

2020  
Sustainability Report  

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**Role Model Among Chinese  
Companies and Energy Pioneer**

## About this Report

### Reporting Period

January 1, 2020 to December 31, 2020. Some of the contents go beyond the above range.

### Reporting Cycle

This report is an annual report, and is our 15<sup>th</sup> sustainability report released since 2006.

### Main Contents

This report outlines our intentions, actions and performance in 2020 on economic, environmental and social issues. Its relevant content, data and cases are rooted from relevant company documents, statements and grassroots enterprises.

### Compilation Basis

*Unified Standard for the Sustainability Reporting* from the Global Reporting Initiative (GRI)  
*ISO26000: Guidance on Social Responsibility (2010)* issued by the International Organization for Standardization  
*Guidelines on Social Responsibility (GB/T36000-2015)* issued by the Standardization Administration of the People's Republic of China  
*Environmental, Social and Governance Reporting Guidelines* issued by Hong Kong Exchanges and Clearing Limited  
*Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises (CASS-CSR 4.0)* issued by Chinese Academy of Social Sciences

### Title Description

For convenience of expression, in this report, "CHNG", "Huaneng Group", "Huaneng", "the Company" and "We" refer to "China Huaneng Group Co., Ltd."

### Online Access to the Report

The Report is available in Chinese and English. The video version is also available. The Chinese version and the video version are released at the same time. Please visit our website at <http://www.chng.com.cn> or call 010-63228777 to request for the Report.  
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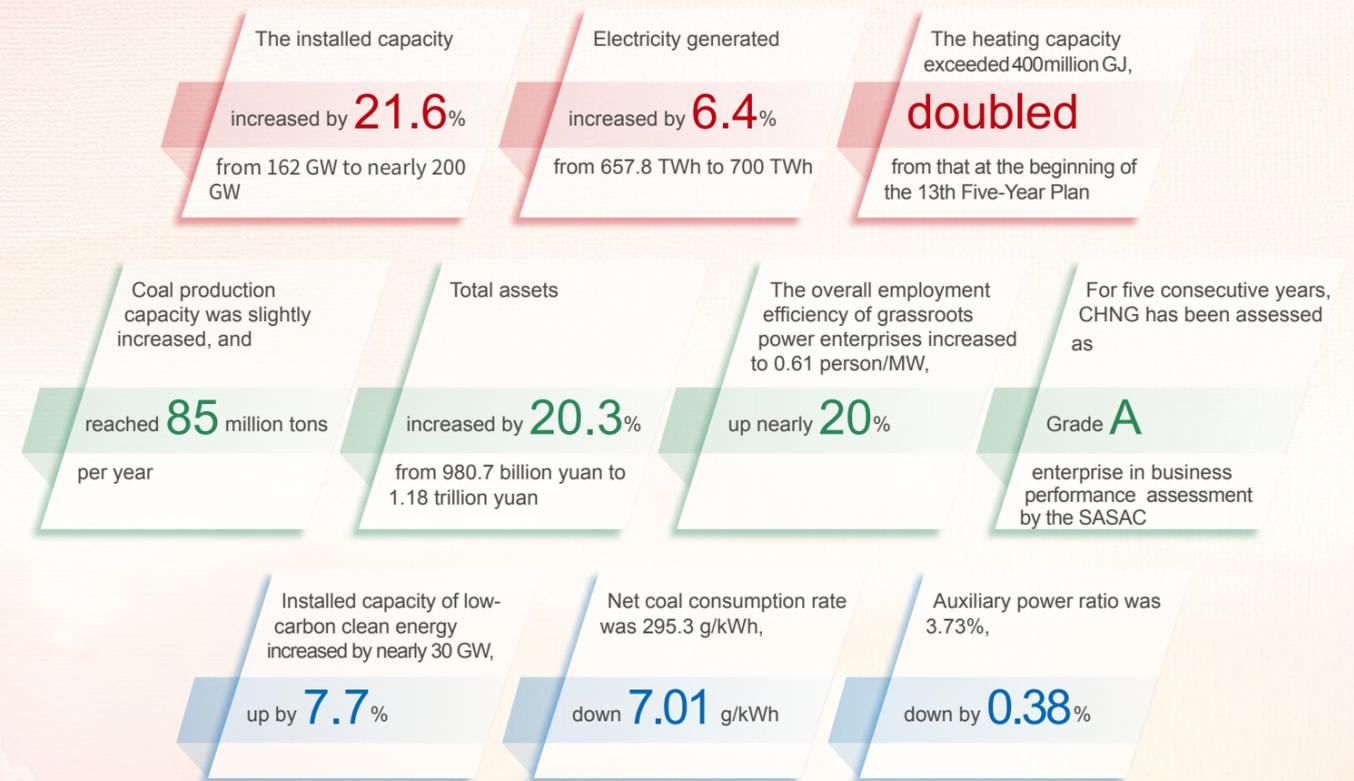
Scan the QR code to access the video version of the Report



