbon power, promote electric power substitution in key areas and continuously optimize the energy structure and network in the Greater Bay Area, so as to make the Greater Bay Area a high-quality community that is good for living, working and leisure.

Keeping the original aspiration in mind, we have clean electricity transmitted eastward to the Greater Bay Area

CSG was established with the historic mission of carrying out the West-to-East power transmission strategy. The newly formed company upholds the guidelines of reform and is committed to transmitting the rich hydropower resources from west China to the load centers in the eastern coastal areas. The clean power helps fuel the development of the Greater Bay Area while protecting the environment in this region.

We should build a high-quality community that is good for living, working and leisure. We should enhance the energy supply structure, vigorously carry out supply-side structural reform in the energy sector, improve the energy structure and network in the Greater Bay Area, and develop a clean, low-carbon, safe and efficient energy supply system.

Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area

Building the West-to-East power transmission channel

In December 2009, as the first of its kind in the world, the ± 800 kV Yunnan-Guangdong UHVDC transmission demonstration project of CSG, was put into production, laying a foundation for the efficient, secure and reliable hydropower transmission between the provinces.

For the last ten years, we have continuously strengthened the construction and maintenance of the West-to-East power transmission channel. In 2018, we put the ± 800 kV Northwest Yunnan-Guangdong UHVDC Power Transmission Project into full operation, and started the construction of the Kunbei-Liubei-Longmen UHVDC transmission project. By the end of 2018, the Company has set up a West-to-East power transmission channel consisting of "eight AC projects and ten DC projects", among which the nine-circuit DC project transmits power to load centers in the Greater Bay Area.

Connecting Hong Kong and Macao to deliver clean power

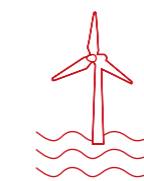
The Company has connected with Hong Kong via 13-circuit transmission lines and with Macao via 9-circuit transmission lines to deliver clean nuclear power and hydropower from the West to these two regions. The electricity sent in this way accounts for about a quarter of the total consumption in Hong Kong and more than 80% of the consumption in Macao.

Transformation and upgrading enables us to better serve the green development of the Greater Bay Area

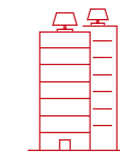
The Company actively promotes its transformation to a smart grid operator, a value chain coordinator in the energy sector, and an energy ecosystem service provider. With the green development platform based on our grid service, we have supported the faster development and better life in the Greater Bay Area with lower energy consumption and cleaner resources.

Serving new energy development

The Company has actively served new energy development and promoted the energy structure optimization and development in the Greater Bay Area.



Offshore wind power—We actively promote the construction of the Guishan offshore wind farm project in Zhuhai. Phase 1 of the project of 120MW has been completed and put into production, which is expected to provide 266GWh of clean electricity per year, reducing standard coal consumption and CO2 emissions approximately by 86,600 tons and 206,700 tons respectively.



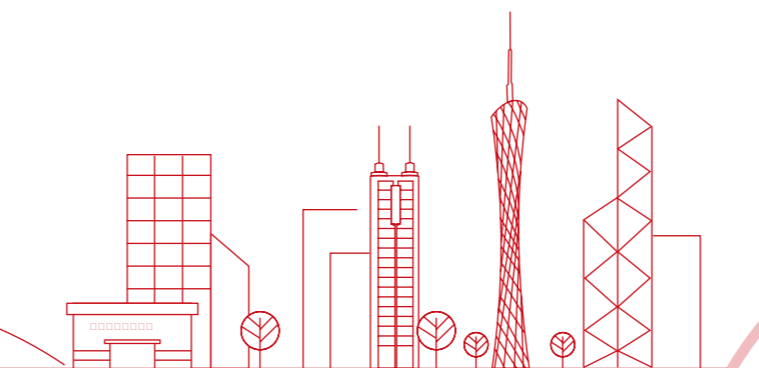
Rooftop PV projects—As the manufacturing industry is concentrated in the Greater Bay Area, the Company actively promotes the development of factory rooftop PV projects, and has built the Galanz (Zhongshan) distributed PV project and the Midea distributed PV project, etc. By the end of 2018, we had completed distributed PV projects of 1599.81MW in total in the Greater Bay Area.



Guishan offshore wind farm demonstration project in Zhuhai

Power sent from the West to the East in 2018
217.5 TWh

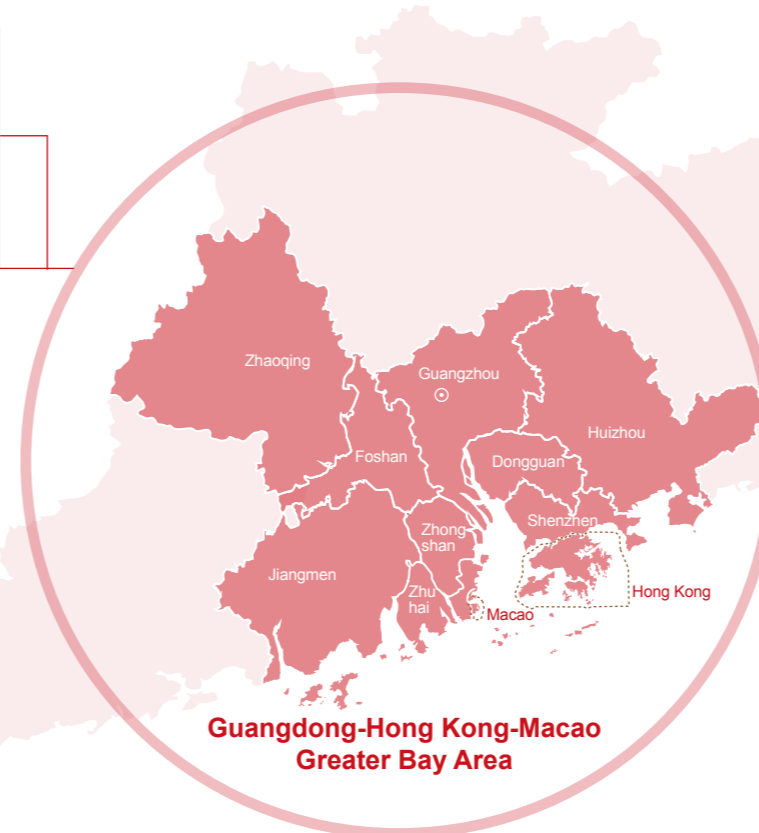
Proportion of clean energy and power generation sent from the West to the East in 2018
86.1 %



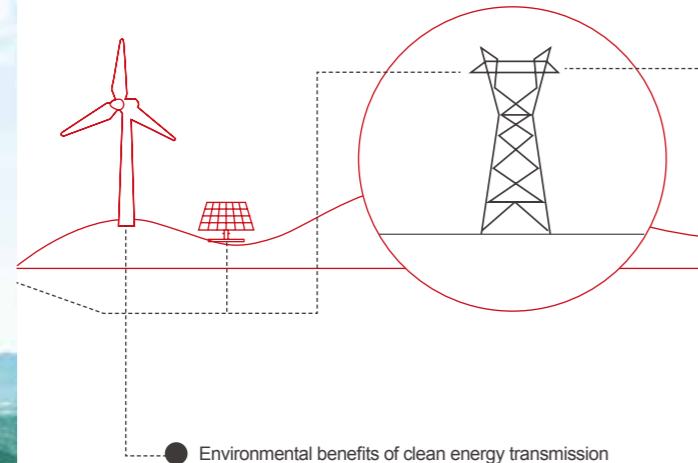
Power transaction volume in 2018
338.0 TWh

Promoting clean energy utilization through market-oriented transactions

Based on Guangzhou Power Trading Center and the first power spot market in China, we have fostered the complementary development of hydropower and thermal power to maximize their advantages and promote clean energy consumption. In 2018, we formulated guidelines for the transactions on replacement of thermal power with hydropower and clean energy transactions, thus promoting the regular operation of the power transmission for Guangdong by replacing thermal power from Guizhou with the hydropower from Yunnan.



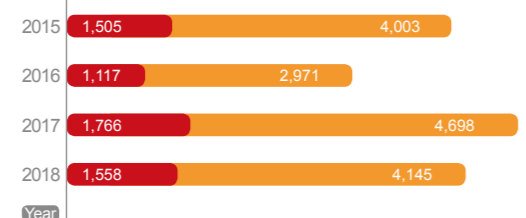
Guangdong-Hong Kong-Macao Greater Bay Area



Environmental benefits of clean energy transmission

Equivalent to reduction of standard coal consumption
Unit: 10,000 tons

Equivalent to reduction of CO₂ emission
Unit: 10,000 tons



500 KV Zongjiang Phase II Project, the first reservoir-crossing project in Dongguan

Clean energy transmission

The Company initiated the *Clean Energy Transmission Work Program 2018* and the *Clean Energy Transmission Operating Rules*, formulated and implemented 41 specific measures to absorb water, wind, solar, nuclear and other clean energy to the maximum extent, so that more clean energy can be transmitted to the Greater Bay Area.

Further promoting electric power substitution

The Company actively promotes the electric power substitution in key areas such as shore power technology and electromagnetic kitchens, and accelerates the construction of electric vehicle charging facilities. We have achieved full coverage of the inter-city charging network in the Pearl River Delta.

Extending energy-saving services

The Company has further extended its energy-saving services in hotels, shopping malls, hospitals, and so on, and has introduced advanced energy-saving technologies at home and abroad, sparing no efforts to promote energy conservation of customers in the Greater Bay Area.

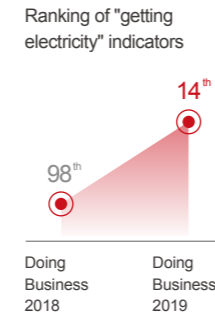
Spotlight

Optimizing the Business Environment to Serve the High-quality Development of the Five provinces in Southern China

A good business environment is important for implementing the new development visions, building a modern economic system, enhancing the development of an open economy, and achieving high-quality development. It is also vital to deepening reform, exploring development potential, strengthening soft power in local economic development and enhancing a region's competitiveness.

Higher ranking in the World Bank report

On October 31, 2018, the World Bank released *Doing Business 2019*, revealed that China had an Ease of Doing Business (EODB) score of 73.64, ranking 46th among 190 economies. The country scored 92.01 and ranked 14th in getting electricity, showing the biggest increase compared with the other 9 indicators.



CSG takes action to optimize the business environment

In 2018, the CPC Central Committee and the State Council issued a series of targeted policies and measures for optimization of the business environment. The National Development and Reform Commission (NDRC) and the National Energy Administration requested that small and micro enterprises (SMEs) "getting electricity" should be made a priority, and that efforts need to be made to learn from the best practices of cities outside of China, and promote exemplary business environment projects in terms of access to electricity.



Strictly implementing the policies and plans formulated by the CPC Central Committee and the State Council to optimize the business environment, we have set up a leading group for optimizing the electricity-related business environment, formulated action plans, and introduced seven initiatives consisting of 20 measures with a focus on improving the ease of getting electricity. We have been dedicated to optimizing the business environment in southern China and serving the high-quality development of the five provinces.

We should improve the investment and market environment, gather pace in opening up, and reduce market operation costs, so as to create a stable, fair, transparent and predictable business environment, accelerate the construction of a new open economy system, and promote the sustainable and healthy development of China's economy.

Statement by President Xi Jinping, also the General Secretary of the CPC Central Committee and Chairman of the Central Military Commission, on the 16th meeting of the Central Leading Group for Financial and Economic Affairs

A brand new experience of power service

We established an application checklist system to further simplify the materials required for application, inform customers in advance of the connection procedures, and promote distribution network planning based on high-voltage electricity demand.

We canceled the design review and intermediate inspection for electricity connection, merged the acceptance inspection as well as meter installation and power access, thus reducing the high-voltage electricity connection application procedure to three steps from five steps, and streamlining the process of low-voltage connection to two steps.



We continued to extend the investment interface of power expansion projects to "customer red line" (the boundary of the land property where customers live or operate). We promoted the low-voltage power supply for customers applying for incremental capacity of 200 kVA and below and helped SMEs achieve free electricity connections in nine cities including Guangzhou and Shenzhen in the Greater Bay Area.

We strictly implemented national electricity pricing policy, greatly reducing customers' electricity costs. We also carried out the ten price reduction measures of the NDRC, and actively cooperated with the pricing departments of local governments to explore the potential to reduce electricity price for general industrial and commercial businesses.

Improving the ease of getting electricity, we promote high quality development

The Company continued to improve its power supply services, comprehensively optimized the electricity-related business environment, and helped the five provinces in southern China complete their annual economic and social development goals.



	Guangdong Power Grid Co., Ltd.	Guangxi Power Grid Co., Ltd.	Yunnan Power Grid Co., Ltd.	Guizhou Power Grid Co., Ltd.	Hainan Power Grid Co., Ltd.	Guangzhou Power Supply Bureau	Shenzhen Power Supply Bureau
GDP output per kWh Unit: RMB	11.50	11.95	10.65	9.99	14.79	22.95	26.80
Power supply reliability Unit: %	99.8995	99.8105	99.7696	99.7538	99.7236	99.9679	99.9823
Cost savings for customers Unit: RMB billion	38	7.1	13.1	5.5	0.7	1.65	3.13

Note: GDP output per kWh = GDP/overall electric power consumption. According to the Company's reality, data about Guangdong was calculated after excluding data about Guangzhou and Shenzhen; for indicator of cost savings for customers, data about Guangdong includes that of Guangzhou and Shenzhen.

Urban Power Supply Reliability in China(2017) Published in 2018



We strengthened information disclosure by showing the application procedure, materials, time limit, and charging standards for electricity connection in physical service centers as well as e-channels, which effectively improved the business transparency. We promoted the "Internet +" online electricity connection application, saving both the enterprises and residents the inconvenience of having to visit a service center.

Improving transparency



Enhancing reliability

We accelerated the implementation of the "one-hour action plan", strengthened power grid construction, continued to overcome obstacles and stepped up efforts in distribution network construction and transformation, thus eliminating such problems as distribution network overload, undervoltage and power outage in urban villages and improving power supply reliability.

Year-on-year reduction of power connection time for low-voltage customers

34%

Year-on-year reduction of power connection time for high-voltage customers

22%

Total extended investment

RMB 13.6 billion

The average interruption duration in the core districts of Guangzhou, Shenzhen and six cities in the Pearl River Delta was less than 1 hour, reaching world-class standards.



The average interruption duration in the core districts of Futian Central Business District of Shenzhen in 2018 was 1.93 minutes per household



Power Supply



Answering the call of the era

Focusing on solving the principal contradiction between unbalanced and inadequate development and the people's ever-growing needs for a better life, we must promote balanced progress in promoting a new type of industrialization, IT application, urbanization and agricultural modernization, work faster to modernize the economy and strive to achieve better-quality, more efficient, fairer and more sustainable development.

An excerpt from President Xi Jinping's speech on the 40th anniversary of reform and opening up

The latest global revolution in science and technology and industrial transformation are trends we must keep up with. We will do more in implementing the innovation-driven development strategy, and keep on making the Chinese economy more innovative and competitive.

An excerpt from the *Report on the Work of the Government in 2018*



CSG in action

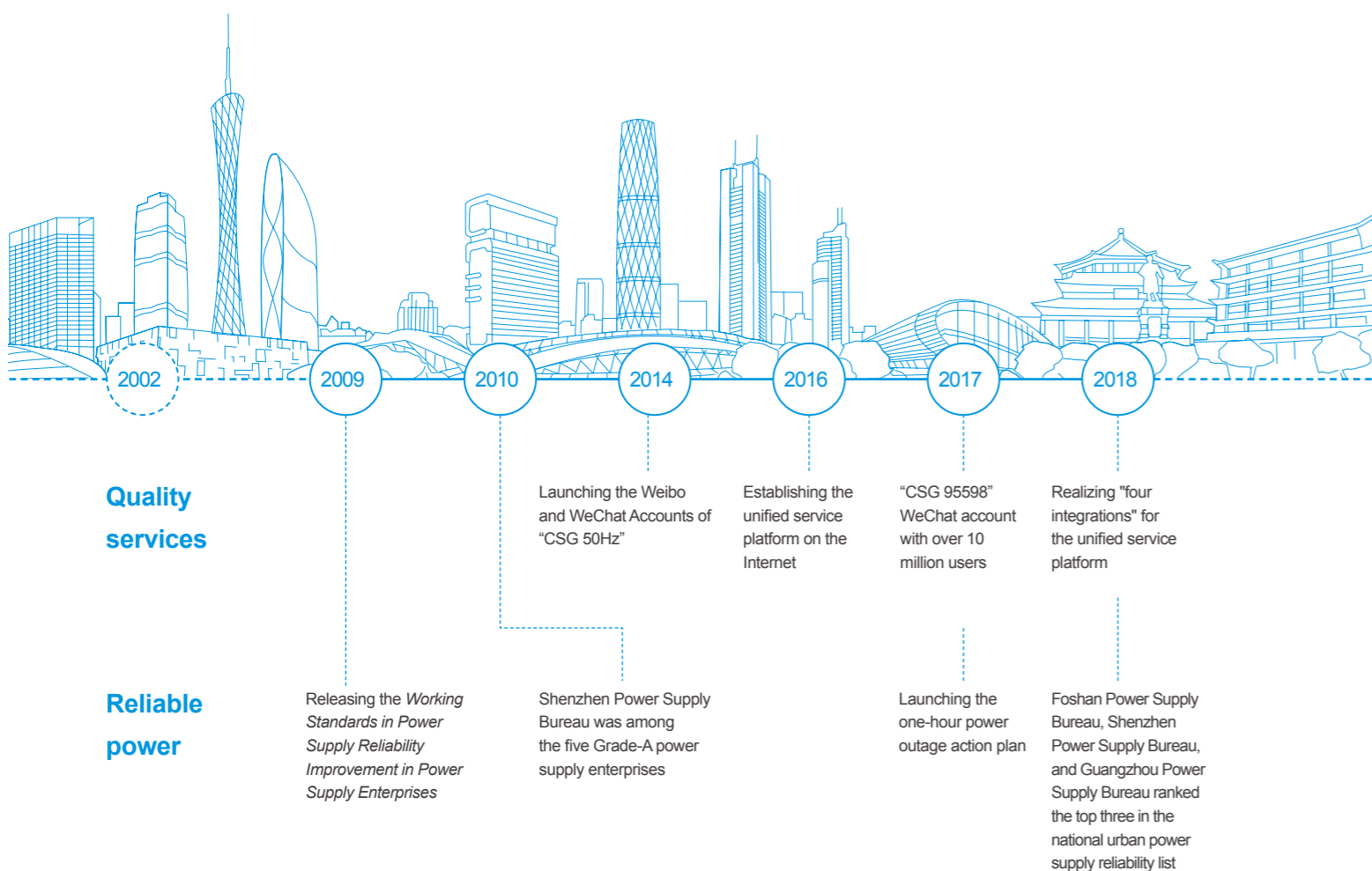
We have continuously stepped up efforts in optimizing the electricity-related business environment, reducing the average interruption duration, power consumption costs, and providing more convenient electricity connection services and balanced services for urban and rural areas, so as to facilitate the high-quality development and foster a strong domestic market.

We have promoted the digitalization of customer services by taking technological innovation as the key, innovation in services and business model as the core and management innovation as a guarantee.





Embarking on the journey of reform, we have made enormous strides in the new era



Key topic management in 2018



Key topics

- Offering diversified smart services
- Providing reliable power supply
- Ensuring safe operation
- Strengthening grid construction
- Fostering technological innovation



Major action plans

- We promoted the digital transformation of customer service
- We promoted the "One-Hour" power outage action plan to ensure the power supply for major national events
- We fostered the across-the-board safety management framework and increased the application of intelligent technologies
- We promoted a smart grid development mode featuring a "demonstration and leading role with comprehensive actions".
- We increased research investment and promoted the research platform development, aiming to improve the application of scientific and technological achievements.