# CHNG Successfully Completes the Tasks in the 13th Five-Year Plan

2020 was an extraordinary year, a decisive year for building a moderately prosperous society in all respects, and the closing year of the 13th Five-Year Plan period. As an important state-owned backbone enterprise, CHNG has stood the great test, made significant progress and achievements in reform and development, and successfully completed the tasks in the 13th Five-Year Plan.

## The Supply-side Structural Reform Has Achieved Substantial Results



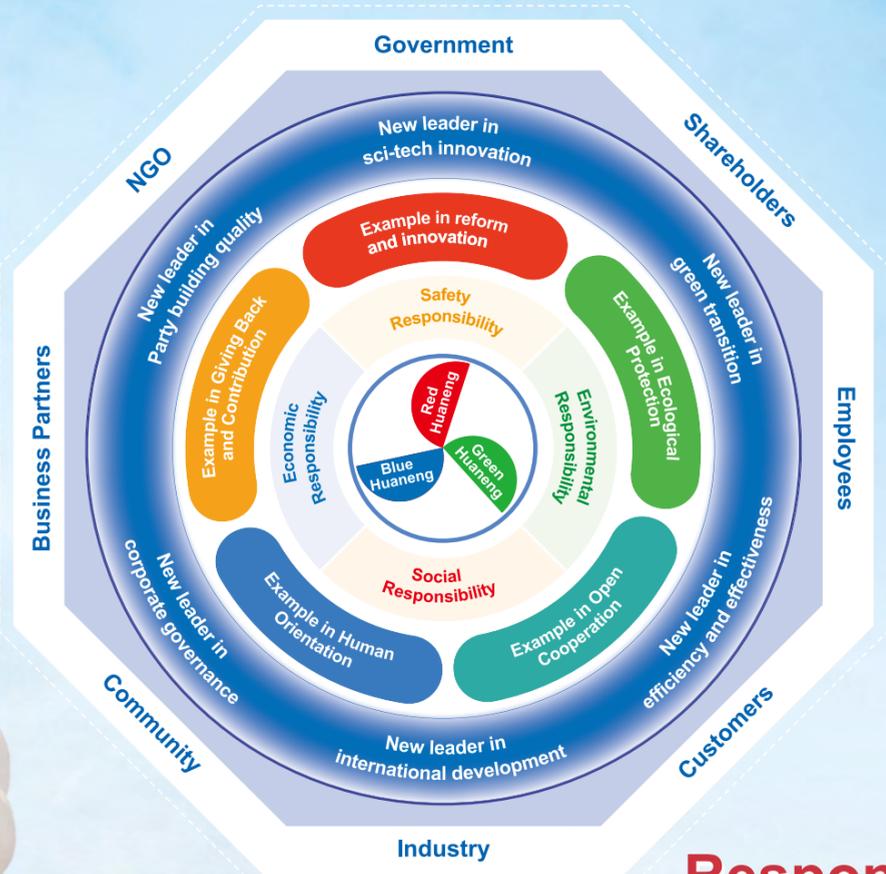
## Sparing No Effort to Win the "Three Tough Battles"

**Effectively preventing major risks.** The asset-liability ratio was reduced to less than 70%, and the deleveraging task in three years was completed. No major or higher level safety accidents occurred. Effective measures were taken to deal with floods, typhoons and other natural disasters. The number of unplanned outages of units (hydro & thermal power) decreased by 25% compared with the same period last year, and the number of unplanned outages per unit reached the lowest level over the years. 68 thermal power plants had zero unplanned outage. 14 coal mines were rated as super safe and efficient mines. The nuclear power safety management system was improved.

**Making all efforts to win the fight against poverty.** A total of 5.05 billion yuan was invested, 988 poverty alleviation projects were implemented, 13,000 poverty-stricken students were financially aided, and 260,000 people were helped out of poverty. All the poverty-stricken counties (villages) supported by CHNG were lifted out of poverty, due to which the Company has been rated as "Good" in the targeted poverty alleviation work evaluation for four consecutive years.

**Successfully completing the pollution prevention and control target.** A total of more than 15 billion yuan was invested in the ultra-low emission retrofit of coal-fired units. By the end of 2020, the capacity of ultra-low emission units accounted for 97%, 113% of the national ultra-low emission retrofit task specified in the 13th Five-Year Plan was successfully completed, and the emission of sulfur dioxide, nitrogen oxides and dusts were reduced by 73%, 52% and 84% respectively.

# CHNG in Sustainable Development



## Responsibility as the Driving Force

**Persisting in serving national interests and development strategies**

Serving as an example in promoting economic and social development in all respects

**Persisting in scientific development and technological innovation**

Serving as an example in building a resources-conserving and environmentally friendly society

**Persisting in pursuing enterprise value in a rational way**

Serving as an example in promoting harmonious progress of both the enterprise and the society

**Persisting in the principle of relying on employees and working with the public to develop the enterprise**

Serving as an example in putting people first and sharing benefits

**Persisting in giving back to society and benefiting the people**

Serving as an example in practicing social ethics



## Overall Planning

### Corporate Mission

- A "red" company that serves national strategy, safeguards energy security, and serves the need of socialism with Chinese characteristics
- A "green" company that facilitates energy revolution, protects the environment, and supplies clean energy to ensure a better life for the people
- A "blue" company that participates in global energy governance, serves the Belt and Road Initiative, and contributes to building a community with a shared future for mankind

### Strategic Orientation

Power as the core business, synergy among various energy sectors, innovation as the leading force, finance as the supporting business, global layout

### Strategic Vision

To speed up the building of a world-class modern clean energy company featuring "Three Colors, Three Strongs and Three Excellents"

- Three Colors** → Always adhere to the "three-color company" corporate mission
- Three Strongs** → Strong innovation capability, strong value creation capability and strong global competitiveness
- Three Excellents** → Excellent assets, excellent management, excellent performance
- Modern** → Digital, intensive, lean, standardized and international

## Strategic Improvement

## Board of Directors



Shu Yinbiao

Secretary of the Party Leading Group and Chairman of the Board of Directors



Deng Jianling

Board Director, President, and Deputy Secretary of the Party Leading Group



Wang Sen

Board Director and Deputy Secretary of the Party Leading Group



Xu Ping

External Board Director



Zhu Yuanchao

External Board Director



Zou Zhengping

External Board Director



Xu Qiyong

External Board Director



Yang Qingting

External Board Director

## Management Team



Shu Yinbiao

Secretary of the Party Leading Group and Chairman of the Board of Directors



Deng Jianling

Board Director, President, and Deputy Secretary of the Party Leading Group



Wang Sen

Board Director and Deputy Secretary of the Party Leading Group



Fan Qixiang

Member of the Party Leading Group and Vice President



Wang Yihua

Member of the Party Leading Group and Chief Financial Officer



Wang Wenzong

Member of the Party Leading Group and Vice President



Wang Limin

Member of the Party Leading Group and Chief Compliance Officer



Li Fumin

Member of the Party Leading Group and Vice President



Li Xiangliang

Member of the Party Leading Group and Vice President

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## Message from the Chairman