Key performance

Score of third-party customer satisfaction	Average annual interruption duration	Investment in power grid construction
82	13.11 hours per household	RMB 87.4 billion
Patents in total	Serious accidents caused by power supply or equipment failure	
17,267	0	

Quality Service

Promoting the comprehensive digital transformation of customer service

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 7.1 Ensure universal access to affordable, reliable and modern energy services by 2030</p>	<p>Disclosure 417-1 Requirements for product and service information and labeling</p>	<p>Build a digital smart service system</p> <p>Realize full coverage of the smart meters and automatic and centralized low-voltage metering</p>

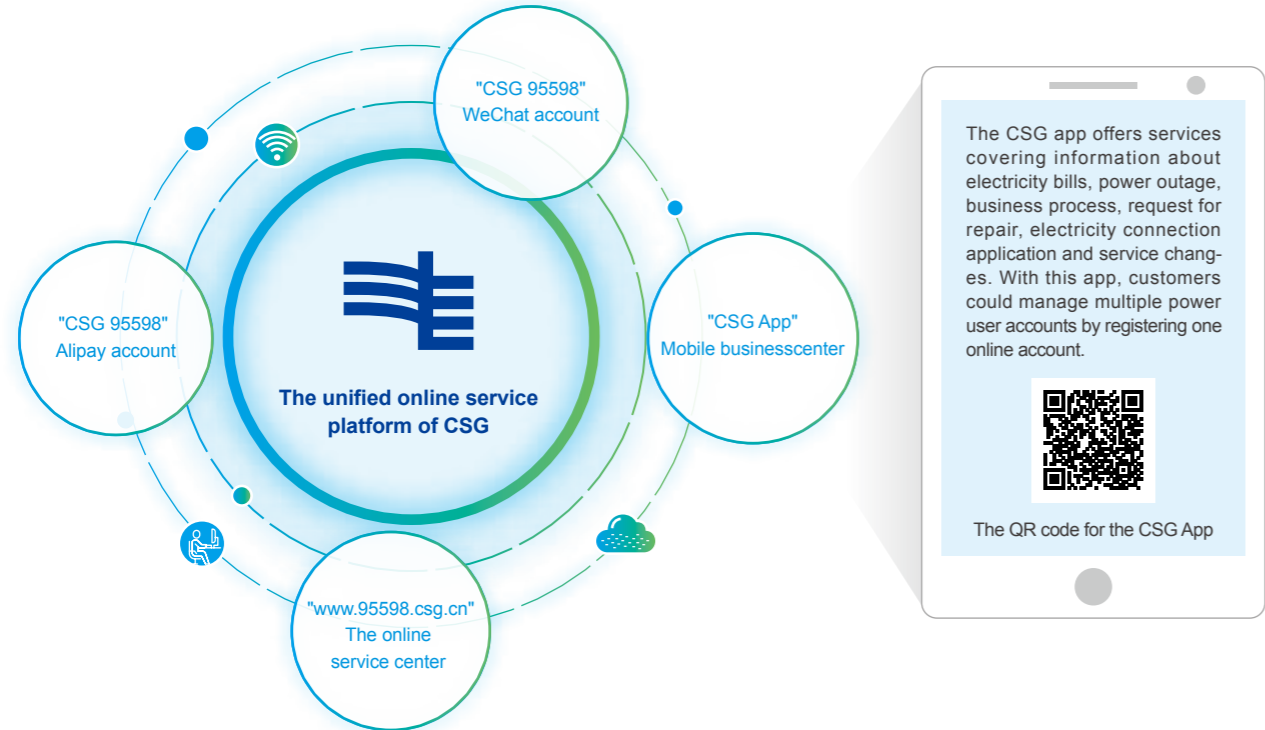
Note: SDGs are short for The 2030 Sustainable Development Goals, and GRI is short for Global Reporting Initiative, the same below.

Practicing CSG's Corporate Culture Philosophy Multiple smart services

The Company has accelerated the establishment of an intelligent service system with "mobile terminal + Internet + big data" to promote the innovation and integration of traditional electricity services and the Internet, which effectively improved our service efficiency and problem-solving abilities, and created greater value for customers with professional and quality services.

More services on the unified online service platform

We have built a unified online service platform integrating the e-channel brands, customer privilege, services and back-stage management of the five provinces in southern China, and improved customer experience, offering easier access to our services.



More intelligent power supply service centers

Through new technologies such as Internet of things (IoT), artificial intelligence and mobile applications, we have promoted the intelligent upgrading of all our physical service centers, turning them into service experience centers and smart service centers, so as to better meet the customers' needs for personalized services. In 2018, we set up 2 smart service centers in Nanshan District of Shenzhen and Huangpu District of Guangzhou.



More efficient 95598 service hotline

We have continuously promoted the provincial-level "four integrations" (integration of service standards, integration of customer experience, integration of business control and integration of back-stage support) of 95598 hotline. In 2018, the call connection rate was 98.5%, up by 11 percentage points as compared with other provinces without service integration.

More diverse Internet service channels

CSG has cooperated with the third-party service platforms such as banks, Alipay, WeChat and convenience service sites, saving customers time and energy, and allowing them to apply for electricity connection more conveniently.

In August 2018, we launched the Alipay account of "CSG 95598" with electricity services covering electricity bill payment, request for repair and electricity connection application and service changes. The Alipay account of "CSG 95598" introduced face recognition technology and took the lead in providing the service of transferring ownership by "face scanning". Users in Shenzhen now can complete the transfer of ownership within one minute by scanning their faces. In future, we will promote the application of this technology in the five provinces in southern China.



Accurate metering and billing

CSG has strictly implemented relevant national laws and regulations, continued to improve the standardization of metering management and the automatic meter reading (AMR) system, and realized the full coverage of smart meters and automatic low-voltage meter reading two years ahead of schedule, ensuring accurate metering and billing with the supervision of related government departments to protect the interest of customers. A provincial-level centralized electricity consumption measurement system featuring "four lines, one warehouse and one platform" was built in Guangzhou in 2018, which is the largest in China, also with the greatest electricity consumption measurement capability. From electricity meter reading to electricity bill collection, the efficiency has been greatly improved.



Coverage rate of smart meters

100 %

Coverage rate of automatic low-voltage meter reading

100 %

Single phase Watt-hour meter verification of Guangxi Power Grid Co., Ltd.

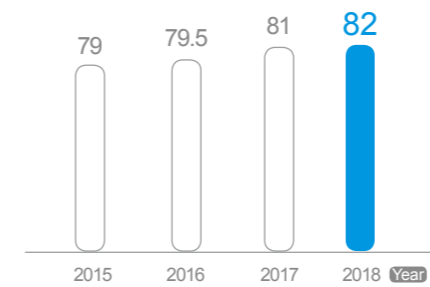
Power supply services	National power supply standards	CSG power supply service commitment	Performance in 2018	Comparison with 2017
Rate of 95598 power supply service hotline connection within 20s (%)	/	90	98.5	2.9 ↑
Reliability rate of power supply in urban areas is no lower than (%)	99	99.9	99.9435	0.0190 ↑
Reliability rate of power supply in rural areas is no lower than (%)	/	99.5	99.7831	0.1063 ↑
Receiving end voltage eligibility rate for urban residents is no lower than (%)	95	98	99.755	0.3350 ↑
Voltage eligibility rate of rural customers end is no lower than (%)	/	94	98.87	0.8490 ↑
Response given to a customer application for single high-voltage supply within (workdays)	15	15	6.69	0.71 ↓

Customer satisfaction

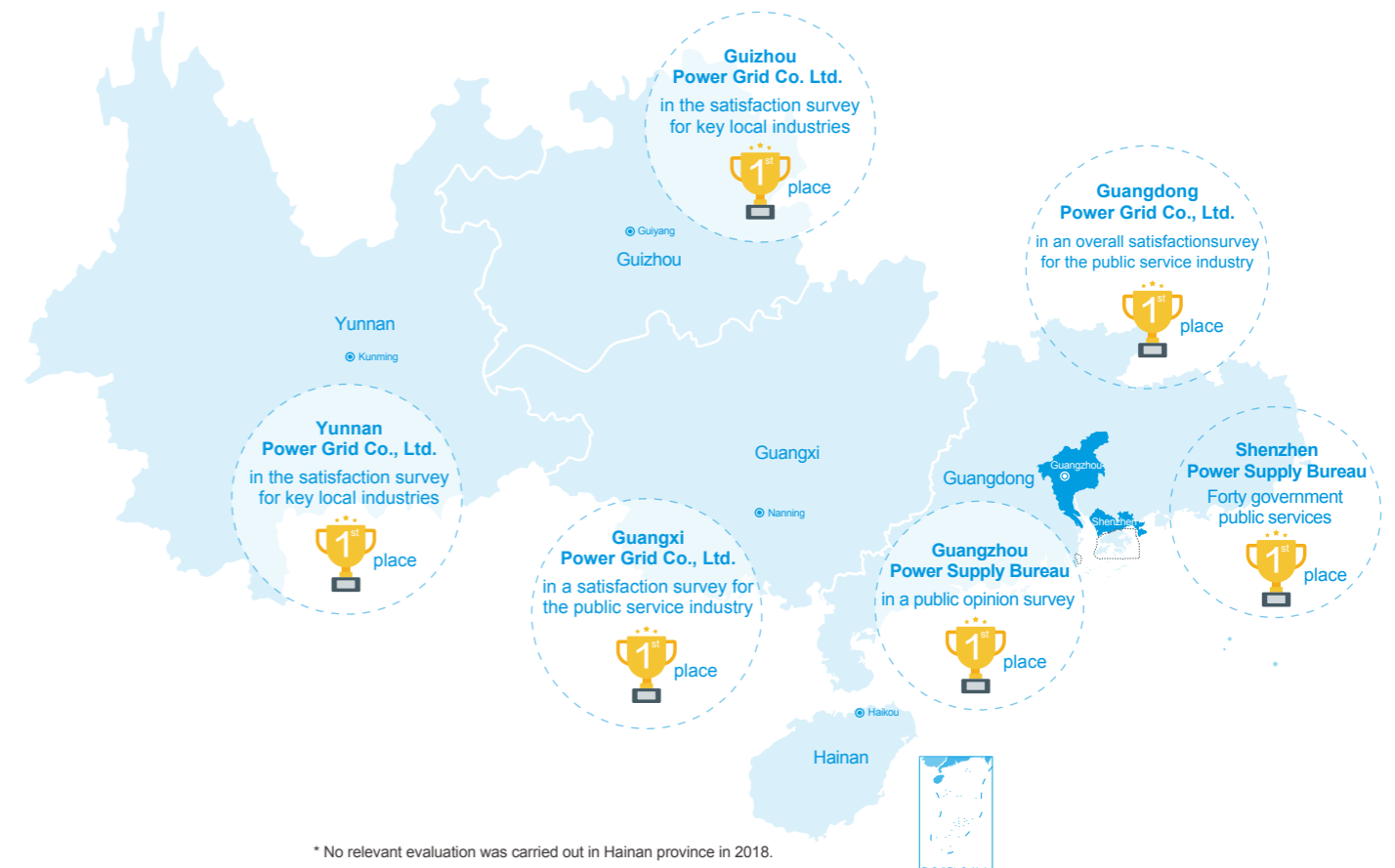
Always insisting on "customer-centered" development, CSG improves the comprehensive customer service system and enhances its professional ability to coordinate and solve customers' problems. In 2018, the Company fulfilled its power supply service commitments, and its quality services were widely praised by customers in the five provinces in southern China. In 2018, the number of complaints for our services through 12398 hotline in the five provinces decreased by 62%, which won the recognition from the National Energy Administration.

Third-party customer satisfaction scores

Unitscore



Ranking 1st in public evaluation among all provincial (level) companies in 2018*



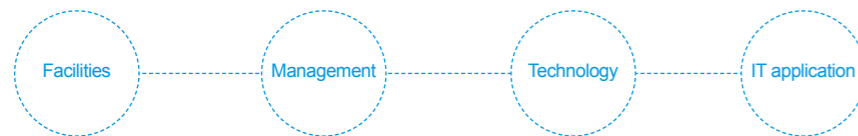
Reliable Power

Striving for world-class power supply

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 7.1 Ensure universal access to affordable, reliable and modern energy services</p>	<p>Disclosure 203-2 Significant indirect economic impacts</p>	<p>Promote the "One-Hour" power outage action plan</p> <p>Achieve the goal of "zero error", "zero accident" and "zero complaint" in the power supply</p>

Reducing power outage time

The Company has further carried out power supply reliability management, comprehensively promoted the "One-Hour" power outage action plan, and coordinated efforts in facilities, management, technology and IT application. In 2018, the average interruption duration in the core districts of Guangzhou, Shenzhen and six cities in the Pearl River Delta was less than one hour, reaching the world-class standards. The interruption duration in Futian CBD reached the international top level of less than 2.5 minutes.



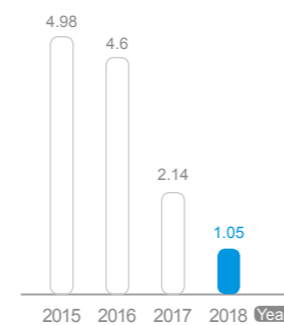
We strengthened efforts to build a reliable and economical distribution network with well-organized structure, advanced technologies and information channels to satisfy electricity demands with a reliable distribution network that is effectively monitored and flexibly controlled.

We optimized the integrated outage management process, and strengthened collaboration and responsibility transfer between reliability improvement with planning, materials and facilities, production, operation and maintenance, as well as customer services, which effectively reduced interruption duration and frequency.

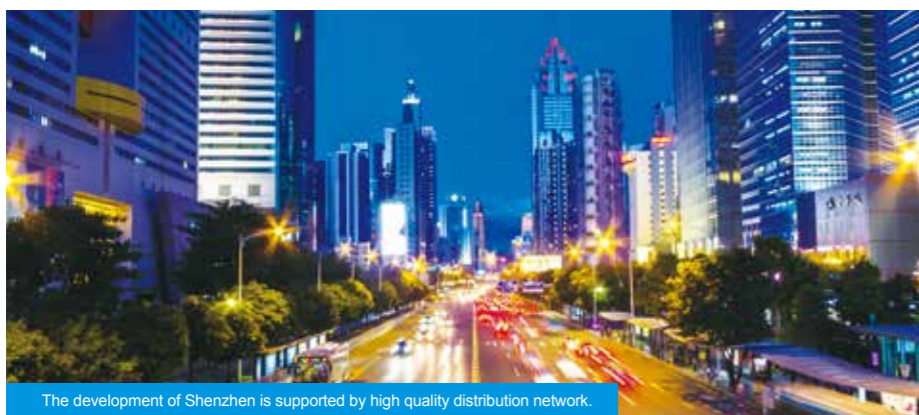
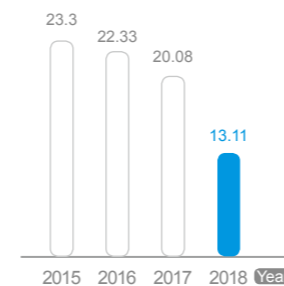
We actively promoted the application of advanced technologies such as distribution automation, drone-based aerial inspections, live-line operation, and robot operation to improve power supply reliability. In 2018, the implementation of live-line operation on the distribution network reached 178,588 times.

We continued to promote multiple uses of a single data set, strengthened coordination and connection, and effectively leveraged the information system to automatically collect such data as outage incidents and interruption duration, and analyze the data online.

Interruption duration in the core districts
Unit: hour/household



Outage time in all the districts
Unit: hour/household



Optimizing power quality

To address the most prominent quality problems such as voltage dips, short interruptions and undervoltage in the urban power grids, the Company has steadily conducted monitoring and control of undervoltage, provided customers with value-added technical services such as power quality assessment, evaluation and management, and improved the quality of power supply in multiple dimensions to meet the demands of high-end and high-tech modern industries.

	2015	2016	2017	2018 Year
Receiving end voltage eligibility rate for urban residents (%)	98.730	99.124	99.420	99.755
Receiving end voltage eligibility rate for rural residents (%)	97.449	97.825	98.021	98.870
50±0.2Hz frequency qualification rate (%)	100	100	100	100
500 kV voltage eligibility rate (%)	99.9999	99.9999	99.9999	99.9999

The way to improve power supply reliability

In June 2018, Foshan Power Supply Bureau, Shenzhen Power Supply Bureau, and Guangzhou Power Supply Bureau ranked the top three in the national urban power supply reliability list issued by the National Energy Administration and China Electricity Council. Ten years ago, "reliability" was still a new word for many people at CSG who were not yet clear about the direction that should be taken. It took us ten years to find our way, to excel in lean management, and to achieve world-class reliability management.

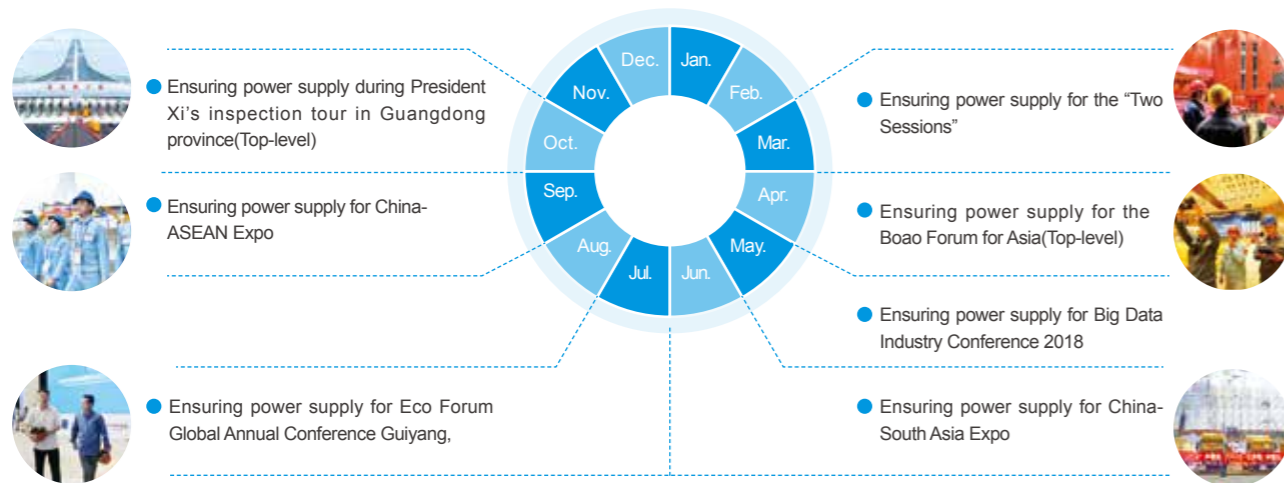
- 2009**: Since we released the Working Standards of Power Supply Reliability Improvement in Power Supply Enterprises in 2009, power supply reliability management has grown more standardized.
- 2010**: thanks to its accurate outage management, Shenzhen Power Supply Bureau was rated as one of the country's top five Grade-A power suppliers.
- 2015**: we made progress in ensuring compliance with rules concerning equipment management and building of substation operation teams, and promoted comprehensive checks of accounts, cards and equipment.
- 2016**: we promoted the establishment and application of the module of "multiple uses of a single data set" to achieve coordination and connection in management.
- 2017**: we officially launched the equipment ownership system, and issued the "One-Hour" power outage action plan, marking a solid step in power supply reliability improvement
- 2018**: three subsidiaries of CSG ranked top three in terms of city power supply reliability. CSG fared well in such measures as power transmission and transformation reliability and power supply reliability

0 error
0 accident
0 complaint

Hong Kong-Zhuhai-Macao Bridge

Guaranteed power supplies during major national events

The Company has established a regular power supply guarantee mechanism, exercised strict grid risk control, and ensured the security of network and information as well as power facilities. As a result, we successfully ensured power supply during Party and state leaders' inspection tours, the Boao Forum for Asia, China-ASEAN Expo, and other political events or events with great implications for people's well-being. No error, accident or complaint has occurred during these events.



2 Top-level tasks to ensure power supply
10 Level-1 tasks to ensure power supply



Ensuring power supply for CHINA-ASEAN Expo: from inconvenient communication to visualized and controllable operation

In 2018, China-ASEAN Expo celebrated its 15th anniversary. Guangxi Power Grid Company, the power supplier for the event, had to face such challenges as a greater area and a more complex environment than in previous years. The company implemented the principle of "Digital and Smart CSG", achieved lean management by using visualized sheets, and upgraded the power supply visualization system which allows operators to see clearly the location of each generator car within the distance of about one kilometer, stocks in each warehouse, and even the movement of patrol inspection personnel. Backed by mobile handsets that enable real-time interactions with the command center, this system marks a huge step forward as it can now provide better-informed instructions on the basis of visualized and measurable on-site data.

“Fifteen years ago, adequate staffing was important for power security as a person would be assigned to watch over a pole or tower. Then lean management was introduced with an emphasis placed on graphs and sheets. Now we have the visualization system. We can say that the times of inconvenient communication have passed, and we have entered a new era with visible and real-time management in ensuring power supply.”

An employee of Guangxi Power Grid Company

Safe and Steady Operation

All accidents are preventable

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
<p>Target 9.1 Develop quality, reliable, sustainable and resilient infrastructure</p> <p>Target 11.5 Significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters</p>	<p>Disclosure 203-2 Significant indirect economic impacts</p> <p>Disclosure 403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities</p>	<p>Foster the across-the-board safety management framework</p> <p>Step up efforts in "robot + personnel inspections" as well as UAV inspections</p> <p>Accelerate the building of an intelligent disaster prevention and resistance system and resilient power grids</p>

Improving safety management

The Company has made safety a top priority of which no one shall override the line. It improved the work safety responsibility system covering all employees, innovated in the closed-loop management and supervision of risks at work, and promoted a culture of safety as well as the across-the-board safety management pattern, striving to build an intrinsically safe enterprise.