Secretary of the Party Leading Group and Chairman of the Board of Directors:  
Shu Yinbiao

2020 was an extraordinary year, a decisive year for building a moderately prosperous society in all respects, and the closing year of the 13th Five-Year Plan. CHNG, as an important state-owned backbone enterprise, guided by Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, has always adhered to the Party's overall leadership, the new development concept, the strategic guidance, reform and innovation, and people-oriented principle, made major progress and achievements in reform and development, and successfully completed its task specified in the 13th Five-Year Plan.

In the past year, facing the complex and severe external situation, CHNG, under the firm leadership of the CPC Central Committee with Comrade Xi Jinping as the core, strengthened the "Four Awarenesses" and "Four Confidences" and ensured "Two Upholds". Thus, we reached the goals and completed the tasks of the year, and fully demonstrated CHNG's spirit and sense of responsibility in the great test. CHNG always regarded studying and implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the primary political task, and the "first topic" of the Party Leading Group meeting, so as to constantly strengthen out Party building. In the face of the sudden impact of COVID-19, CHNG adhered to the working principle of focusing on both COVID-19 prevention and control and the resumption of work and production. We ensured overall mobilization and implementation, and achieved important phased results in the fight against COVID-19. **As a Role Model Among Chinese Companies, CHNG Sticks to the Original Aspiration to Make Great Achievements of the Era.** CHNG has optimized and coordinated the industrial layout. We took the power industry as the center, and worked together with the science & technology, coal, finance, and transportation sectors to further strengthen synergy. We made efforts to improve the quality of development, and realized an operating revenue of 314.2 billion yuan, with a year-on-year increase of 2.6%, a profit of 22.4 billion yuan, with a year-on-year increase of 25.6%, and the best operating profit in history. We worked hand in hand with partners to achieve win-win results, and actively promoted the coordinated development of Beijing, Tianjin and Hebei. We supported the construction of Hainan Free Trade Zone, and carried out in-depth cooperation with local governments, enterprises and universities to promote win-win results for all parties. We intensively expanded the overseas market, established the Research Institute of International Standards and Technology, and held the International Standards Summit of 2020. We successfully released two international standards and gained approval for five international standards proposals. All our overseas projects made profits, with a profit of 2.128 billion yuan, the best level in history. In order to build a moderately prosperous society in all respects, we supported poverty-stricken counties (villages), which have all been lifted out of poverty. Therefore, we have been rated as the highest grade central SOE in the targeted poverty alleviation work evaluation for four consecutive years. **As an Energy Pioneer, CHNG Strives to Write a Vivid Chapter in Its Tireless Endeavors to Develop Electric Power.** We made unwavering efforts to develop the main businesses, undertook the essential responsibility, fought against COVID-19 and natural disasters, guaranteed production and supply, and ended with a domestic power generation of 708.3 TWh, with a year-on-year increase of 0.37%, realizing growth against downtrend. We improved the ecology of scientific and technological innovation, successfully developed the first set of domestically-made DCS system and PLC system with complete independent intellectual property rights of China, and achieved a major breakthrough in scientific and technological innovation. We cared for the work and life of our employees, adhered to the people-oriented principle, established a dual-channel promotion mechanism with position ranking as the main

basis and professional technical skill level as supplement" to build up a career development platform for employees. We strictly abode by the work safety red line, with no major or above-level safety accidents occurred. We took effective measures to deal with natural disasters such as flood and typhoon, and kept our coal and nuclear power sectors stable. We strengthened environmental protection effectively, and comprehensively promoted the strategic layout featuring "two-line" (north line and east line) and "two-integration" (integration of wind, photovoltaic, coal, electricity transmission and consumption, and integration of offshore wind power investment, construction, operation and maintenance). We reached the "10GW target" in terms of the capacity of newly-approved, newly-commenced and newly-added renewable energy projects. The cold test for the two reactors of the major national science and technology project, Shidao Bay HTGR (High Temperature Gas-cooled Reactor) Nuclear Power Plant Demonstration Project, was passed in one try, Changjiang Nuclear Power Project Phase II was approved, and we made great progress in green transition.

Looking back on the past, we have stood firm and made great achievements; Looking forward to the future, we will make further efforts and achieve greater results. In 2021, the Communist Party of China celebrates the 100<sup>th</sup> anniversary of its founding, the 14th Five-Year Plan commences, and we begin to build the Company into a world-class modern clean energy enterprise. We will continue to adhere to the guidance of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era, fully follow the decisions made by the CPC Central Committee and the State Council, firmly grasp the theme of high quality development, and strive to become a leader in six fields, including scientific and technological innovation, green transition, efficiency and effectiveness, international development, corporate governance and Party building quality, and accelerate to build the Company into a world-class modern clean energy enterprise with global competitiveness.

Sticking to the Original Aspiration to Make Great Achievements of the Era, and Striving to Write a Vivid Chapter in Its Tireless Endeavors to Develop Electric Power. The "14th Five-Year Plan" is the key period to achieve high-quality development, during which China will start a new journey of building itself into a modern socialist country in all aspects. The "14th Five-Year Plan" is also an important period of strategic opportunity for the Company to achieve new leadership, during which we will also enter a new stage of development. More closely united around the CPC Central Committee with Comrade Xi Jinping as its core, CHNG will resolutely shoulder the mission entrusted by the new era, march forward in the face of difficulties, write the splendid chapter of CHNG in the new era, welcome the 100<sup>th</sup> anniversary of the founding of the Communist Party of China with excellent results, and make new and greater contributions to starting a new journey of building China into a modern socialist country in all aspects and achieving the great rejuvenation of the Chinese nation!

舒印彪

# Strengthening Party Building • Continuing to Push Forward Great New Undertaking



## Hot words in 2020 • Party Building

The practice since the 18<sup>th</sup> CPC National Congress shows that the Party's organizational route in the new era has provided a scientific basis for strengthening the Party's organizational construction and an important guarantee for enhancing the Party's creativity, cohesion and combat effectiveness. As long as we unwaveringly adhere to and improve the Party's leadership, continue to push forward the great new undertaking of Party building, and constantly build the Party stronger and more powerful, we will be able to stay calm during the tense situation.

— Xi Jinping's Speech at the 21<sup>st</sup> Collective Learning of the Political Bureau of the 19<sup>th</sup> CPC Central Committee

## Armed with Theories

CHNG always regarded studying and implementing Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the primary political task, and the "first topic" of the Party Leading Group meeting. Throughout the year, our Party Leading Group studied the important speeches and instructions of General Secretary Xi Jinping and the decision-making and deployment of the CPC Central Committee for more than 40 times, held 7 group learning seminars, and Party organizations at all levels conducted more than 260 exchanges of learning achievements from bottom to top.

We carried out in-depth study and training for the guidelines of the Fourth Plenary Session of the 19<sup>th</sup> CPC Central Committee by online self-study and combination of learning and examination. More than 2700 Party members above division chief level participated in the study and training, with the examination pass rate of 100%.

## Comprehensively Promoting Strict Party Self-governance

We firmly implemented the strategic deployment of the 19<sup>th</sup> National Congress of the Communist Party of China on comprehensive and strict Party self-governance, established a coordination group for improving the Party's work style, building clean governance and conducting anti-corruption work to coordinate the discipline inspection & supervision, organization, audit and other departments to strengthen collaboration and form a joint force. Our Party Leading Group signed the Letter of Responsibility for improving the Party's work style and building clean governance with the Party Committees of the subsidiary companies and the heads of headquarters departments, and implemented "one-vote veto" system for subsidiary companies with major duty-related crime cases in subordinate enterprises in annual assessment. The Discipline Inspection and Supervision Team informs our Party Leading Group about the complaint report, investigation clues and handling results every quarter, and urges the Party Leading Group members to earnestly fulfill the responsibility of building a clean and honest governance in their respective fields.