- We upgraded the work safety risk management system, refined and carried out the plan for improving work safety ratings, and continuously improved the efficiency of the work safety risk management system.
- We held the first safety culture forum themed "life is precious, safety is paramount and a culture of safety is fostered", and launched activities such as the "Work Safety Month", so as to promote the safety culture in an orderly manner.

0 serious and major power accidents and equipment failure in 2018

0 notable power accidents and equipment failure due to negligence in 2018

0 notable accidents causing injuries and fatalities in 2018

0 safety incidents causing negative impact on society or company due to negligence in 2018

CSG's achievements in the work safety risk management system, 2016 - 2018 (Unit: piece)

	2016	2017	2018
5 star	1	5	9
4 star	26	31	35
3 star	69	71	79

Stable grid operation

Focusing on prevention and control of operational risks of the power grid, CSG has strengthened closed-loop management of dynamical risks at all levels, and improved the management of system operation, so as to ensure the long-term stable operation of complex and large power grids. No electrical safety accidents occurred in the system despite enormous safety pressure and heavy workload.

- Carefully preventing and controlling the risks in grid operation, we completed 38 key tasks to prevent the nine major grid operation risks throughout the year, and successfully eliminated the hidden dangers in DC operation. No operation failure occurred in the grid stability control system or protection devices.
- We promoted excellent dispatching through equipment upgrade, management improvement and technological innovation. In 2018, the grid security situation awareness system was initially established, with which 66 prefecture-level power supply bureaus realized the integrated operation mode of "dispatching, monitoring and control".

Sound operation of equipment

The Company has actively explored the application of intelligent technology in equipment operation and maintenance, vigorously promoted "robot + personnel inspections" as well as UAV inspections, and provided lean and differentiated operation and maintenance as well as standardized overhaul of power transmission and transformation equipment, so as to continuously enhance its sound operation.

- We strengthened the operation and maintenance of key plants and stations, major channels of West-to-East power transmission, major crossing points and other equipment. We also actively took special actions to deal with potential risks in equipment operation. As a result, the number of electrical safety incidents has decreased year on year.
 - Times of UAV inspections: **310,000**
 - Inspection mileage of UAV: over **400,000** kilometers
- We actively promoted the pilot projects of intelligent technology application in the five areas of intelligent equipment, intelligent operation, condition monitoring, situation awareness and smart operation.
 - Number of substations inspected by robots: **145**
 - Number of electrical safety incidents fell by: **38%** year on year

Guizhou Power Grid Company achieves full coverage of UAV inspections, starting a new operation and maintenance mode for power transmission

In order to improve the inspection accuracy and efficiency of power transmission lines, Guizhou Power Grid Company took measures such as improving UAV hardware, standardizing operator training, and building a data sharing platform for the inspection. The company covered all the lines of 35 kV and above with UAV inspection, and provided UAVs and UAV inspection technologies for all front-line teams, thus starting a new operation and maintenance mode for power transmission. By the end of 2018, Guizhou Power Grid Company had a total of 1,069 UAVs, and the UAV-inspected lines of 220 kV and above reached 40,000 kilometers long.



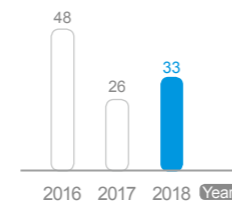
The transmission line patrol of Guizhou Power Grid Co Ltd has changed from traditional patrol mode to UAV inspection, and its efficiency has been greatly improved.

Strengthening safety management

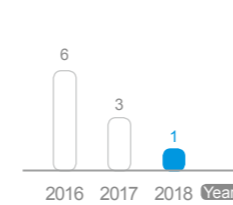
Personal safety

Firmly upholding the idea of safe development, the Company has built a comprehensive and integrated work safety responsibility system, carried out safety trainings to raise employees' safety awareness, and strengthened safety management of infrastructure construction sites to prevent accidents that cause casualties.

Level 3+ electrical safety accidents (Unit:Cases)



Accidents causing personal injury (Unit:Cases)



Information security

As required by the government for network and information security, CSG has strengthened network security and management, and built a professional and skilled network security team to improve its capabilities in monitoring and early warning, defense against attacks and resilience in emergency, thus guarding against major network security incidents.

Level 2+ network security incidents in 2018

0

Average malicious network attacks resisted by CSG per month in 2018

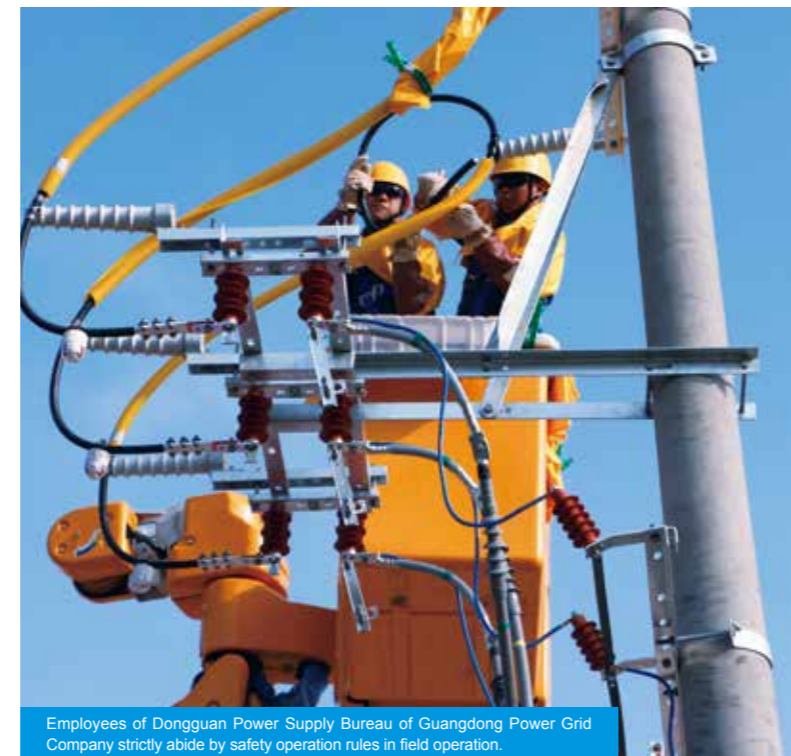
Over 90,000



The network security situation awareness platform of the first power monitoring system covering power grids of 500 kV and above was put into operation.



CSG won the first place in the network and information administrator contest of the National Professional Skills Competition.



Employees of Dongguan Power Supply Bureau of Guangdong Power Grid Company strictly abide by safety operation rules in field operation.

Public safety

CSG pays great attention to public safety, and has improved the long-term mechanism for checking and managing potential public safety hazards related to electricity, and promoted the special actions of township power supply stations to prevent personal accidents. The Company continues to clean up the potential safety hazards in urban villages and safeguard personal safety within distribution networks. We also strengthen publicity on safe electricity use, wind and flood prevention and electric shock prevention to ensure public safety.

0 electricity-related public safety incident in 2018

In 2018, the number of electric shock accidents among social workers dropped by

7.7 %

Effectively responding to natural disasters

Always taking grid security and public interests as a priority, CSG sped up its efforts to build an intelligent disaster prevention and resistance system and a more resilient grid, shifting its focus from disaster response to disaster preparedness. This comprehensively improved the grid security and its capability of disaster prevention and resistance, providing stable and reliable power supplies for economic and social development as well as a better life for the people.

Improving the comprehensive disaster resilience capability of the power grid

- CSG intensified its efforts to fulfill the three goals of disaster prevention and resilience, promoted the building of disaster-proof power grids in 28 major cities, reinforced the grid and improved the typhoon resistance of overhead lines.
- CSG promoted 28 key projects to improve power supply capacity for Macao. We built the first 220 kV cable line for power supply to Macao, significantly improving the grid's capacity to resist typhoons and other disasters and ensure the power supply for Macao.

Responding to natural disasters in an orderly manner

The Company revised and improved the emergency plan, continuously enhanced emergency trainings and drills, and responded to natural disasters in an orderly and proper manner based on the mechanism of "disaster prevention, mitigation, and relief", so as to ensure the emergency plan is implemented in an efficient and orderly manner. Over 355,000 emergency repair personnel, 96,000 emergency repair vehicles and 1,017 emergency power generation equipment were put into operation throughout the year, effectively resisting six heavy rains and five typhoons in the power supply area.



With no fear of Typhoon Mangkhut, we complete power recovery for 6.52 million users within 78 hours

Typhoon Mangkhut has been the strongest typhoon in recent years which had the longest duration, covered the widest area on land, and sustained the most powerful gusts. At 23:00 on September 19, 2018, after 78 hours of hard work, we completed power recovery for 6.52 million users affected by Typhoon Mangkhut in the power supply area of CSG. The power supply lines for emergency command departments at all levels as well as Hong Kong and Macao, and the power transmission lines of nuclear power plants were not affected. The damage rate of poles and towers was decreased by 46%, and the repair time decreased by 40%. With more advanced technologies, better mechanisms, and stronger power grids, CSG employees have more confidence in forging ahead.



We continuously strengthened the building of disaster-proof power grids and reinforced the power grids against wind damage to develop stronger power grids.



High technologies such as "Armor Chariot", "remote control" and UAV helped improve the emergency repair efficiency.



With a spirit of mutual support, we spared no efforts in ensuring the power supply for Hong Kong and Macao.

Power Grid Construction

The "expressway" power grids face new development

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 7.1 Ensure universal access to affordable, reliable and modern energy services</p> <p>Target 7.5 Expand infrastructure and upgrade technology for supplying modern and sustainable energy services</p>	<p>Disclosure 203-1 Infrastructure investments and services supported</p>	<p>New era, new changes</p> <p>Increase investments in UHV project construction</p> <p>Build smart grid demonstration zones at all levels</p>

Constructing key projects

Smart grids serve as the basic platform that supports CSG to become an internationally competitive world-class enterprise, which are also important material basis to promote economic and social development. Focusing on meeting people's ever-growing needs for a better life, the Company has promoted the implementation of the 2018-2020 action plan for smart grid development, increased investments in UHV projects, and built smart grid demonstration zones at all levels, so as to serve the high-quality development of the five provinces in southern China with safe, reliable, green and efficient smart grids.

Investment in power grids (Unit: RMB billion)

	2015	2016	2017	2018
500 kV and above	17.8	13.9	14	12.4
220 kV	15.4	13.6	10.4	10.2
110 kV and below	34.2	50	57.3	64.8

-  The Luxi Back-to-Back HVDC Project won the gold award of National Quality Project Award
-  The "±800 kV UHVDC Demonstration Project (Yunnan-Guangdong)" won the China Grand Awards for Industry.
-  The ±500 kV Power Converter Station Project won the China Construction Engineering Luban Prize

7 projects won the "2017-2018 National Quality Project Award"

10 projects won the 2018 China Electric Power Quality Engineering Award










The first multi-terminal hybrid UHVDC demonstration project in the world

In May 2018, the Company started construction of the multi-terminal UHVDC demonstration project (hereafter referred to as the "Kunbei-Liubei-Longmen UHVDC transmission project") transmitting power from Wudongde Power Station to Guangdong and Guangxi. With the ±800 kV three-end DC transmission technology and a total length of 1,489 km, the Kunbei-Liubei-Longmen UHVDC transmission project will set many records in the world once it is completed. It will be the world's largest multi-terminal UHVDC transmission project, the first multi-terminal hybrid UHVDC project and the first UHVDC flexible converter station project. It will be a milestone in promoting a shift in energy development, ensuring energy security and fuelling economic and social development in southern China.

Building smart grids



- We released reports on smart grid planning, accelerated the construction of key smart grid projects at the provincial-level as well as 20 smart grid demonstration zones, and developed the smart grid in a comprehensive way that allows it to play a "demonstration and leading role".
- We held the first CSG Boao Smart Grid Development Forum, laying a foundation for cooperation in smart grid planning and construction, equipment manufacturing, and technology research and development.
- We carried out the key tasks in the Special Plan for Further Integration of Artificial Intelligence and Business Development, and strengthened the integration and application of cutting-edge technologies such as cloud computing, big data, Internet of Things, mobile internet and artificial intelligence to support the smart grid development.

 <p>Guangdong Power Grid Co. Ltd.</p>	<p>According to local circumstances, the company built three forms of smart grid demonstration zones for urban area, rural area and islands.</p>	 <p>Guizhou Power Grid Co. Ltd.</p>	<p>The company comprehensively promoted digital and smart grid development based on the mode of "1+3+N".</p>
 <p>Guangxi Power Grid Co. Ltd.</p>	<p>The company promoted smart grids after pilot projects in certain areas, with a focus on securing the border, poverty alleviation by electricity provision and building grids in rural areas.</p>	 <p>Hainan Power Grid Co. Ltd.</p>	<p>The company helped build an exemplary provincial smart grid.</p>
 <p>Yunnan Power Grid Co. Ltd.</p>	<p>To build a smart grid with local characteristics, the company laid a solid foundation, set a good example and promoted transformation with its own characteristics..</p>	 <p>Guangzhou Power Supply Bureau</p>	<p>The company promoted smart grid development based on the "1+4" mode and set up several smart grid demonstration zones such as Guangzhou Knowledge City and Mingzhu Industrial Park.</p>
		 <p>Shenzhen Power Supply Bureau</p>	<p>The company realized "four full coverages" and built several smart grid demonstration zones such as South High-tech Industry Park in Nanshan District and Qianhai Shekou Free Trade Area.</p>



500KV Shexiang substation of Guizhou Power Grid Co. Ltd.

Technological Innovation

Giving impetus to innovation in building a world-class enterprise

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 7.5 Expand infrastructure and upgrade technology for supplying modern and sustainable energy services</p>	<p>Disclosure 203-2 Significant indirect economic impacts</p>	<p>Optimize the management system for technological innovation</p> <p>Accelerate building the base and platform for mass entrepreneurship and innovation</p> <p>Promote application of research achievements</p>

At a new starting point, CSG has carried out the national strategy of innovation-driven development. We have improved the innovation system, strengthened scientific and technological research, created a culture of innovation, and promoted the further integration of "cloud computing, big data, Internet of things, mobile Internet and artificial intelligence" into the energy sector, so as to give impetus to innovation in building an internationally competitive world-class enterprise and contribute CSG's wisdom and innovation to building a moderately prosperous society in all respects.

Laying a solid foundation for innovation

The Company has optimized the technological innovation management system, increased investments in scientific research and incentives for technological innovation, and sought, cultivated and gathered talents in innovations practices, thus facilitating continuous innovation.

Technological investment in 2018 RMB **8.50** billion

Investment in S&T projects in 2018 RMB **2.21** billion

Supporting employee innovation

The Company accelerates the construction of "entrepreneurship and innovation" bases and platforms, aiming to create a good atmosphere for on-the-job entrepreneurship and innovation, fully stimulate the innovation vitality and creative potential of the whole staff and grasp the initiative of innovation-driven development in the new round of industrial revolution.

Investment in on-the-job entrepreneurship projects in 2018 RMB **144** billion

Number of on-the-job entrepreneurship projects supported by CSG in 2018 **2,890**

The project achievements of "Key Technologies, System Development and Application of Complex Power Grid Autonomous-Synergetic Automatic Voltage Control" won the **first prize of National Award for Science and Technology Progress**.

The project of "Control Methods Suitable for Dynamic Reactive Power Compensation Device for Multi-Infeed DC Transmission" won the **silver prize of the Wipo-Sipo Award**.

Li Licheng, Academician of the Chinese Academy of Engineering and Chairman of CSG Expert Committee, was honored as one of the **top ten figures in scientific and technological innovation in China in 2018**.

The chief technical expert Rao Hong of CSG won the **IEEE PES Uno Lamm High Voltage Direct Current Award**.

Note: IEEE PES Uno Lamm High Voltage Direct Current (HVDC) Award represents the highest honor in the field. The winners are leading experts who have made important contributions to DC transmission technologies in the world. It is the first time for CSG to win this award.

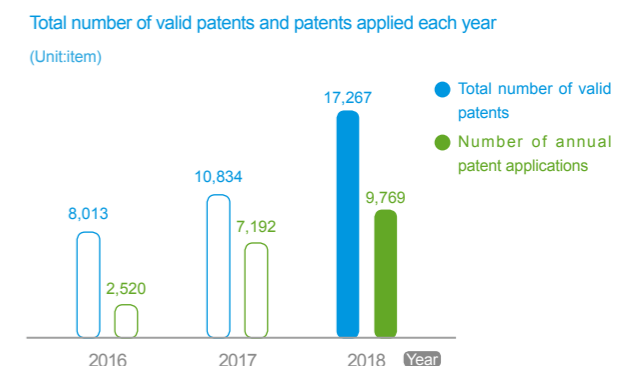


A new generation of UAV helps to improve the working efficiency of Guangxi Power Grid Co. Ltd.

Promoting the application of research achievements

The Company improved the application and transformation of research results, and explored effective ways to integrate innovation achievement in business development. CSG has applied cutting-edge technologies such as cloud computing, big data, Internet of Things, mobile Internet, and artificial intelligence in production and operation, and made efforts to build itself into a digital and smart grid company.

- We issued the guidelines on new technology application, and opened up green channels for new technology application to promote the upgrading of technologies and equipment.
- We established Guangdong Southern Energy and Technology Incubator Co., Ltd. and Shenzhen Power Grid Energy Technology Co., Ltd. to provide platforms for turning technological achievements into marketable products and promoting the industrial applications of these achievements at a faster pace.



Promoting the transition of the power grid towards "intelligent equipment and smart operation"

On May 11, 2018, CSG issued a plan for the application of intelligent technology in the field of production, which comprehensively analyzed the new generation of intelligent technology industry, and set down the application goals and directions for intelligent technology. Guangdong and Hainan pioneered in the full application of intelligent technology. We have carried out a number of pilot applications of intelligent technology in production field with noticeable effects. In future, the Company will continue to expand and deepen the integration of intelligent technology and power technology, promote the intelligent operation of all our equipment step by step, and provide the targeted services for customers, so as to promote the transformation and upgrading of the Company with "intelligent equipment and smart operation".



The infrared temperature measurement of 110 KV GIS equipment by rail lifting robot of Shenzhen Power Supply Bureau



Environmental Protection



Answering the call of the era

We should enhance system building to promote ecological progress and implement the strictest possible system for environmental protection. We should step up efforts to promote ecological progress, uphold the philosophy that "lucid waters and lush mountains are invaluable assets", develop eco-friendly growth models and ways of life, make our country more beautiful and ensure that the people live in an environment with blue sky, green mountains, and clear waters.

An excerpt from President Xi Jinping's speech on the 40th anniversary of reform and opening up

We should actively respond to people's needs and expectations, make great efforts to promote ecological progress and provide more quality ecological products to keep up with people's ever-growing needs for a better environment.

An excerpt from *Promoting New Progress in China's Ecological Development*, written by President Xi Jinping



CSG in action

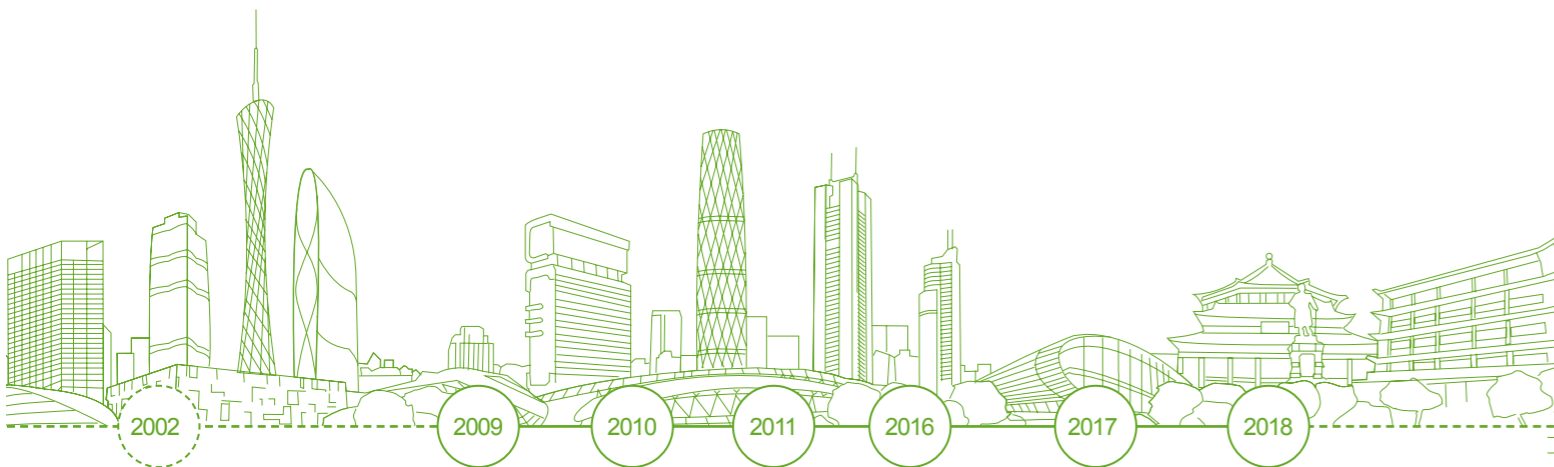
CSG has built and operated a smart grid that is safe, reliable, green and efficient, on the basis of which it proceeds to build, improve and make innovations in a variety of open platforms.