## Constantly Consolidating the Grassroots Foundation

We thoroughly implemented the *Regulation on the Work at Primary-level Party Organizations of State-owned Enterprises (for Trial Implementation)*, standardized the setting of Party branches in 44 subsidiary companies. We have been constantly deepening the establishment of "Excellent Party Branch" and providing education and training to Party leaders and members, aiming at realizing the full coverage of training in rotation for Party secretaries. We conscientiously implemented various Party activities, and strengthened the application and management of the "Smart Party Building" system. The Party Committee of Huaneng Yangluo Power Plant was awarded the title of **"Advanced Grassroots Party Organization of Central SOE"**, Huaneng Beijing Thermal Power Plant Gas Turbine Equipment Party Branch was awarded the title of **"Grassroots Model Party Branch of Central SOE"**.

Adhering to the leading role of Party building, we actively carried out "Party member exemplary action", and played the role of grassroots Party organizations and Party members in the great test and tackling major tasks. We deepened the innovative practice of "focusing on Party building to promote business development", and promoted the deep integration of Party building and production and operation. We implemented the responsibility system of Party building in all aspects and carried out appraisal and assessment on grassroots Party building, and was awarded the title of **Grade A Central SOE in the Assessment and Evaluation of the Responsibility System of Party Building in 2019**.

## Deepening Ideological Publicity

We issued the *Notice on Ideological and Political Work during COVID-19 Prevention and Control and Resumption of Work and Production*, held a symposium themed "Carrying forward the Spirit of Fighting against COVID-19 and Uniting Huaneng Strength", which was closely focused on promoting the implementation of strategic tasks, accelerating scientific and technological innovation, and serving production and operation. We also deeply publicized the strong sense of responsibility and elegant demeanor of young workers at the grassroots level, so as to set an example for all workers.

We have been further promoting the spiritual civilization building and implementing the annual self-inspection mechanism and cultivation mechanism of civilized units, with nine subsidiary companies including Huaneng Jinling Power Plant rated as **national civilized units**. We have constantly strengthening the corporate culture building, and conducted the series activities of "Publicizing Corporate Culture to the Grassroots", based on which we were selected as **a pilot enterprise for cross-cultural communication**. We were awarded the title of **the Industry Banner of Chinese Enterprise Culture Building during the 13th Five-Year Plan period**. Huaneng Nuozhadu Hydropower Station was awarded the title of **National Best Practice in Corporate Culture**.



In October 2020, the China Enterprise Confederation held the physical meeting on national enterprise culture of 2020 and awarded Nuozhadu Hydropower Station of Huaneng Lancang River Hydropower Inc. the title of National Best Practice in Corporate Culture.

## Promoting the Party's United Front and Youth Work

We thoroughly studied and implemented General Secretary Xi Jinping's important guideline on the Party's United Front and Youth Work, organized the United Front members to carry out the activities themed "Loving Huaneng, Offering Good Advice and Making Contributions", and established a Demonstration Office for United Front Members to Give Advice and Suggestions, so as to inspire the talent's patriotism, hardworking spirit and the vitality of creation. Adhering to the principle of focusing on the central task and serving the overall interests, we carried out the education practice themed "Learning the Guidelines of General Secretary Xi Jinping's May Fourth Message and Showing the Responsibility of Youth", and aimed at giving full play to the role of Youth League members in promoting COVID-19 Prevention and Control and production and management.

We vigorously cultivated and selected outstanding young cadres, and held outstanding youth training classes to recommend talents and training classes for Youth League key members at different levels, through which more than 2800 Youth League key members were trained. Among the leaders under the management of the Party Leadership Group, 30% were born in 1970s, and nearly one fifth were about 45 years old. Each of the leading group of 155 grassroots enterprises was provided with one outstanding young leader born in the 1980s on average, and the selection of young leaders was further strengthened.