Based on the operation of the smart grid, CSG integrated upstream new energy and distributed energy and downstream smart energy utilization and demand-side management, promoted multi-grid integration and adopted a balanced energy mix.





Embarking on the journey of reform, we have made enormous strides in the new era



Promoting clean energy development

2009 The Yunnan-Guangdong UHVDC transmission demonstration project was put into production.

2010 We took the lead in energy conservation and power generation dispatching.

2011 We realized full utilization of solar power and basically completed full utilization of wind power.

2016 We innovatively provide the power transmission for Guangdong by replacing thermal power from Guizhou with the hydropower from Yunnan and promoted market-based clean energy utilization.

2017 The Northwest Yunnan-Guangdong UHVDC Power Transmission Project was completed ahead of schedule and put into operation.

Leading a green lifestyle

2010 Based on China Southern Power Grid Integrated Energy Co., Ltd., we provided integrated energy services.

2018 GSG started to transform itself into an energy service provider and further promoted the replacement of fossil energy with green energy.

Key topic management in 2018



Key topics

- Consuming clean energy
- Building a green power grid
- Promoting energy consumption revolution



Major action plans

- We took special actions to promote clean energy utilization and expanded the market for clean energy utilization.
- We improved grid construction and utilization of various resources.
- We further implemented the energy substitution strategy.



Key performance

Non-fossil energy power generation

51.5 %

Power transported from the west to the east

217.5 TWh

Comprehensive line loss rate of the entire power grid



6.31 %

Electric power substitution

22.4 TWh

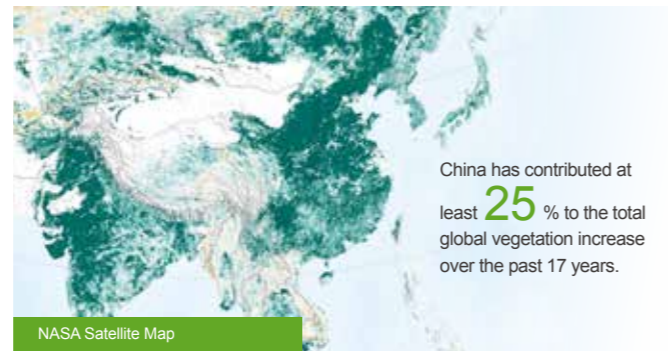
Winning the Battle against Pollution

Winning the battle against pollution

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 Target 7.2 Increase substantially the share of renewable energy in the global energy mix  Target 12.2 Achieve the sustainable management and efficient use of natural resources	Disclosure 302-3 Energy intensity Disclosure 305-5 Reduction of GHG emissions	Consuming clean energy Building the West-to-East power transmission channel Promoting energy consumption revolution

Warm and cold, we share together

Climate change is a severe challenge for mankind in the 21st century. The United Nations has listed "Climate Action" as one of the 17 Sustainable Development Goals, and the Paris Agreement sets the goal of keeping the increase in global average temperature to well below 2°C. At the beginning of 2019, the satellite imagery released by the NASA showed that the earth was getting more and more "green" thanks to the efforts of all countries, and China has become the main force to make it happen.



Lucid waters and lush mountains are invaluable assets

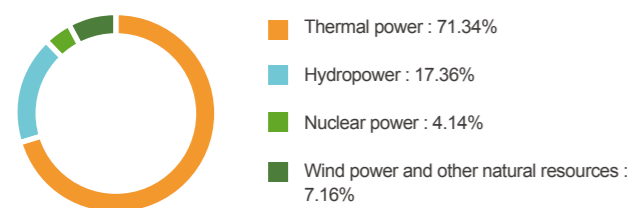
Since the 18th CPC National Congress, the Chinese government has attached great importance to the ecological progress. To protect the lucid waters and lush mountains, China has carried out a series of fundamental, groundbreaking and long-term work. The philosophy underlying ecological progress has been deeply rooted in people's hearts and new achievements have been made. China's clean energy investment has ranked No.1 in the world for many years. China's forest cover has increased from 16.6% at the beginning of this century to about 22%.

Installed capacity of non-fossil power generation in China in 2018

770 GW

National power generation structure in 2018

Unit: %



Power development in transformation

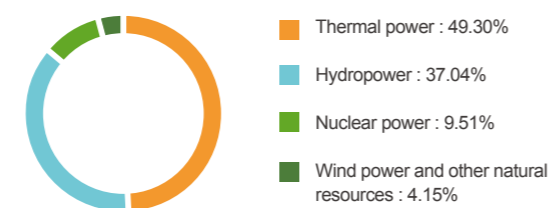
China's power industry is getting more environmentally friendly with improving power generation energy mix and declining installed coal power capacity. Solar power, wind power and hydropower have contributed to green development of the power industry. We are taking gradual steps to build a clean, low-carbon, safe, and efficient energy system, as changes take place in energy production and consumption. *In 2018, the hydropower generating capacity by the unified dispatching of CSG was 376.6 TWh.

Installed capacity of non-fossil power generation in CSG's service area in 2018

170 GW

CSG's regional power generation structure in 2018

Unit: %



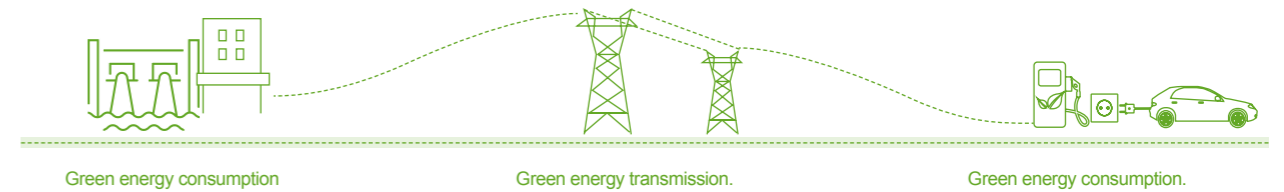
*Sources: • Promoting New Progress in China's Ecological Development written by Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee, Chinese President and Chairman of the Central Military Commission
 • 2018 Annual Report on the Development of China's Electric Power Industry

Environmental issues are a major concern for the public, and are decisive to Chinese people's judgment of the success of building a moderately prosperous society in all respects. This is a battle we must win.

Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee, Chinese President and Chairman of the Central Military Commission

Protecting the blue sky

CSG actively implements the national requirements for energy conservation and emission reduction, and gives full play to its guiding role of upstream and downstream in the industrial chain, so as to promote the construction of green power grid and foster high-quality green development of society. In 2018, CSG's energy consumption of electricity generated and received was 142.2 grams of standard coal per kWh, and the comprehensive energy consumption per RMB 10,000 of output value stood at 0.146 tons of standard coal, improving "upstream and downstream" performance of energy conservation and emission reduction, equivalent to reducing 49.34 million tons of standard coal consumption and 131.24 million tons of CO₂ emission.



We built the West-to-East power transmission channel, set up the power market trading platform, and increased the proportions of clean energy and new energy in our energy mix.

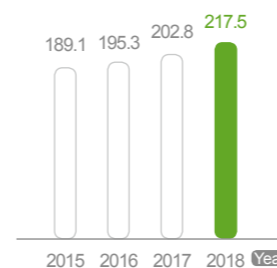
We embrace the idea of green development throughout the process of grid construction and power transmission, promoting eco-friendly grid construction and increasing efficiency of power transmission.

We promoted the energy consumption revolution and established an integrated energy service platform, striving to accelerate the industry transformation and upgrading and improve the energy consumption structure in the five provinces in southern China.



"Upstream and downstream" performance of energy conservation and emission reductions promoted by CSG

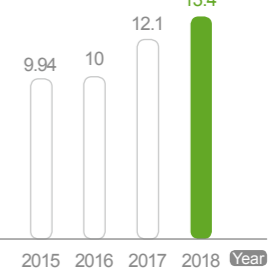
Power transmitted from the west to east
Unit: TWh



The comprehensive line loss rate
Unit: %



Demand-side energy conservation and emission reduction promoted by CSG
Unit: 100 GWh



Developing New Energy

Adjusting and improving the energy mix

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 7.2 Increase substantially the share of renewable energy in the global energy mix</p>	<p>Disclosure 308-2 Negative environmental impacts in the supply chain and actions taken</p>	<p>Promoting the utilization of such new energy as wind power, solar power and biomass power</p>

We strongly supported the development of new energy in a healthy and orderly way and helped expand the installed capacity of new energy. In 2018, the installed capacity of wind power, solar power and biomass power within the region stood at 19.29 GW, 10.85GW, and 2.51 GW, respectively, making a positive contribution to the effective reduction of greenhouse gas emissions.

Stepping up support

We accelerated the research on new energy technologies to ensure safe new energy power generation and grid-connection. We developed new energy technologies, encouraged new product development, and conducted researches on new energy power generation business such as biomass power. The annual power generation from new energy such as wind power, solar power and biomass power increased by more than 20% year on year. In 2018, the capacity of grid-connected wind power, photovoltaic power and other new energy sources reached 7 GW.

Building a demonstration base

We built a base for the application of multiple types of new energy such as offshore wind power, solar power, energy storage, and ocean energy, etc., as well as for research, test and demonstration of advanced equipment technologies in our power supply service area. In 2018, Smart Micro-Grid Project in Nansha, Guangzhou, a National New Energy Micro-Grid Demonstration Project were put into operation.

Smart Micro-Grid Project in Nansha put into production to explore better power supply with low-carbon clean energy

The high-reliability smart and low-carbon micro-grid project of Guangzhou Power Supply Bureau focuses on PV power generation. Part of the power has been connected to the major power grid, and the rest is for charging and storage in the micro-grid so as to achieve low-carbon and clean energy supply. The energy storage equipment achieved cascade utilization of used power battery of electric vehicles, improving resource utilization efficiency and reducing environmental pollution caused by waste batteries.



National new energy microgrid demonstration project-- Nansha Intelligent Microgrid Project in Guangzhou

Developing Green Grids

Delivering clean power in an efficient and eco-friendly way

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 6.3 Reduce pollution, substantially increase global waste recycling and safe reuse</p>	<p>Disclosure 303-3 Water recycled and reused</p> <p>Disclosure 304-3 Habitats protected or restored</p>	<p>Comprehensively reducing line loss in operation</p> <p>Sharing pylons by improving the utilization rate of pylons</p>
 <p>Target 12.2 Achieve the sustainable management and efficient use of natural resources</p>		

Building green grids

Implementing the concept of green development, CSG actively promotes the construction of green power grid and pays attention to the protection of biodiversity in the construction process, striving to reduce the impact of power grid construction on the natural environment and community.

Green construction

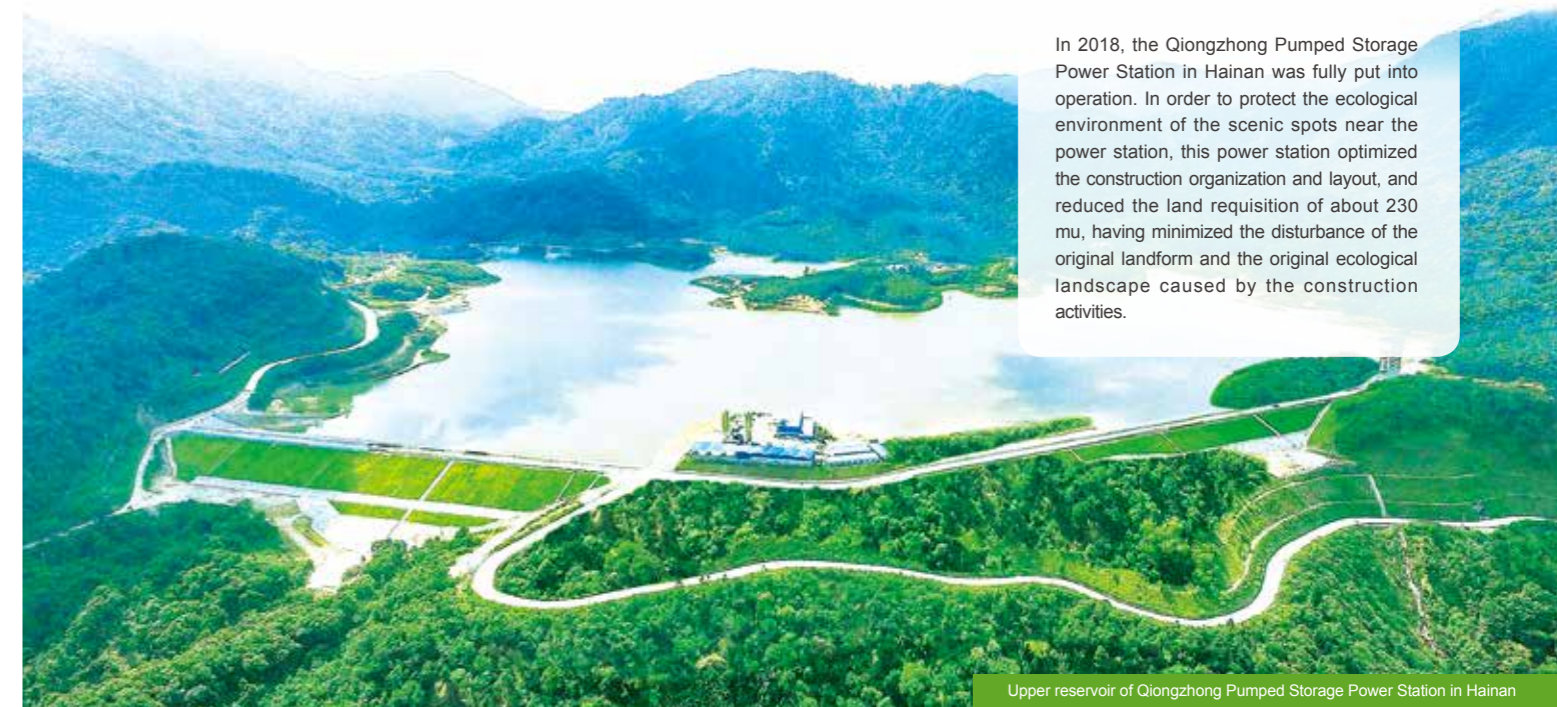
In the past year, infrastructure designs were 100% green and reached the Level 1 or higher, and the EIA approval rate for new projects and ecological restoration rate after grid construction reached 100% as well.



Building green substations

We fully incorporated the idea of environmental protection into the process of substation construction in an effort to harmonize the project with the environment.

- We incorporated green lighting into the design of standard substations, and gradually carried out green lighting transformation for the existing substations.
- We built our first open substation with a semi-underground structure - 220 KV Daitian substation of Shenzhen Power Supply Bureau, which promoted intensive land use, pull down enclosures and conducted the three-dimensional landscaping, thus making the substation in harmony with its surrounding environment.



In 2018, the Qiongzong Pumped Storage Power Station in Hainan was fully put into operation. In order to protect the ecological environment of the scenic spots near the power station, this power station optimized the construction organization and layout, and reduced the land requisition of about 230 mu, having minimized the disturbance of the original landform and the original ecological landscape caused by the construction activities.

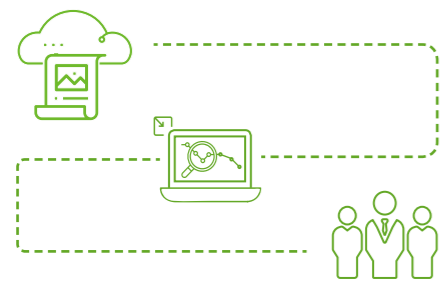
Upper reservoir of Qiongzong Pumped Storage Power Station in Hainan

Promoting Green Operation

The Company has reduced energy consumption in operation, improved resource utilization, and strived to reduce the impacts of operation on the environment.

Reducing line loss

We improved the line loss management process, carried out detailed line loss data management, and enhanced intelligent analysis to reduce line loss from all aspects in operation. In 2018, the comprehensive line loss rate was 6.31%.



- We compiled the implementation plan of the simultaneous management of the comprehensive line loss index, and completed the functional development and establishment of the simultaneous statistical system for the comprehensive line loss rate within the CSG network, with which we realize the automatic acquisition of electricity data from metrology automation system and the statistics of line loss rate in the same period. We have devoted great efforts to promoting the application of the system within CSG.
- The application of analysis on the line loss in the same period promotes the improvement of basic file management and data quality, and improves the lean management of line loss.

Improving resource utilization

We recycled waste gas, waste water and solid waste to continuously improve resource utilization and reduce the impacts of grid operation on the environment.

- Disposal of solid waste
We disposed solid waste produced in infrastructure construction on the basis of the 3R principle (reuse, reduce and recycle)
- Recycling of waste gas
We improved our ability and performance in the treatment of major gas pollutants, and the recycling rate of sulfur hexafluoride reached 100%.
- Discharge reduction of waste water
We recycled wastewater and achieved zero consumption of cooling water outside the converter valves of some converter stations.
- Sharing the pylons
We cooperated with China Tower to promote pylon sharing, so as to achieve the reuse and comprehensive utilization of pylon resources.

Promoting green office

We strengthened green office management, created a green office environment, and encouraged employees to promote energy conservation and emission reduction in their daily work.

- Online bidding
The entire bidding process has gone online with no hardcopy documents or offline bids involved.
- Green travel
We included electric vehicles into the scope of internal procurement so as to promote the use of electric vehicles in engineering projects and public affairs.



Giving Impetus to Green Consumption

Transforming into an energy industry value chain coordinator and an energy ecosystem service provider

Contributing to SDGs



Target 7.2 Increase substantially the share of renewable energy in the global energy mix



Target 11.6 Reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management

Core indicators of GRI Standards

Disclosure 302-4 Reduction of energy consumption

Disclosure 302-5 Reductions in energy requirements of products and services

New era, new changes

We accelerated the integration of upstream and downstream resources, and built our capacity for resource allocation, we achieved value maximization in integrating the supply-side and the demand-side, as well as technology and market

Establishing an integrated energy system

Taking advantage of its brand, technologies and customer resources, CSG keeps up with the trends of energy technology development and customers' energy use to meet their diversified energy needs.

New system



We built a new balanced system for integrated utilization of multiple types of energy. We vigorously developed comprehensive energy utilization projects such as distributed energy, biomass power generation, and reuse of waste heat and residual gas, so as to build an integrated energy supply system with electricity at the core.

Energy saved on the demand side

694 MW

New services



We offered new integrated energy services featuring "Internet+". Based on new technologies such as the IoT and big data as well as online platforms, we aimed to become an energy supplier featuring extensive IT applications and realize real-time awareness and information feedback of the energy Internet.

New model



We developed a new energy consumption model with electricity as the core. By promoting electric power substitution, we increased the proportion of electricity in terminal energy consumption, and improved the electrification and efficiency on the demand side.

New products



We developed new integrated energy service products with a focus on modern energy storage, big data of integrated energy, carbon assets and financial services.



From north and south, driving electric cars to Beijing

Guangzhou Power Supply Bureau and State Grid Electric Vehicle Company held an event with the theme of "Green Driving Guaranteed by Power Grids". During the event, the participants drove electric vehicles from Guangzhou to Beijing with the support of interconnected charging facilities, through which the drivers experienced the convenience brought by electric vehicles. Promoting the use of electric vehicles was a key part for broadening consumption channels of clean energy, and also an important practice in developing the new energy consumption model and new services integrated energy featuring "Internet +". The company cooperated with the State Grid Corporation of China to build an interconnected charging network, providing a strong charging guarantee for the travel from south to north.



"Green Driving Guaranteed by Power Grids" Guangzhou-Beijing trip for interconnection of electric vehicle charging facilities in 2018

Providing integrated energy services

CSG endeavors to meet diversified needs of customers in energy production and consumption, by providing multiple comprehensive energy services, reducing the cost of energy use, and improving the comprehensive energy efficiency, which also promotes energy conservation and emission reduction for the society. In 2018, we completed electric power substitution of 22.4 TWh.



The first inland-river shore power project in Guangdong province was put into operation in Zhaoqing city.



Electromagnetic kitchen publicity activities



"Internet +" smart energy utilization comprehensive demonstration community



Charging piles for artificial island of Hong Kong-Zhuhai-Macao Bridge

Industry

- We developed new business models such as energy-saving and value-added services and invested in energy stations in the industrial field so as to provide industrial customers with integrated energy services.
- We achieved full coverage and energy saving transformation of shore power facilities in ports. In 2018, we completed a number of port power projects in Guangdong and Hainan province to support the green development of shipping industry.

Food

- We implemented the electromagnetic kitchen renovation projects in the staff canteens within the Company.
- We actively promoted electromagnetic kitchen, providing safe, eco-friendly, and energy-efficient kitchen renovation solutions for enterprises in related industries.

Living

- We built modern smart communities based on shared cables, and provided the users with smart electricity services such as the automatic meter reading system for water, electricity and gas use, as well as smart home, distributed energy, and charging facilities.
- We promoted deep integration of power, information and business, and made accurate analyses of the power demands so as to provide users with household energy-saving solutions.

Travel

- We built an intelligent charging service platform and a charging operation management system for electric vehicles, and invested in six charging service platforms including "Duduchong", "Yueyichong", "Caiyunchong", "Electric Guizhou", "Yangchengchong" and "Xiaonanchong". With these efforts, we have realized data interconnection and the services in five provinces.
- We built an inter-city charging network in the Pearl River Delta, a charging network around Hainan Island, and a charging network along the expressway connecting Beijing with the Pearl River Delta, giving impetus to green transport.

Advocating the idea of green consumption

CSG advocates the idea of green consumption, encourages green ways of working and living, and develops energy-saving services such as industrial energy conservation, energy management contracting, energy efficiency management, energy conservation consulting, etc., so as to provide customers with comprehensive energy conservation solutions and help them save energy.

New charging piles in 2018
9,605

New charging stations in 2018
374

Energy saving services

We invested in energy station projects and adopted the mode of energy management contracting to provide advanced integrated energy supply services in China and create economic and environmental benefits for customers.

Comprehensive power utilization

We improved the comprehensive utilization of energy and increased the added value generated by carrying out projects of co-generation, integrated cooling and gas supply.

Distributed energy

We carried out several distributed energy projects, and promoted power generation from solar power and natural gas to reduce and replace fossil energy consumption.

Total energy conservation service projects in 2018
834

Enterprises received free energy conservation advice provided by CSG in 2018
412

The Nandudu energy conservation service website promoted energy conservation transactions of RMB **5.3** billion in 2018 and developed an "online energy-saving industrial cluster".



Operating Efficiency



Answering the call of the era

We must follow the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and the underlying principles of the 19th CPC National Congress, build up our full confidence in the path, theory, system, and culture of socialism with Chinese characteristics and follow the right direction of reform and opening-up.

An excerpt from President Xi Jinping's speech on the 40th anniversary of reform and opening up

We work consistently to make SOEs into leaner, better performers, increase the core competitiveness of their main business, and support state capital in becoming stronger, doing better, and growing bigger. Our SOEs should, through reform and innovation, become front-runners in pursuing high-quality development.

An Excerpt from *Report on the Work of the Government in 2018*



CSG in action

Taking supply-side structural reforms as its main task, CSG had a firm grasp of the policy requirements of "consolidating the existing results, strengthening the momentum of development, improving the level of the industrial chain and smoothing the cycle of the national economy" and adhered to market-based reforms and high-level opening-up.

To resolutely implement the major decisions and policies of the CPC Central Committee, CSG coordinated the tasks of ensuring security, stabilizing growth, advancing reform, adjusting structure, promoting transformation, increasing vitality, and strengthening Party building.



Operating Efficiency

7 AFFORDABLE AND CLEAN ENERGY



8 DECENT WORK AND ECONOMIC GROWTH



16 PEACE, JUSTICE AND STRONG INSTITUTIONS

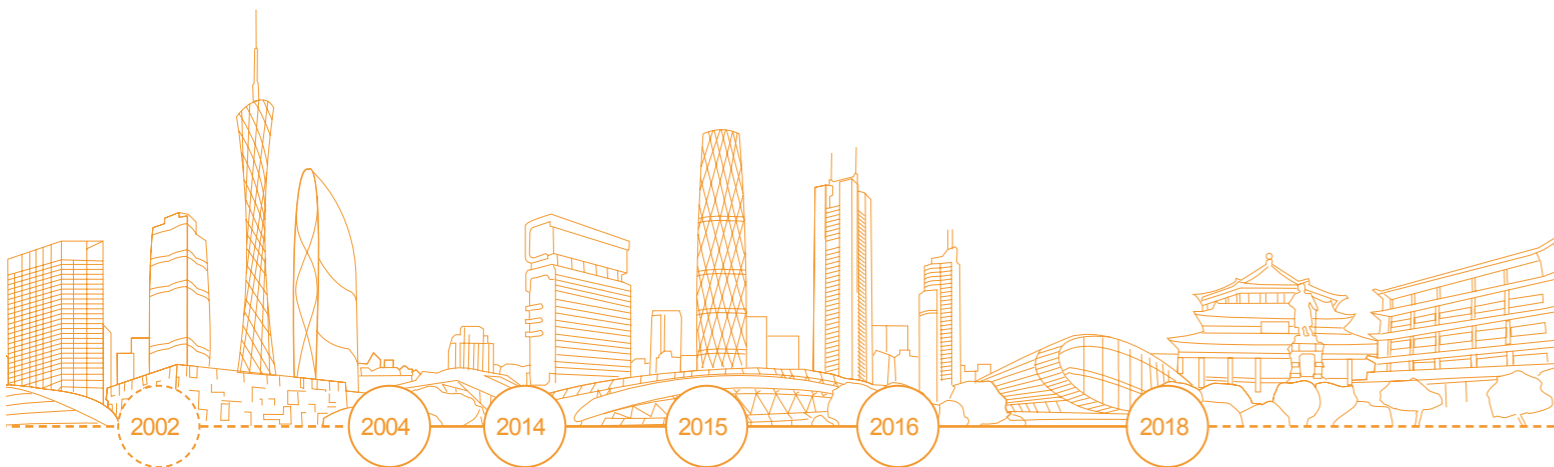


17 PARTNERSHIPS FOR THE GOALS





Embarking on the journey of reform, we have made enormous strides in the new era



We deepened power reform

2004 We took the lead in carrying out the power transmission and distribution pricing reform in Shenzhen.

2014 Qianhai & Shekou Power Supply Co., Ltd. was established.

2015 Guangzhou Power Trading Center was established

2016 We took the lead in launching trial operation of the power spot market in Guangdong.

2018 Guangdong frequency regulation auxiliary service market began its formal settlement and operation

We expanded international business

2004 As the first China-Vietnam power grid of 110 kV from Hekou County of Yunnan Province to Lao Cai in Vietnam was put into operation, CSG became China's first power grid enterprise that "went global".

2018 Vietnam Vinh Tan Power Plant and Nam Tha Hydropower Station in Laos were put into operation, connecting to the state grids of Lancang-Mekong countries - through 12-circuit line of 110 kV and above.

With high-quality development

CSG has been rated Class A in the Assessment of Business Performance by the SASAC for 12 consecutive years

Key topic management in 2018



Key topics

- Forecasting and defusing major risks
- Integrating the value chain of the energy industry
- Deepening reform
- Promoting international exchanges and cooperation



Major action plans


- We took 20 measures to prevent financial risks and created a negative list of financial business.
- We vigorously promoted the "SOE and Central SOE Reform Action" to select top 100 central SOE subsidiaries and top 100 local mainstay SOEs under the leadership of the SASAC, and steadily advanced the reform of the power system.
- We promoted digitalization, platformization and globalization, integrated the industrial chain, and expanded the ecological circle.
- We accelerated the acquisition of overseas assets and promoted exchanges with neighboring countries



Key performance

Overall asset ratio	Cost of electricity for customers reduced by lowering the price of electricity
60.4 %	RMB 22.3 billion
Overseas assets	Income from emerging, financial and international businesses
RMB 43.9 billion	RMB 31.47 billion

Preventing and Resolving Major Risks

Preventing and resolving major risks		
Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation</p>	<p>Disclosure 102-15 Key impacts, risks, and opportunities</p> <p>Disclosure 201-1 Direct economic value generated and distributed</p>	<p>Launching work program of streamlining and improving quality and efficiency</p> <p>Conducting comprehensive financial risk investigations</p>

CSG took its responsibility as a national backbone enterprise by implementing the strategic decisions of the CPC Central Committee and the State Council on forestalling and defusing major risks, fully engaging itself in forestalling and defusing major risks, adhering to proactive prevention and systematic response, reducing asset-liability ratio, and preventing operational risks to build itself a world-class enterprise with global competitiveness through high-quality development.

Overcoming difficulties to lay a solid foundation

CSG took steady measures to forestall and defuse major risks, improved resource allocation, and properly arranged investment and cost to boost high-quality development.

Strengthening the top-level design

We launched the "1+8" plan to make the organization lean, efficient and highly productive, and strengthened a series of targeted measures to forestall and defuse major risks.



Focusing on deleveraging and debt reduction

We carried out multi-version and multi-program estimates and analyses to work out a clear asset-liability ratio management plan for the period from 2018 to 2020.

Tapping internal potential to revitalize the additional financial resources

We refined the cash flow management, continued to improve the financing structure, controlled the financing costs, and kept advancing the eight special actions for laying the foundation to gain long-term benefits.

Conducting full-coverage investigation into financial risks

We conducted comprehensive financial risk investigations, developed a clear list of negative restrictions on financial business so as to guard against financial debt risks and capital security incidents.

Expanding industrial financial business

We actively explored new investment areas, strategically invested in Yingda International Trust Co., LTD., Bank of Guangzhou, China Guodian Capital Holdings Ltd. and National Nuclear Capital Holding Company, etc., and conducted low-risk businesses in secondary markets such as financial leasing, securities lending and new share subscription.

Financial leasing contracts completed by CSG in 2018

over RMB **12.3** billion

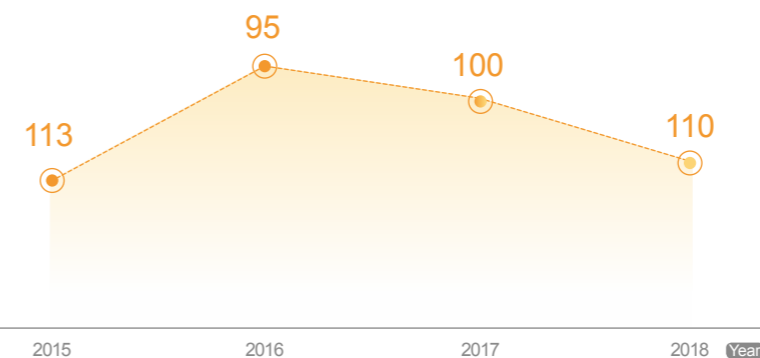
We must always be highly vigilant for both the "Black Swan" incidents and the "Gray Rhino" incidents. We should take preventive measures and develop effective strategies to deal with and defuse risks. We should be ready to prevent and defuse risks, and also take strategic initiative to avoid danger and turn it into opportunity.

Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee, Chinese President and Chairman of the Central Military Commission

Defusing risk to improve quality

Achieving its annual operation targets, CSG has been rated Class-A in the Assessment of Business Performance by the SASAC for 12 consecutive years, ranking 110th among the Fortune Global 500 companies and 293rd among the world's top 500 brands.

Ranking of CSG among the Fortune Global 500 companies over the years



Overall asset-liability ratio in 2018

60.4%

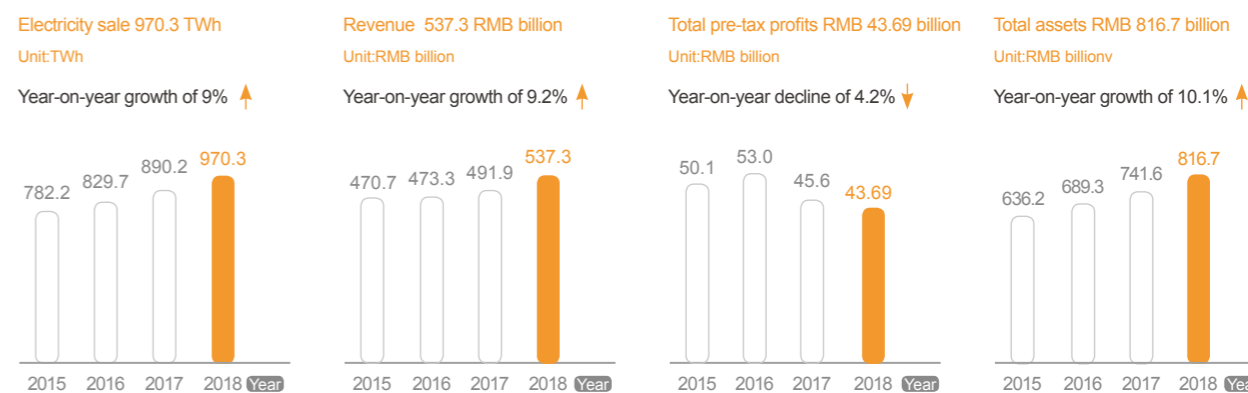
US dollar bonds successfully issued by CSG in 2018

1 billion

Domestic bonds issued by CSG in 2018

RMB **83** billion

Key indicators of CSG's business performance in 2018



Consolidating the Cornerstone of Development

Let the pace of development be firm and down-to-earth

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 16.6 Develop effective, accountable and transparent institutions at all levels</p>	<p>Disclosure 103-2 The management approach and its components</p>	<p>Promoting law popularization to build a law-based central SOE</p> <p>Promoting management innovation for high quality development</p>

Operational compliance

Thoroughly studying and implementing President Xi Jinping's important statements on law-based governance, we enhanced our ability in promoting the rule of law, improved audit environment, and accelerated the building of a well-established, law-abiding, and credible central SOE.



Enhancing the ability of law-based governance

Guided by the Seventh Five-Year Plan of the Publicity Department of CPC Central Committee and the Ministry of Justice on Carrying out Law Promotion and Education Among Citizens, CSG established four major platforms to increase public knowledge of the law via television, Internet, mobile phones, and newspapers, and built characteristic brands for raising public awareness of law, including the Voice of Laws in Guangdong, "Legal Clinic - Legal Service", and Legal Report.

Giving full play to the role of legal review and inspection, CSG managed to achieve a 100% review rate of economic contracts. CSG also strengthened the management of legal cases, and the legal cases which CSG is accountable for decreased by 43.33%, avoiding or recovering economic loss of RMB 870 million.



Improving audit

CSG fully cooperated with the National Audit Office in its special audit and investigation on the 2017 annual balance sheet income statement and the overseas investment and overseas assets management and use, as well as the follow-up audit of the implementation of major national policies in 2018.

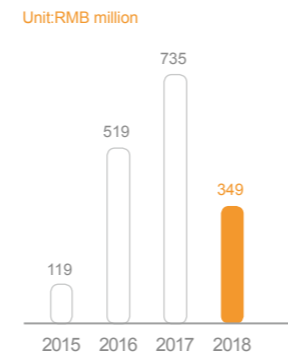
We improved the efficiency of supervision, implemented the full coverage of audits in a sound and orderly manner, and put forward 4,785 audit opinions, increasing our enterprise value by RMB 349 million.



In 2018, training on law popularization had **60,000** participants

Guangxi Power Grid Co., Ltd. promotes law popularization in campuses.

Total amount of increased income and saved expenditure by conducting audits



Management innovation

We actively implemented the new development philosophy, and promoted the reform of system and mechanism through innovation to realize strategic transformation and high-quality development.



Improving mechanism

We formulated management measures for consulting projects and innovation results, including incorporating management innovation results into the scope of incentives, optimizing project evaluation and approval, and standardizing innovation project management.

We tried to stimulate the vitality of management innovation and create an atmosphere of management innovation where the staff is brave, willing and good at innovation.



Creating atmosphere

- Developing a culture of management innovation. We combine top-down and bottom-up management innovation paths to create a good cultural atmosphere for management innovation.
- Carrying out major research projects on management tools. We study the practice of first-class enterprises at home and abroad to support the strategic transformation and high-quality development of the Company.
- Building a platform for innovation exchange. For many years, management forums have been held to provide opportunities for exchange of frontier management research results, and to provide a platform for managers at all levels to fully demonstrate their thinking and research on hot issues of reform and management difficulties.



Using tools

We actively introduced advanced management tools to promote lean management, enhance overall benchmarking management and create a new situation of management.

- Lean improvement. Starting from the system, we continue to deepen the lean management thought and integrate lean management with business, so as to promote business continuous improvement, and create comprehensive value.
- Benchmarking evaluation. We carry out comprehensive benchmarking evaluation, continuously improve the first-class index of each unit, narrow the management gap between eastern and western regions, and promote the universal application of benchmarking management tools, thus effectively enhancing our management capacity.

Effect

Key lean projects implemented **991**

First prize for management innovation achievements at company level **8**

Second prize for management innovation achievements at company level **12**

Deepening Reform in All Respects

Let the pace of development be firm and down-to-earth

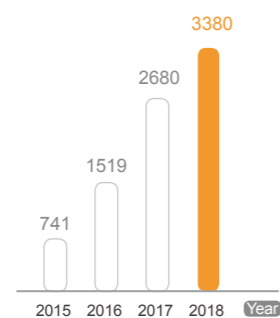
Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
<p>Target 7.1 Ensure universal access to affordable, reliable and modern energy services</p>	<p>Disclosure 203-1 Infrastructure investments and services supported</p>	<p>Establishing power spot market in southern China (Start from Guangdong)</p>
<p>Target 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels</p>		<p>Deeply advancing the reform of Qianhai & Shekou Power Supply Co., Ltd.</p>

Reform of power system

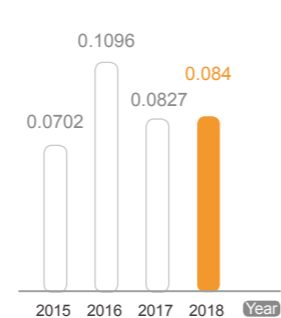
Playing its role as a trailblazer, CSG took the lead in exploring the power transmission and distribution pricing reform, the reform of incremental distribution network, and building of the power spot market, allowing the people to better benefit from the reform and development.

- We resolutely implemented the state policy of "reducing the electricity price for general industrial and commercial businesses by 10% on average", and vigorously took measures such as rectifying the power pricing system and reducing the electricity price for general industrial and commercial businesses. As a result, we reduced the cost of electricity for customers by RMB 22.3 billion in 2018.
- The Hainan Power Exchange Center formally activated, and it provides standardized, reliable, efficient and high-quality power trading services in accordance with the law and regulations, laying a good foundation for the development of power market in Hainan.
- We reviewed the transmission and distribution pricing reform to keep improving the transmission and distribution pricing mechanism.
- We actively cooperated with the incremental power distribution business reform, and competed for pilot project opportunities in a fair and just way. We determined the owners of the first batch of the 20 pilot projects in southern China, and cooperated with local governments to plan for the second and third batches of pilot distribution network.
- We advanced the building of the power spot market in the southern China, and took the lead in launching the pilot operation of the power spot market.

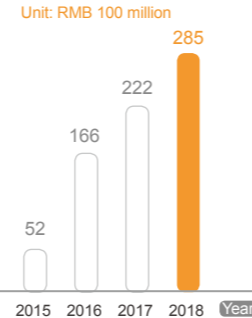
Power transactions within the province
Unit: 100 GWh



Average price reduction for users
Unit: yuan / kWh



Costs reduced for customers by promoting market transactions
Unit: RMB 100 million



Reform of the state-owned enterprises and state capital

Focusing on the requirements of "improving governance, strengthening incentives, highlighting main business, and improving efficiency", CSG has removed institutional obstacles and improved the governance system and management modes.

- Deepening the reform of SOEs**

Shenzhen Power Supply Bureau, China Southern Power Grid Integrated Energy Co., Ltd., and the Guangdong Power Transmission and Transformation Engineering Company were selected by the SASAC as pilot companies for the "SOE and Central SOE Reform".
- Deeply advancing mixed-ownership pilot reform in Qianhai & Shekou Power Supply Company**

We defined the general guidelines and goals of the mixed-ownership pilot reform in Qianhai & Shekou Power Supply Company, worked out 36 measures in five aspects, and coordinated with all parties to complete the asset injection of shareholders, aiming to form a replicable, widely adoptable, and leading "Qianhai model" in respect of mixed-ownership system reform.
- Achievements in streamlining improving quality and efficiency**

We made remarkable achievements in relieving ourselves of the obligation to operate social programs and in solving long-standing problems. We made coordinated efforts to cut the number of legal persons, cancelling 168 legal persons and overfilling the highest requirements of SASAC for 2016-2019 in advance. The functions of water/power/air supply and property management were separated and the signing rate of formal agreements on power supply facilities reached 100%.

Practicing CSG's Corporate Culture Philosophy With the trial operation of the southern power spot market in Guangdong

On August 31, 2018, the southern power spot market in Guangdong was officially put into trial operation. As an important part of price discovery, the power spot market allows electricity to return to its commodity attributes, reflecting the role of time and location in electricity pricing. The operation of the power spot market in Guangdong is expected to give full play to the decisive role of the market in resource allocation and further promote the consumption of clean energy.

- We reached important consensus with relevant parties and market players on key issues such as the model of spot trading, designed a "medium and long-term + spot" centralized market mechanism based on the actual situation in Guangdong, and built a complete market system.
- We assisted the government in completing the preparation of the spot market trading rules and built China's first spot market technical support system with independent intellectual property rights.



“Market awareness is well developed in Guangdong Province. The operating rules of the power spot market managed to use the market mechanisms to reflect prices and gain the largest reform benefits with minimal costs. The pilot reform in Guangdong has set a good example and provided experience for power reform and development in China.”

— Xia Qing, Professor of Tsinghua University




Transformation and Upgrading

Maintaining steady and sustainable development


Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 Target 8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation  Target 17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms	Disclosure 203-1 Extent of development of significant infrastructure investments and services supported; current or expected impacts on communities and local economies Disclosure 413-1 Operations with significant actual and potential negative impacts on local communities	Establishing industrial investment group companies and incubate emerging industries Integrating financial resources to serve the real economy Strengthening cooperation with Lancang-Mekong countries and engaging in the Belt and Road Initiative

Focusing on four major business segments of regulation services, emerging business, international business and financial services, CSG strengthened the support system for shared services to ensure steady and sustainable development in the future. In 2018, CSG's revenues from emerging, financial and international business were RMB 31.47 billion, a year-on-year increase of 26.9%.




Emerging business

We strengthened the integration and development of competitive industries, and adapted to new technologies, new industries, new forms of business, and new models such as cloud computing, big data, Internet of things, mobile Internet, and smart city.



Financial services

We have become a stable, green, intelligent and open industrial chain financial service provider.



International business

We enhanced the synergy between international business and the industry and financial sectors, improved resource allocation and to promote the growth of international business with concerted efforts.



Financial services

Based on the platforms of CSG Finance Co., Ltd. and Dinghe Property Insurance Co., Ltd, CSG continued to expand its financial business and improve qualifications so as to ensure fund security and stable development and provide financial support for building itself a world-class enterprise with global competitiveness.



Integrating financial resources

We established a sound mechanism for sharing of and efficient coordination between industrial and financial resources, and developed a variety of industrial financial business systems including financial companies, insurance companies, insurance brokerage companies, capital holding companies, fund companies and financial leasing companies.



Expanding financial services

We further expanded investment and financing channels and made overall arrangements for financial leasing contracts RMB 12.3 billion. We accelerated the deployment of insurance institutions, and increased the number of secondary companies in non-corporate service areas to eight and provided insurance services for projects of Xiangjiaba Left Bank Power Station, China Guodian Corporation and Shanghai International Port (Group) Co., Ltd.

Emerging business

Through integrating high-quality resources in the value chain and cooperating with upstream and downstream enterprises to build a shared market, CSG strove to transform itself into an integrator of the value chain of the energy industry.

- We set up a branch in CSG Xiongan New Area to grasp the development opportunities at the area, made contributions to the construction of Xiongan New Area and expanded our industrial development.
- We developed the high-end equipment manufacturing industry by focusing on the energy industry value chain, and comprehensively promoted business negotiation and cooperation implementation of shared electricity pylons.
- We promoted the implementation of integrated energy business and electric vehicle service business. The integrated energy demonstration projects in Nansha, Guangzhou and Songshan Lake National High-tech Industrial Development Zone were completed and put into operation, and the construction of the demonstration project in Dapeng New Area of Shenzhen was started.



Promoting the upgrading of industrial parks with integrated energy solutions

In view of the characteristics of concentration of leading enterprises, large energy consumption and diversified needs of load in the Mingzhu Industrial Park of Conghua Economic Development Zone, Guangzhou Power Supply Bureau proposed a package solution covering distributed energy, energy-saving transformation and intelligent dispatching, aiming to provide clean source power for eco-friendly and higher quality development of the Industrial Park. According to the solutions, we provided abundant cooling, heating and electricity resources by means of distributed energy stations with combined cooling, heating and power (CCHP) generating units driven by natural gas in the industrial park. We also introduced measures such as differential pressure power generation, thermal energy cascade utilization, waste heat recovery, and air-conditioning energy-saving renovation, and made tailored energy saving and eco-friendly plans for companies. On this basis, a multi-energy coordinated intelligent dispatching system was established to promote full consumption of clean energy such as photovoltaic power and CCHP driven by natural gas, providing systematic support for corporate energy management. The solutions explored a new approach to achieve win-win operation for enterprises, power plants, users, and integrated energy service providers.

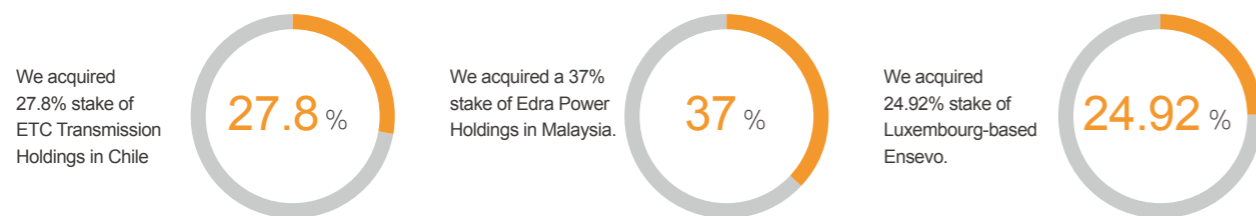


Conghua Pearl Industrial Park in Guangzhou

International business

As our service area is adjacent to Hong Kong and Macao and borders on Vietnam, Laos and Myanmar, CSG has distinctive regional and geographical advantages. CSG actively carries out Xi Jinping Thought on Diplomacy and makes full use of its own advantages to promote power trade, greenfield investment, equity M&A and power grid connectivity in neighboring countries and regions as well as key countries involved in the Belt and Road Initiative. Through extensive consultation, joint contribution and shared benefits, CSG takes solid steps in contributing to the Belt and Road Initiative. In 2018, we put the projects, which were signed witnessed by state leaders of China and the partner country, into operation six months ahead of schedule. We have made great achievements in supporting China's overall diplomatic strategy and enhancing international exchanges and cooperation.

Making a breakthrough in overseas equity M&A



Taking solid steps to carry out the Belt and Road cooperation projects


Through developing quality projects that benefit local people, the Vinh Tan Coal-fired Power Plant Phase I BOT project in Vietnam and the NO.1 Nam Tha Hydropower Station project in Laos were well recognized by local governments and the society, and recommended as the key Belt and Road demonstration project by Chinese Embassy in Vietnam and Chinese Embassy in Laos.

Vietnam



The Vinh Tan Coal-fired Power Plant Phase I BOT project was signed witnessed by state leaders of China and Vietnam. In November 2018, two generation units were put into commercial operation, half a year ahead of schedule. The high quality project paid attention to environmental protection in its construction, which was regarded as a quality and demonstration project benefiting local people by the Vietnamese government. It becomes a demonstration project for power cooperation between China and Vietnam.

Laos



The Nam Tha NO.1 Hydropower Station project in Laos was signed with the witness of state leaders of China and Laos. In October 2018, three generation units were put into production for power generation, half a year ahead of schedule. The project marks another achievement in power cooperation between China and Laos, which will promote local economic development and greatly improve people's livelihood in Laos.



Vinh Tan Coal-Fired Power Plant in Vietnam

To fulfill our social responsibility overseas and implement the principle of pursuing the greater good and shared interests in promoting the Belt and Road Initiative

- We relocated nearly 10,000 inhabitants, thus benefiting local people. During the Nam Tha project construction in Laos, we built 11 resettlement sites and 37 villages for a total of 1,735 households with 9,296 inhabitants, and also relocated nearly 4,000 buildings, public facilities from the 37 former villages, as well as the livestock. As an unprecedented achievement in the history of hydropower station construction in Laos, the resettlement project greatly improved the living standards of the local people and created opportunities for people in the mountainous area to get rid of poverty and become better off, which won the recognition from the local government. In 2018, after a flood hit Attapu, a southern province of Laos where we were building a hydro-power station, we organized donations for the disaster area to help local people rebuild their homes.
- We carried out cultural exchanges to strengthen people-to-people ties and cultivate foreign students from Mekong countries. CSG has tailored a 2016-2025 cultivation program for 110 international students studying in China from Laos, Thailand, Vietnam, Myanmar and Cambodia. Now there are 72 students studying in China. Since 2011, a total of 110 international students from Lancang-Mekong countries have been enrolled in China. We also organize activities regularly and invite students to visit our substations.
- We carried our trainings for technicians in the power industry in neighboring countries. In 2018, CSG held five training classes to provide professional trainings in equipment operation and maintenance for 32 senior technical experts of the Electricity Authority of Cambodia, which was highly praised by the Ministry of Industry, Mining and Energy and the Electricity Authority of Cambodia.
- We prepared vocabulary books of terms in the power industry in multiple languages. CSG has compiled and released the *Technical Terms of Coal-fired Power Plants in Vietnamese, Chinese, and English*, which contained more than 30,000 terms. It could meet the needs for power technology exchanges and project production and operation between China and Vietnam, and solved the language obstacles in communication of professional problems.
- We hired local employees to support local social and economic development. During the project construction, The Vinh Tan Power Plant project in Vietnam hired Vietnamese workers, accounting for 66.1% of the total. The project hired Laotian workers and other foreign workers, accounting for 61.6% of the total. We have raised foreign employees' safety and quality awareness and organized skill trainings, so as to help foreign employees achieve outstanding performance in the industry, deliver tangible benefits for them and seek friendship.

The Vietnamese workers hired by Vinh Tan Power Plant project in Vietnam accounted for **66.1%** of the total in 2018.

Laotian workers and other foreign workers hired by the the Nam Tha project accounted for **61.6%** of the total in 2018.



Graduation ceremony for Laos students in China

Actively promoting international cooperation and exchanges

- Witnessed by Premier Li Keqiang and French Prime Minister Philip, CSG and Electricite De France signed a cooperation statement on Boao Lecheng Smart Grid and Low Carbon Smart Energy Integrated Demonstration Zone Project.
- Making full use of the three summits initiated by CSG, we promoted the exchanges and cooperation between power companies in Guangdong, Hong Kong, and Macao, Lancang-Mekong River countries, as well as China, Japan, and South Korea. Taking the opportunity of "2018 Lancang-Mekong Week" campaign, CSG successfully held the 5th Power Utility Summit and relevant activities.
- Actively supporting China's overall diplomacy, we participated in major international events, conferences and exhibitions including the Boao Forum for Asia 2018, the Beijing Summit of the Forum on China-Africa Cooperation, the 2018 BRICS Business Forum, the Exhibition on Mekong-Lancang Cooperation Outcomes, China-ASEAN Expo, the Belt and Road Energy Ministerial Conference, the First China International Import Expo in Shanghai, the APEC CEO Summit 2018, etc.
- We actively joined international organizations to further promote cooperation. Recently we have become a new member in the Edison Electric Institute (EEI), APEx, and the World Economic Forum, and renewed the Memorandum of Understanding on the cooperation with ERDF and KEPCO.



Social Harmony



Answering the call of the era

We should see that our people will always have a strong sense of fulfillment, happiness, and security, constantly promote the well-rounded human development and common prosperity for everyone.

An excerpt from President Xi Jinping's speech on the 40th anniversary of reform and opening up

We will, in line with economic growth, do more to directly benefit the people, address the difficulties that affect their lives, and ensure that their basic living needs are met. Our aim is to help people feel more satisfied, happier, and more secure.

An excerpt from the *Report on the Work of the Government in 2018*



CSG in action

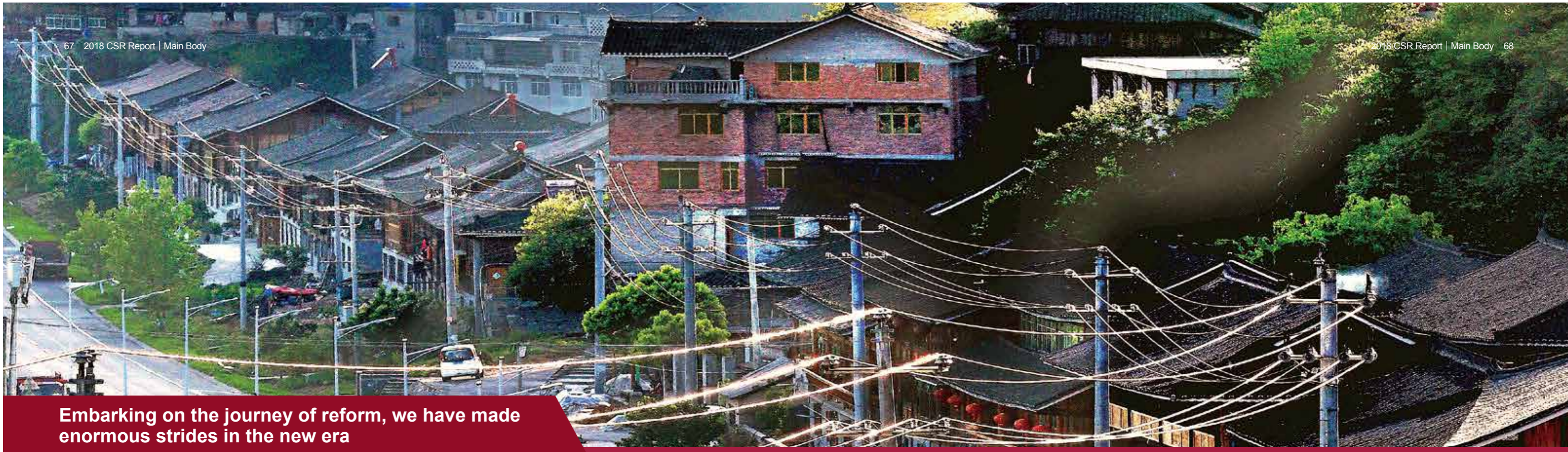
We are fully engaged in the fight against poverty and have made greater efforts to help areas of extreme poverty like the "three regions and three prefectures" and the most vulnerable groups to lift themselves out of poverty.

Sticking to the guideline of relying wholeheartedly on the working class, we have advanced the reform in building the workforce of the industry, fostered the development of employees at a faster pace, and continuously enhanced employees' sense of fulfillment and happiness.

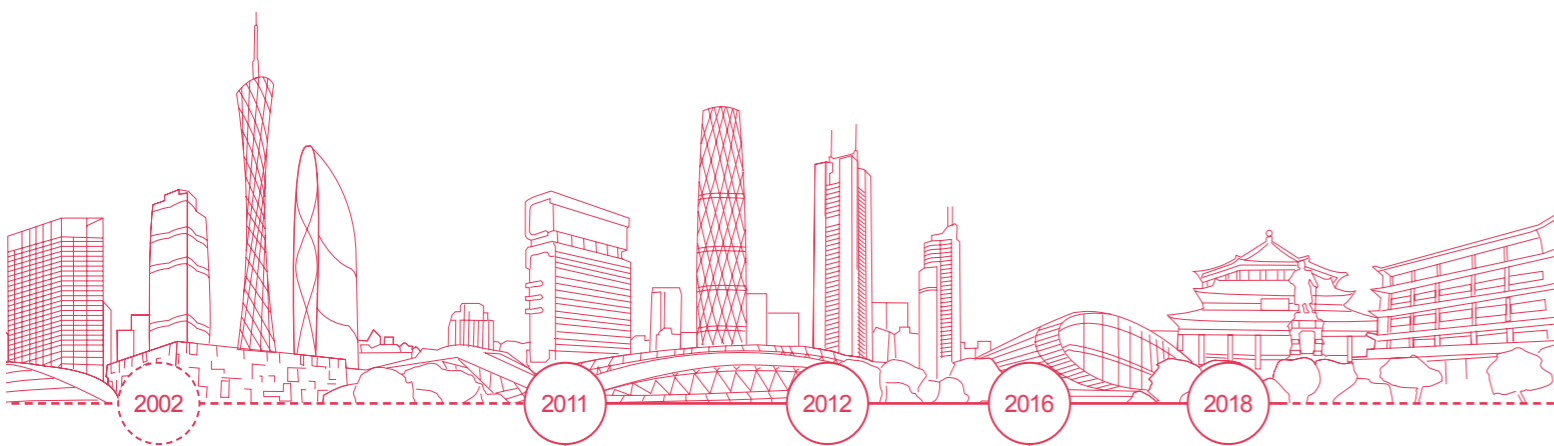


Social Harmony





Embarking on the journey of reform, we have made enormous strides in the new era



Serving the development of agriculture, rural areas and rural people to promote rural revitalization

2011: CSG invested in an independent power grid along the Dulong River to help the ethnic Dulong people step into modern life.

2012: CSG achieved the goal of electricity connection in all households within its service area three years ahead of schedule required by the national plan.

2016: CSG made great efforts to promote targeted poverty alleviation and invested RMB 66.95 million in poverty alleviation in targeted areas.

2018: CSG won the top performers in the targeted poverty alleviation evaluation of central SOEs for two consecutive years.

Helping all Dulong people to get out of poverty.

Key topic management in 2018



Key topics

- Further promoting targeted poverty alleviation
- Building a happy CSG
- Serving the rural revitalization strategy
- Promoting common development



Major action plans

- We implemented a poverty alleviation strategy with a dual focus on power supply and industrial development, and pushed through targeted poverty alleviation in innovative ways.
- We conducted a new round of rural grid transformation to help build a beautiful countryside.
- We accelerated the building of workforce in the new era.
- We carried our transparent procurement and urged suppliers to improve their CSR performance.



Key performance

Impoverished areas that get out of poverty directly helped by CSG

240

Investment in the new round of rural grid transformation

RMB **40.3** billion

Employee training rate


96.5 %

Suppliers certificated by the Occupation Health and Safety Management System (OHSMS)

95.12 %

Winning the Tough Battle of Targeted Poverty Alleviation

Winning the tough battle of targeted poverty alleviation

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 1.1 Eradicate extreme poverty for all people everywhere</p> <p>Target 1.4 Ensure that all men and women, have equal rights to economic resources, as well as access to basic services</p>	<p>Disclosure 413-1 Operations with local community engagement, impact assessments, and development programs</p>	<p>Innovating in targeted poverty alleviation model and path</p> <p>Serving the rural revitalization strategy</p>

Implementing the decisions and policies of the CPC Central Committee, we compiled the *Three-Year Action Plan of CSG for Fighting against Poverty (2018-2020)*, actively explored and innovated in poverty alleviation models and approaches, and fully promoted power industry-specific and pairing poverty alleviation programs, so as to promote targeted poverty alleviation and serve the rural revitalization strategy.

Alleviating poverty in innovative ways

Based on the characteristics of the industry, CSG implements its own targeted poverty alleviation measures and actively explores new ways, contributing CSG wisdom to targeted poverty alleviation.



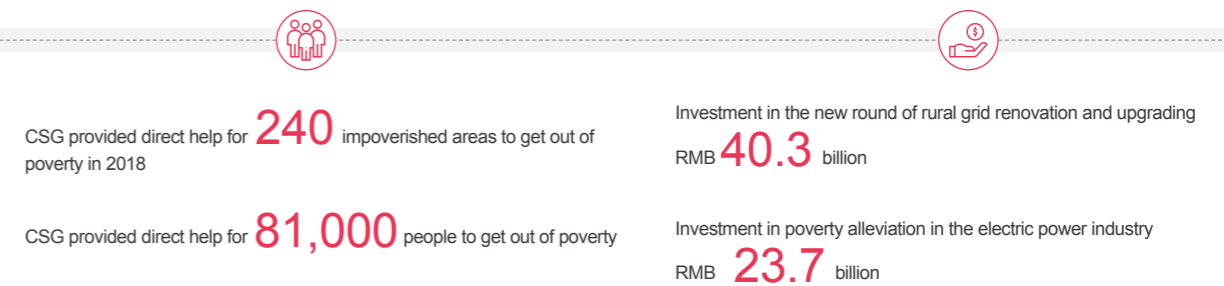
Meng Zhenping, Chairman and Secretary of CSG Party Committee, made a trip to Weixi County in Yunnan to find out what should be done in poverty alleviation.

To win the war against poverty is the primary task to build a moderately prosperous society in all respects. We must integrate development-oriented poverty alleviation, modern agricultural development, growthdevelopment of agriculture, rural areas and rural people, and building of beautiful countryside to realize the goalensure that people in rural areas are better off, agriculture is stronger, and rural China is more beautiful.

Xi Jinping, General Secretary of the Communist Party of China (CPC) Central Committee, Chinese President and Chairman of the Central Military Commission

Achievements in poverty alleviation

CSG has made solid progress and got good results in poverty alleviation. The Company won the top performers in the targeted poverty alleviation evaluation of central SOEs for two consecutive years, and won the gold cup of the Guangzhou Poverty Alleviation Hongmian Cup for three consecutive years.



CSG helps the Dulong people get out of poverty

The Dulong people have been living together for generations in Dulong Jiang Township, Gongshan County, Nujiang Prefecture, Yunnan Province, near the border between China and Myanmar. Since 2010, CSG has set up cables in high mountains to realize electricity connection in all households in Dulong Jiang Township; we built a micro-smart grid, and opened the Dulong people's journey to modern life with green and reliable electricity, and settled in villages to alleviate poverty, paying close attention to and actively solving the production and living difficulties of the poor people. In 2018, more than 4,000 residents get out of poverty and became the epitome of CSG's earnest implementation of General Secretary Xi Jinping's requirement of "achieving a well-off society in an all-round way with no minority people left behind" and the targeted help for "Three Regions and Three Prefectures" and other deep poverty-stricken areas.



For more information on "Helping the Dulong people get out of poverty", please scan the QR code.

Employees of Yunnan Power Grid Co. Ltd. compete with monkeys and follow the spider in high mountains to set up power lines, which are intimately called "more powerful than monkeys" by Dulong people.

New model

"Five-combination" approach. We carried out targeted poverty alleviation based on our core business and comprehensively advanced the "five-combination" approach in poverty alleviation.

New system

Multi-dimensional support with the "five major systems". Based on the actual situation of the recipients of assistance, we established "five major systems" to ensure that poverty alleviation policies were implemented.

New guarantee

Plan of "cultivating talents to be Party members and cultivating Party members to be talents". We insisted on the organic integration of poverty alleviation and the building of primary-level Party organizations to provide organizational support for poverty alleviation.

New focus

Building targeted poverty alleviation demonstration villages. We selected villages to build them into targeted poverty alleviation demonstration villages, and implemented the requirements of "targeted recipients of assistance, targeted project arrangement, targeted use of funds, targeted measures for each household, targeted personnel assignment, and targeted poverty alleviation effect", thus setting a good example for poverty alleviation.

New working style

Carrying out the "three-one" project to improve poverty alleviation work style. As 2018 was announced a year for improved conduct in poverty alleviation, we conscientiously implemented the requirements for conduct in 2018to ensure steady work and effective outcomes of poverty alleviation.

New management

Introducing the "four-step approach" to improve the management of poverty alleviation projects. We explored the "four-step approach" throughout the project management cycle to ensure that the poverty alleviation projects proceed in compliance with laws and policies.

New platform

Creating an "Internet +" consumption platform. We built an online "Poverty Alleviation Module" to provide information on poverty alleviation products and logistics support, and expanded channels to sell poverty alleviation products.

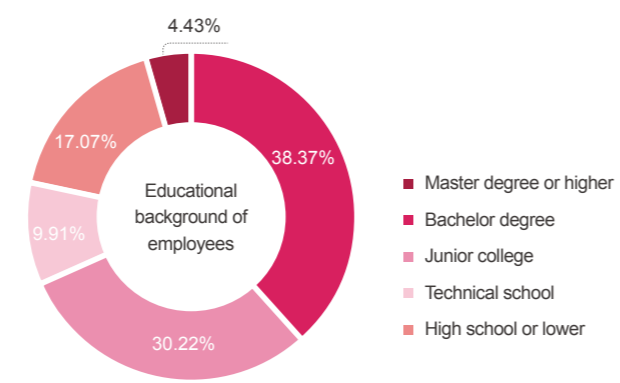
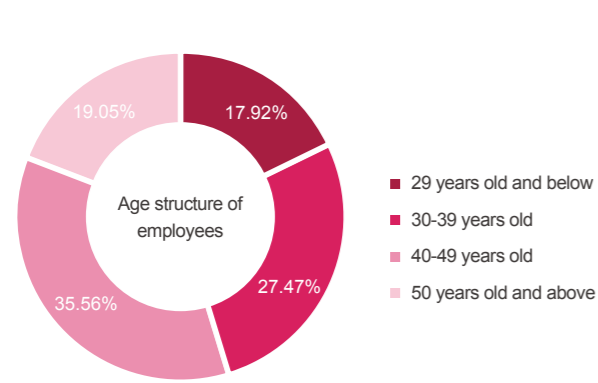
New mechanism

Guiding the distribution of income and exploring a long-term mechanism. We implemented the Guidelines on Income Distribution for New Poverty Alleviation Projects on a trial basis, laying a solid foundation for "thorough poverty alleviation".

Building a Happy CSG

The primary resource of an enterprise and the foundation for development and market competition

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
<p>5 <small>Gender Equality</small></p> <p>Target 5.1 End all forms of discrimination against all women and girls everywhere</p>	<p>Disclosure 404-2 Programs for upgrading employee skills and transition assistance programs</p> <p>Disclosure 405-1 Diversity of governance bodies and employees</p>	<p>Improve the quality of the workforce and maintain regular and open channels for employee development</p>
<p>8 <small>Decent Work and Economic Growth</small></p> <p>Target 8.5 By 2030, achieve full and productive employment and decent work for all women and men and equal pay for work of equal value</p>		<p>Develop a workforce in which everyone has lofty ideals and keeps faith, masters technology and makes innovations, and is willing to take responsibility and make contributions.</p>



Safeguarding the rights and interests of employees

CSG strictly abides by labor laws and regulations, respects employees' privacy, respects and protects their legitimate rights and interests, and actively builds harmonious labor relations.

- We upheld the principle of fair and just recruitment, worked to eliminate any form of employment discrimination, and signed labor contracts according to law, with a labor contract signing rate of 100%.
- We established a sound, systematic and complete human resources system, and revised and released five management systems related to labor, personnel and income distribution. The social insurance coverage rate of CSG reached 100% in 2018.
- We established a well-regulated system of congress of workers and staff, and promoted the certification of standard implementation for practicing transparency of factory affairs and democratic management to the fourth-tier units. The proportion of employees participating in the trade union and the response rate to the proposals put forward on the congress of workers and staff reached 100%.
- We upgraded the "Staff Home", improved the working conditions of front-line employees, cultivated the culture of "Staff Home", and developed the mobile app of "CSG e-Home". The "Staff Homes" of 11 branches and subsidiaries of CSG were awarded as "National Model Staff Home" in 2018.

Proportion of female employees **24.59%**
 Paid leave per capita **9** days

Supporting staff development

CSG has built diversified channels for employees' career development, enriched the staff training system and motivated employees' innovation, so as to promote rapid growth of the workforce.

Officials management

Upholding the principle of the Party supervising officials and talents, CSG continuously worked to build a contingent of competent officials and talents so as to train outstanding officials that meet the needs of the reform and development of the Company in the new era.

- We adhered to the standards for good officials in the new era and the "20-Chinese characters" requirement for leaders of state-owned enterprises (Be Loyal to the Party, Be Bold to Innovate, Be Good at Management, Be Able to Make the Company Thrive, and Be Honest and Upright), and stuck to putting political standards in the first place.
- We stepped up efforts to cultivate and select young officials and cultivated 100 outstanding young officials, and the average age of manager-level staff at the headquarters decreased by 0.9 year.
- Focusing on the improving the ability and quality of officials, we held the first operation and management training for them. Our "Power of Faith" teaching case was included in the Selections of Innovation Practices in Officials Education Training Reform of the Organization Department of the CPC Central Committee.
- We promoted the reform of the talent development system and mechanism, and our employees were included in national and provincial talent support programs 37 times in 2018.

Training evaluation

CSG has upheld the principle of "training as a must for business management", and incorporated it into production and management, thus systematically conducting trainings for all employees. In 2018, we carried out 56,800 training sessions, with an employee training rate of 96.5%.

- Strengthening the building of the internal trainer team. We carried out innovative building of the inner trainer team and launched "Excellent Inner Trainers" selection activities. More than 16,000 internal trainers were recruited.
- Improving training resources. A total of 1,281 skill training rooms were constructed.
- Promoting staff evaluation in depth. We implemented the management mechanism of "training, evaluation, employment with certificates", and 57,000 employees passed the post competency evaluation in 2018, and 100% of key skill posts in the fields of work safety, marketing and infrastructure were certified.

Practicing CSG's Corporate Culture Philosophy Carrying out the reform for building the workforce in the new era

CSG has implemented the Reform Plan for Building the Workforce in the New Era formulated by the CPC Central Committee, and promoted the building of an educated, skilled and innovative workforce on the basis of "leadership program, quality program, growth program, solidarity program, and caring program".

Leadership program

We cultivated key employees to be Party members and developed Party members to be key employees, ensured that each unit has at least one Party member, and guided staff growth by taking new measures of Party building.

Quality program

More than 70% of training funds are used for front-line employees and we established a "Human Resources Management System + Online Training and Evaluation System".

Growth program

We set up three career development channels of management, professional technology and skills to break the barriers between these three channels.

Solidarity program

We developed a characteristic democratic management system with "professional management system + comprehensive evaluation method" to ensure that the employees have a sense of responsibility.

Caring program

We equipped 2,218 primary-level stations with cultural and living facilities and established charity funds to "send care" for the employees in need, pooling positive energy.

"CSG's useful practice and active exploration of the reform in building the workforce provided practical reference and experience for other enterprises, especially SOEs to implement the Reform Plan for the Building the Workforce in the New Era. So to speak, CSG played a demonstration and guiding role".


Yan Jinghua, Vice Chairman of the All-China Federation of Trade Unions



Guangxi Power Grid Co. Ltd. strengthens employee business training.

Promoting Common Development

Serving as a qualified coordinator of the value chain

Contributing to SDGs	Core indicators of GRI Standards	New era, new changes
 <p>Target 12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities</p>	<p>Disclosure 308-1 New suppliers that were screened using environmental criteria</p> <p>Disclosure 414-1 New suppliers that were screened using social criteria</p>	<p>Work with value chain partners to integrate upstream and downstream resources</p> <p>Jointly establish an open and credible responsibility ecosystem, and serve as a good value chain coordinator</p>


Building a smart supply chain system


CSG has continued to advance the building of a smart supply chain, and efficiently coordinated different parts of the supply chain, so as to promote the accurate matching of supply and demand and industrial upgrading, improve the quality of network access equipment and the service level, reduce the operating and transaction costs, and accelerate the transformation to serve as a qualified coordinator of the value chain of the energy industry.


- We spent a total of RMB 68.7 billion in power grid procurement, strongly supporting the construction of rural power distribution network and guaranteeing the supply of key engineering materials, and the service of power grid operation and maintenance.
- We promoted the application of e-commerce systems, built enclosed evaluation bases in all regions, carried out the procurement "through the platform and to the bases" in an all-round way and improved the procurement efficiency.
- We focused on improving the standardization of materials management and building a "fair, impartial, and open" procurement environment.


- We carried out hierarchical supervision and control to realize the whole process control of major equipment and key projects.
- We conducted sampling inspection of incoming materials on a regular basis, and deducted marks of the suppliers that failed spot inspection.
- We made efforts to improve equipment quality, extended the quality supervision on GIS transformer capacity to key components and parts, and realized full coverage of supervision over major equipment suppliers.

- We built a green logistics system, developed a green intelligent warehousing system, implemented green packaging and distribution, and ensured recycling of hazardous wastes.
- We strengthened the supply of disaster-relief materials to ensure power supply. In response to the Typhoon Mangkhut, we provided emergency materials valuing RMB 59.82 million in a timely manner, ensuring that the repair and power recovery are carried out successfully.

- 

Material procurement completed in 2018
RMB **68.7** billion
- 

Rate of centralized procurement in 2018
97.7 %
- 

Order of CSG e-Commerce Platform in 2018
RMB **1.68** billion
- 

Proportion of equipment passing the first factory test in 2018
99.4 %



Employees of Dongguan Power Supply Bureau of Guangdong Power Grid Co. Ltd. apply the first-aid kit mobile operation app

Jointly building a responsible ecosystem

CSG is committed to building mutually beneficial and win-win cooperation with upstream and downstream partners, establishing a benign development ecosystem and serving the sustainable development of the five provinces in southern China

 <p>Paying tax in accordance with the law Pre-tax profits amounted to RMB 43.69 billion</p>	 <p>Contributing to the community 6,642 volunteer service activities carried out in 2018</p>	 <p>Promoting clean energy development Electricity generated from non-fossil energy accounted for 51.5%</p>
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CSG Lights up Every Household in Southern China

- 290,000 employees
- Power supply service covered an area of one million square kilometers
- Investing RMB 87.4 billion in power grid construction



CSG builds relations with suppliers based on mutual trust and complementary advantages. Through continuous evaluation on suppliers, CSG has improved the suppliers and cooperated with them to achieve win-win development.

- We strengthened supplier management. We implemented supplier pre-qualification in an all-round way and carried out regular supplier registration and evaluation to ensure that contractors perform the contract in good faith, and the power grid is built smoothly and operates safely and reliably.
- We revised the evaluation criteria for contractors of infrastructure projects, and carried out various evaluations on infrastructure contractors on a regular basis to achieve "equal rules and fair evaluation" for contractor management.
- We built a unified service platform. We officially launched the supplier service hotline 4008100100, supply chain information service WeChat public account, and started the establishment of supply chain unified service platform, to help suppliers solve related problems and difficulties.
- We carried out inspections on subcontracting of infrastructure projects, illegal subcontracting and irresponsible management to maintain the order of the electric power market and guarantee the project quality.

Suppliers certificated by the Quality Management System (QMS) in 2018	Suppliers certificated by the Environmental Management System (EMS) in 2018	Suppliers certificated by the Occupation Health and Safety Management System (OHSMS) in 2018	Suppliers punished in 2018
100 %	95.95 %	95.12 %	87


CSR Management

CSR governance

CSG has set up a three-tiered social responsibility system in the charge of the Public Relations Department, which covers the headquarters, branches and subsidiaries, and integrates social responsibility into our strategy, management and operation in a systematic and procedure-based way. CSG aims to build itself into an enterprise with global competitiveness and a model enterprise that follows the new vision of development, takes social responsibility and has world-renowned brands.


CSR Research

With a global vision, the Company draws on advanced CSR management practices and experience from world-class enterprises, thus continuously improving our social responsibility performance.



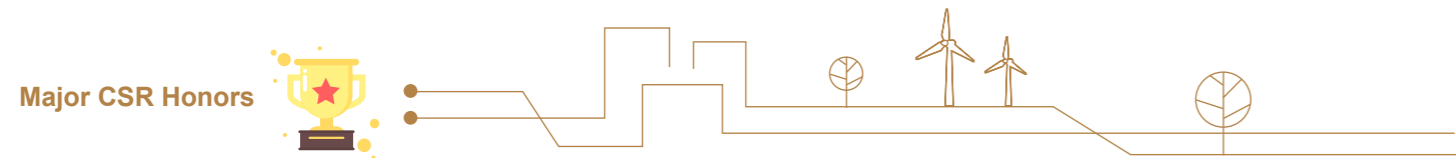
Benchmarking

CSG continuously conducted empirical researches on the CSR reports of leading enterprises in the world, focused on leading upstream and downstream enterprises of the value chain of the energy industry, and benchmarked the 2030 Agenda for Sustainable Development, further explored new approaches of CSR management in the value chain, so as to provide references for improving CSR compilation and management capability.



Strengthened exchanges

CSG actively participates in academic exchange activities organized by mainstream CSR organizations to share our CSR philosophy and experience, thus making contributions to sustainable development.



Major CSR Honors



CSG's CSR Report has been evaluated as Five-Star report for eight consecutive years by Research Center of Corporate Social Responsibility, Chinese Academy of Social Sciences.

CSG's CSR Report has won the GoldenBee Excellent CSR Report • Evergreen Award for six consecutive years

CSG's targeted poverty alleviation projects were included in 2018 *Central SOEs Social Responsibility Blue Book* of the State-owned Assets Supervision and Administration Commission of the State Council (SASAC) and our overseas CSR fulfillment cases were included in 2018 *Central SOEs Overseas Social Responsibility Blue Book*.

CSG's practices of CSR report compilation was included in *GoldenBee Research on Corporate Social Responsibility Reporting in China (2018)*.

Social welfare practice

CSG takes it as a fundamental task to and nurture and practice core socialist values, vigorously encourages employees to learn from Lei Feng and engage in volunteer activities, innovates in forms of public welfare activities to contribute to the new era with actions. In 2018, we carried out 6,642 voluntary service activities and served 430,306 people.

Blue Public Welfare brings light to the heart



Guangming School

Providing educational support
Helping children realize their wishes

CSG volunteers went to schools in underdeveloped regions to help left-behind children in pairs, organized them there to visit areas in the Pearl River Delta.

More than **2,000** activities launched



Happy Kitchen

Small kitchen with great affection
Sending sincere care to the children

We built happy kitchens in the elementary schools in mountainous areas to provide hot meals for the children.

Over **20** Happy kitchens built totally

More than **3,300** children provided with hot meals in mountainous areas



Warm cottages

Paired assistance
Conveying social warmth to the elderly

We visited lonely elderly people regularly to talk about daily life with them, do housework, help them solve difficulties in life, identify and remove potential safety hazards and housing hazards, and care for their physical and mental health.

More than **1,000** hidden dangers in the houses identified totally

Over **300** visits to the elderly during holidays totally



"Blue Public Welfare" volunteers from Guangdong Power Grid Company visit the school in underdeveloped regions.

CSR communication

The Company actively communicates with stakeholders to create a multi-dimensional, comprehensive and platform, so that all stakeholders can witness, spread and promote our open operation.

SOE Open Day

On November 2, 2018, the Company's first "SOE Open Day" was held in Dongguan. The theme of this event is "Green Energy for Better Life". It demonstrates the Company's practices and achievements in transparent operation, innovation-driven development and high-quality service, and establishes a new image of state-owned enterprises in the new era.



"CSR Week" campaign

Since 2013, the Company has held the "CSR Week" campaign for six consecutive years. During "CSR Week" campaign in 2018, we organized the investigation program of "CSG Social Responsibility Tour", and invited stakeholders and media to give advice and make onsite surveys.

<p>New forms of publication </p> <p>For the first time, CSG's 2017 CSR Report Conference was held outside the headquarters. It was held at Qianhai of Shenzhen, the forefront of reform and opening up.</p>	<p>New ways of publicity </p> <p>We filmed a documentary in one take to systematic show our role in serving the "9+2" cities in the Guangdong-Hong Kong-Macao Greater Bay Area.</p>	<p>Activities from new perspectives </p> <p>The investigation group visited the substation in the artificial island of the Hong Kong-Zhuhai-Macao Bridge and the cable tunnel of the Hengqin New Area, and learned about CSG's CSR performance in infrastructure construction and reliable power supply in the Greater Bay Area.</p>
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Outlook 2019

2019 marks the 70th anniversary of the founding of the People's Republic of China and is a crucial year for building a moderately prosperous society in all respects. Following the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, the Company will resolutely implement the major decisions and policies of the CPC Central Committee and make coordinated efforts to ensure security, maintain stable growth, advance reform, adjust structure, promote transformation, increase vitality, and strengthen Party building. CSG will make new progress in building itself an internationally competitive world-class enterprise and make new contributions to the sustainable and healthy development of Chinese economy and society, so as to celebrate the 70th anniversary of the founding of the People's Republic of China with outstanding achievements.

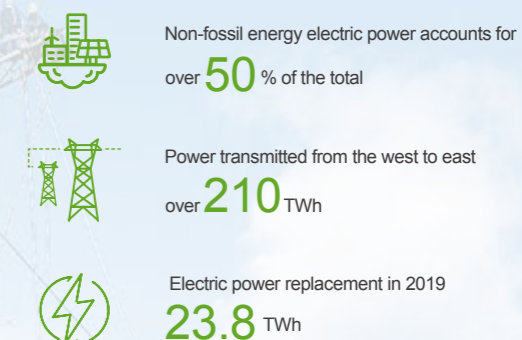
Power supply

We will ensure work safety, vigorously improve the electricity-related business environment by carrying out the corresponding action plan and ten measures, continue to improve its performance in "getting electricity" and actively promoted technological innovation.



Environmental protection

We will implement the requirements for winning the tough battle against pollution by establishing a long-term mechanism for clean energy consumption, give all out to promote the transmission of surplus hydropower from western China to eastern China, and vigorously implement electric power substitution. We will integrate resources to build a unified charging service platform for serving the development of green transport.



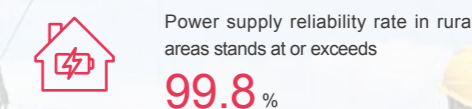
Operating efficiency

We will emphasize on stable growth and make sure the growth of revenue. We will keep streamlining the process to improve quality and efficiency, increase income, supply and sales, reduce expenditure, and strengthen operation and management in compliance with the law.



Social harmony

We will provide power universal services and guaranteed services, promote poverty alleviation to serve the rural revitalization strategy and comprehensively carry out the Party building responsibility system to achieve common development of the Company and employees.



Rating and Evaluation

Rating Report of CSG Corporate Social Responsibility Report 2018



Entrusted by China Southern Power Grid Co., Ltd., the Chinese Expert Committee on CSR Report Rating selected experts to form a rating group to evaluate the CSG Corporate Social Responsibility Report 2018 (hereinafter referred to "the Report").

I. Rating basis

Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 4.0) issued by Research Center for Corporate Social Responsibility of the Chinese Academy of Social Sciences, and Rating Criteria of CSR Reporting in China (2019) issued by Chinese Expert Committee on CSR Report Rating.

II. Rating process

1. The rating group examined and confirmed the Confirmation Letter of Procedural Materials of the CSR Report submitted by the reporting preparation group of the Report and the relevant supporting materials;

2. The rating group evaluated the preparation process and content of the Report and drew up the rating report;

3. The Vice-Chairman of the Rating Expert Committee, the head of the rating group and the experts of the rating group jointly signed and reviewed the Rating Report.

III. Rating conclusion

Process (★★★★★)

The Public Relations Department took the lead in setting up a report preparation group. The Chairman, General Manager and Deputy Party Secretary of CSG gave instructions to the Reporting preparation. The CSG Party Group was responsible for the final review of the Report; CSG positioned the Report as an important tool for shaping a responsible model image, reflecting the status as a national backbone enterprise, a platform-based enterprise and coordinator for the energy industry value chain, and constructed a sound reporting system; CSG identified material topics according to CSG's major issues, relevant national policies, industry benchmarking analysis, internal and external related questionnaire survey, etc.; it is planned to hold a press conference to release the Report, which will be presented in electronic, printed and H5 formats. All of these efforts show the excellent process of the Reporting preparation.

Materiality (★★★★★)

The Report systematically disclosed the key issues of power supply industry, such as power supply guarantee, guarantee of electricity use in rural and remote areas, high-quality services, protection of employees' rights and interests, integrated outage management, work safety, equipment management, improvement of power transmission efficiency, research and development and application of eco-friendly products and technologies, green power supply, etc. It described the contents in details and has excellent materiality.

Completeness (★★★★☆)

The main content of the Report systematically disclosed 88.76% of the core indicators of the power supply industry from the perspectives of "power supply", "environmental protection", "operational efficiency" and "social harmony". The Report is leading in its completeness.

Balance (★★★★★)

The Report disclosed such negative data as "Level 3+ power safety incidents", "Level 2+ network security incidents", "accidents causing personal injury", "average annual interruption duration", "cases of power facilities damaged throughout the year" and so on, which shows excellent balance.

Comparability (★★★★★)

The Report disclosed the comparative data of 44 indicators such as "total assets", "electricity sales", "investment in power grid construction", "third-party customer satisfaction", "power transmission from west to east", "environmental benefits of clean energy transmission",

"proportion of female employees" and "staff training rate" for more than three consecutive years. Through the horizontal comparison of "the 110th among the Fortune Global 500 companies", "293rd among the world's top 500 brands", "Class-A in the Assessment of Business Performance by the SASAC", "first place in the network and information administrator contest of the National Professional Skills Competition", the Report also indicates excellent comparability.

Readability (★★★★★)

The Report continued the theme of "CSG Lights up Every Household in Southern China". From five chapters of "company profile, spotlight, subject, management and performance evaluation", it fully demonstrated CSG's CSR concept, practice and performance. The framework was clear with highlighted key issues, and in response to the expectations of stakeholders, it also showed CSG's deep understanding of CSR; the cover of the Report presented the West-to-East power transmission channel, and the excellent illustrations, representative buildings and scenic spots showed CSG's achievement in serving the high-quality economic and social development of the five provinces in southern China, and enhance the reading pleasure of the Report. Its readability is excellent.

Innovativeness (★★★★★)

The Report responded to SDGs positively and emphatically, demonstrating that the Report keeps pace with the times and CSG's leading role in CSR fulfillment; at the beginning, the spotlight chapter introduced "Guiding and Supporting the Building of a First-class Enterprise with First-class Party Building" and "Adding new impetus to the green development of the Guangdong-Hong Kong-Macao Greater Bay Area" and "Optimizing the business environment to serve the high-quality development of the five provinces of southern China", which responded positively to the national policies and principles, and highlighted the CSR pursuit and responsibility of the central SOE; it is the first time for the Report to present the "ecological business map", which outlined the main business with virtual scenes, displaying the economic, social and environmental values created by CSG for the country and the industry; each chapter set up "Key topic management in 2018" to disclose the management approaches of key topics, which is convenient for readers to grasp the content quickly, thus performing excellently in innovation.

Overall rating (★★★★★)

According to the evaluation of rating group, CSG Corporate Social Responsibility Report 2018 is a five-star report, an excellent CSR report.

The CSG Corporate Social Responsibility Report has won five-star evaluation for the ninth consecutive year.

IV. Suggestions for improvement

CSG is suggested to enhance the disclosure of core indicators about the power industry and improve the completeness of the Report.

魏紫川

Vice chairman of the rating expert committee

钟宏武 张晓松

Leader of the rating team

Expert of the rating team

Process Evaluator

Ren Jiaojiao

2019.4.16



Scan to see corporate rating files



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

Third-Party Evaluations

Deng Guosheng

Professor of School of Public Policy and Management (SPPM) at Tsinghua University

The Report fully demonstrates the transparent and open operation of CSG as a central SOE. First, the principles are more transparent. The Report clearly introduces and explains the CSG's Corporate Culture Philosophy in the opening chapter, and presents the CSR practices under the guidance of the principles in the following chapters, which comprehensively shows stakeholders how CSG responds to the call the era by following the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era and encouraging all employees to fulfill their responsibilities. Second, the measures are more transparent. The Report highlights the contents such as "serving the development of Guangdong-Hong Kong-Macao Greater Bay Area" and "improving the electricity-related business environment", etc., which are most concerned by the stakeholders. With plain words and pictures, the Report shows CSG's CSR practices and performance in pursuing a shared future with the stakeholders. Third, the CSR performance is more transparent. The Report not only reveals the core performance statistics in the power industry, such as customers' electricity cost reduction, power outages, and electricity sales, but also reviews and compares the statistics to show CSG's performance in a more direct and explicit way. In addition, the Report includes the part of "Embarking on the journey of reform, we have made enormous strides in the new era" to highlight the image of the Company as a reform pioneer.

Yin Gefei

Chief Expert of GoldenBee and Secretary of ISO 26000 Stakeholder Global Network (SGN)

It is a great pleasure to see a CSR report showing that CSG has implemented the social responsibility earnestly, comprehensively improved its CSR performance and strived to build a world-class enterprise with global competitiveness. First, the reporting reference standard is upgraded. The Report changes from the traditional mode to map with all standards and regulations in one part to an innovative way in which it decomposes the SDGs and the disclosures of GRI Standards into each subsection, demonstrating that CSG tells CSR stories in the global common language. The second is responsibility upgrading. The Report consistently focuses on the new requirements of sustainable development of enterprises in the new era, focusing on the corporate positioning of "national backbone enterprise", "platform-based enterprise" and "coordinator for the energy industry value chain", which shows the image of responsibility for implementing new development philosophy, implementing national strategies and integrating with the value chain ecosystem in an all-round way. Thirdly, the Report discloses in depth the past year's CSG's CSR practice and performance data on helping win three tough battles, serving the development of Guangdong-Hong Kong-Macao Greater Bay Area, promoting clean energy consumption and so on. It presents the results of CSG's CSR performance in implementing the five development concepts and achieving high-quality development in 2018.

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Actions to Achieve the Sustainable Development Goals

1 NO POVERTY



Action:

- With the direct help of CSG, 240 impoverished areas and 81,000 people were lifted out of poverty in 2018.

P69-70

2 ZERO HUNGER



Action:

- Helped targeted poverty alleviation villages to increase sales of agricultural products.

P69

3 GOOD HEALTH AND WELL-BEING



Action:

- Upgraded the "Staff Home", and improved the working conditions of front-line employees, with 9 days of paid leave per capita.

P71

4 QUALITY EDUCATION



Action:

- Carried out training sessions. Staff training rate reached 96.5%.

P72

5 GENDER EQUALITY



Action:

- Equal pay for men and women. Proportion of female employees reached 24.59%.

P71

6 CLEAN WATER AND SANITATION



Action:

- Recycled wastewater and reduced water consumption of the converter stations.

P47

7 AFFORDABLE AND CLEAN ENERGY



Action:

- Non-fossil energy power generation accounted for 51.5%, thus promoting the electric power substitution.

P41-50

8 DECENT WORK AND ECONOMIC GROWTH



Action:

- Improved the quality of the workforce and maintained regular and open channels for employee development, to enhance all staff member's sense of fulfillment and happiness.

P71-72

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Action:

- Increased investment in technological innovation and power grid construction

P35-38

10 REDUCED INEQUALITIES



Action:

- Carried out the new round of rural grid renovation and upgrading, and strives to solve unbalanced and inadequate power development issues.

P70

11 SUSTAINABLE CITIES AND COMMUNITIES



Action:

- Improving emergency management, comprehensively enhancing the intrinsic safety of the power grid and its ability to resist disasters and provide reliable power supplies for economic and social development.

P31-34

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Action:

- Improved resource utilization to reduce the impacts of grid operation on the environment.

P46-47

13 CLIMATE ACTION



Action:

- Promoted green development from the power side to the customer side

P41-50

14 LIFE BELOW WATER



Action:

- Protected the marine environment in the construction process of offshore wind power.

15 LIFE ON LAND



Action:

- Realized the construction of green power grid, to protect biodiversity

P46

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Action:

- Enhanced our ability in promoting the rule of law, improved audit environment, to build a law-abiding and credible central SOE.

P57

17 PARTNERSHIPS FOR THE GOALS



Action:

- Practiced the Belt and Road Initiative by participating in power cooperation along the Belt and Road.

P63-64



THE GLOBAL GOALS
For Sustainable Development

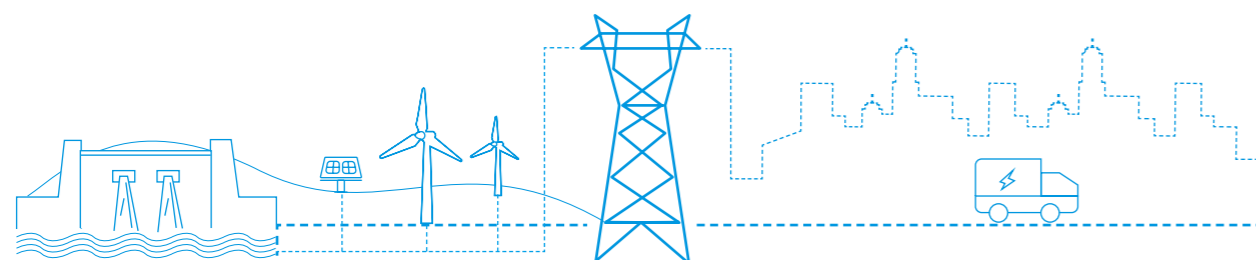
Note: Goal 14 is not disclosed in detail in the report but are available on the Company's website.

Key CSR Performance in 2018

Power Supply

- Interruption duration in the core districts
Unit: hours per household
2015 4.98
2018 1.05
- Investment in power grids
Unit: RMB billion
2015 67.4
2018 87.4
- Technological R&D investment
Unit: RMB billion
2015 2.19
2018 8.50

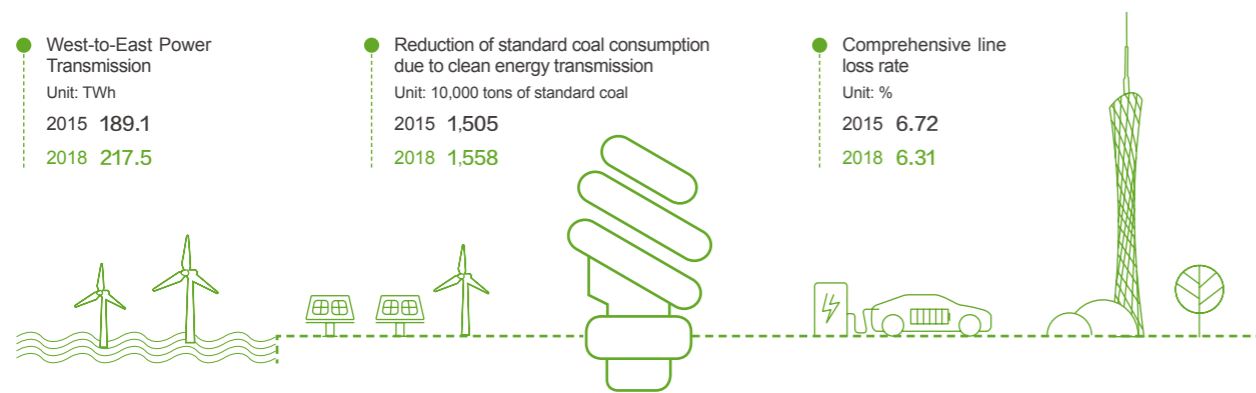
Note: Four-year data comparison, the same below



Company's main business data	2015	2016	2017	2018	Year
Interruption duration in the core districts (hours per household)	4.98	4.6	2.14	1.05	
Investment in power grids (RMB billion)	67.4	77.5	81.7	87.4	
Technological R&D investment (RMB billion)	2.19	5.85	7.62	8.50	
Length of 110 kV and above Transmission Line (km)	200,821	208,438	212,251	226,674	
110 kV and above Transformer Capacity (10,000 kVA)	83,181	92,368	97,429	102,141	
Maximum Load of Centralized Dispatching (10,000 kW)	14,164	14,743	16,297	16,853	

Environmental Protection

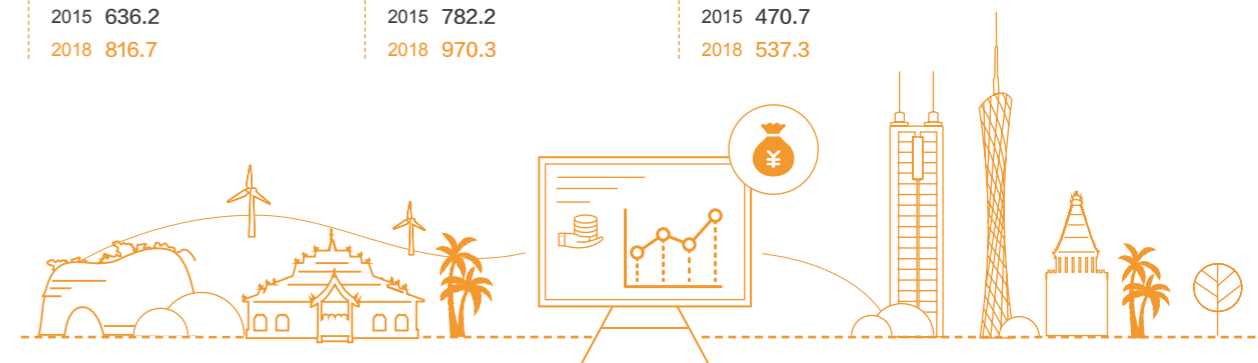
- West-to-East Power Transmission
Unit: TWh
2015 189.1
2018 217.5
- Reduction of standard coal consumption due to clean energy transmission
Unit: 10,000 tons of standard coal
2015 1,505
2018 1,558
- Comprehensive line loss rate
Unit: %
2015 6.72
2018 6.31



Company's main business data	2015	2016	2017	2018	Year
West-to-East Power Transmission (TWh)	189.1	195.3	202.8	217.5	
Reduction of standard coal consumption due to clean energy transmission (10,000 tons of standard coal)	1,505	1,117	1,766	1,558	
The comprehensive line loss rate (%)	6.72	6.38	6.52	6.31	
Demand-side energy conservation and emission reduction (GWh)	994	1,000	1,210	1,340	
Free energy-saving diagnosis (household)	1,135	1,100	1,092	412	

Operating Efficiency

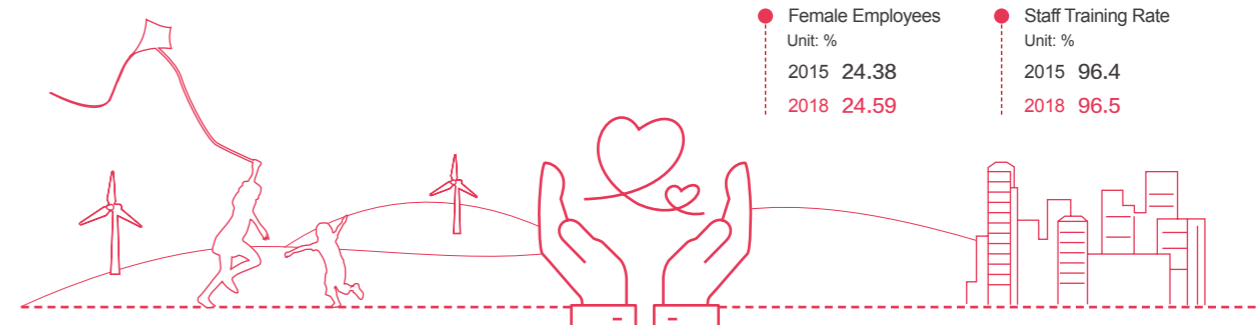
- Total assets
Unit: RMB billion
2015 636.2
2018 816.7
- Electricity sale
Unit: TWh
2015 782.2
2018 970.3
- Revenue
Unit: RMB billion
2015 470.7
2018 537.3



Company's main business data	2015	2016	2017	2018	Year
Total assets (RMB billion)	636.2	689.3	741.6	816.7	
Electricity sale (TWh)	782.2	829.7	890.2	970.3	
Revenue (RMB billion)	470.7	473.3	491.9	537.3	
Total pre-tax profits (RMB billion)	50.1	53.0	45.6	43.69	
Fortune Global 500 Ranking	113	95	100	110	

Social Harmony

- Female Employees
Unit: %
2015 24.38
2018 24.59
- Staff Training Rate
Unit: %
2015 96.4
2018 96.5



Company's main business data	2015	2016	2017	2018	Year
Female Employees (%)	24.38	24.30	25.43	24.59	
Staff Training Rate (%)	96.4	100	96.3	96.5	
Directly helping people out of poverty (1,000 person)	/	/	36	81	
Investment of rural grid renovation and upgrading(RMB billion)	17.3	32.4	34.1	40.3	

About this Report

This report is the 12th annual social responsibility report issued by CSG. The most recent report was released on May 10, 2018 while the next one is scheduled to be released in May 2020.

Based on the principles of objectiveness, standardization, transparency and comprehensiveness, the report discloses CSG's performance in economic, social, environmental and other aspects. The report is available in both Chinese and English. In case of any discrepancy, the Chinese version shall prevail.



- **Reporting Period**

This report covers the period from January 1, 2018 to December 31, 2018 with some dating back to previous years or referring to later years, in order to enhance the comparability and perceptiveness of the Report.

- **Reporting Scope**

The report focuses on China Southern Power Grid Co., Ltd, including its branches, subsidiaries, and directly-administrated organizations.

- **Compilation Basis**

CSG Corporate Social Responsibility Index System (CSG-CSR 2.0);

Guidelines to the State-owned Enterprises Directly under the Central Government on Fulfilling Corporate Social Responsibilities issued by State-owned Assets Supervision and Administration Commission of the State Council (SASAC);

GB/T 36001-2015 Guidance on Social Responsibility Reporting;

Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises 4.0 (CASS-CSR 4.0) by Chinese Academy of Social Sciences;

GRI Sustainability Reporting Standards (GRI Standards) issued by the Global Sustainability Standards Board (GSSB);

Guidelines on Social Responsibility of China's Industrial Enterprises and Industrial Associations (GSRI-CHINA 2.0) by China Federation of Industrial Economics.

- **Reporting Data**

All data in this report is from documents and reports officially issued by CSG and other agencies. The data of 2018 disclosed in this report is from quick statistics data, which may differ slightly from the final statistics.

- **Reliability Assurance**

The company guarantees that there is no a false record, misleading statement or major omission in the report.

- **References**

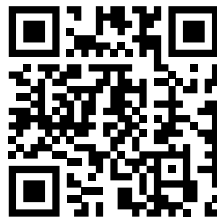
For better expression and readability, "CSG", "the Company" and "we" are used in this report to refer to China Southern Power Grid Co., Ltd.

- **Extended Reading**

A social responsibility information disclosure system has been created in CSG. Please visit CSG's official website www.csg.cn for the previous reports and other materials such as the Social Responsibility Practice Booklets 2018 of our power grids companies in Guangdong, Guangxi, Yunnan, Guizhou and Hainan and the power supply bureaus in Guangzhou and Shenzhen to know more about the Company's CSR practices.

- **Report Access**


You can download the electronic version of this report on our website. Should you have any questions about the report or demand a hard copy, please contact us by E-mail: csr@csg.cn, or by phone: (020) 36621917. For more information, please scan the QR code on the back cover.



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Chinese Expert Committee on CSR Report Rating

Cover story:

The idea of cover is based on CSG's corporate positioning of "national backbone enterprise, platform-based enterprise and coordinator for the energy industry value chain". It presents the West-to-East power transmission channel with simple lines, and the excellent illustrations, representative buildings and scenic spots showed CSG's achievement in serving the high-quality economic and social development of the five provinces in southern China.

The cover means that CSG keeps the original aspiration in mind, response the call of the new era, takes CSG's *Corporate Culture Philosophy* as value guidance, and deepens reform. CSG will make new progress in building itself an internationally competitive world-class enterprise.