In 2020, five employees of CHNG were awarded the title of **"National Outstanding Youth Post Expert"**, one was awarded the title of **"Advanced Individual National Youth Volunteer in Fighting against COVID-19 Epidemic"**, six groups were awarded the title of **"National Youth Work Safety Demonstration Post"**, and one group was awarded the title of **"National May Fourth Red Flag Youth League Committee"**.



Education Practice Themed "Learning the Guideline of General Secretary Xi Jinping's May Fourth Message and Showing the Responsibility of Youth"

# Decisively Fighting Against Poverty • Painting a Magnificent Picture of Rural Revitalization



## Hot words in 2020 • Fight Against Poverty

In the past eight years, the CPC Central Committee has regarded the fight against poverty as an very important factor for governing the country, taken poverty alleviation as the bottom line task of building a moderately prosperous society in all respects, and organized people to launch a massive fight against poverty. The Party and the people have overcome all obstacles, rose to the challenges, and conquered many difficulties in the poverty alleviation process. Many poverty-stricken people have been helped out of extreme poverty, and major historic achievements have been made in the fight against poverty.

— Xi Jinping's Speech at National Poverty Alleviation Summary and Commendation Conference

On the road of fighting poverty, Huaneng has always been firm and powerful. Since the 18<sup>th</sup> National Congress of the Communist Party of China, CHNG has invested 8.248 billion yuan in poverty alleviation, attracted 76.3 million yuan for poverty alleviation, and dispatched 621 cadres on secondment and the first Party secretaries residing in village to promote the sustainable development of poverty-stricken areas and help the poverty-stricken people achieve self-development through investment as well as assistance. With the goal of promoting development and improving people's livelihood, we have carried out targeted poverty alleviation, Qinghai and Tibet aids and local assistance. We have implemented 1,572 poverty alleviation projects in the frontier ethnic areas, deeply poverty-stricken areas, and other poverty-stricken counties and villages in provinces, municipalities and autonomous regions, helping 265,614 people out of poverty. In November 2020, all poverty-stricken counties and villages supported by CHNG were lifted out of poverty.



Scan the QR code to watch our poverty alleviation exhibition of *Enabling a Better Life*

Investment in free poverty alleviation funds (10 thousand yuan)



Attracting free poverty alleviation funds (10 thousand yuan)



- ☀ The Xinjiang Branch's Fanghuiju (Visit the People, Benefit the People and Bring Together the Hearts of the People) work team residing in Bedel Village, Aheqi County was awarded the honorary title of **"National Advanced Group for Poverty Alleviation"** by the Central Committee of the Communist Party of China and the State Council
- ☀ The Group has been rated as the "Good" (the highest grade) central SOE in the targeted poverty alleviation work evaluation for four consecutive years
- ☀ The poverty alleviation practice cases of the Group and Huaneng Lancang River Hydropower Inc. have been selected as the cases for enterprise targeted poverty alleviation study of the State Council's Poverty Alleviation Office for three consecutive years
- ☀ The Group has won the **"Donation Enterprise Award of China Charity Award"** issued by the Ministry of Civil Affairs for two consecutive times, and Huaneng Lancang River Hydropower Inc. won the **"Charity Project and Charitable Trust Award of the 11th China Charity Award"** for its poverty alleviation actions

## In Shaanxi, Helping Old Revolutionary Base Areas out of Poverty

Since 1995, CHNG has carried out targeted poverty alleviation work in Yulin (now Yuyang District of Yulin), Jingbian County and Hengshan County (changed the name to Hengshan District after 2016). For more than 20 years, we have always been rooted in this Loess Plateau and implemented poverty alleviation projects focusing on cultivation of characteristic industries, development of education, improvement of medical and health level, and improvement of rural infrastructure. We helped poverty-stricken farmers improve their self-development ability and increase economic income, and cooperated with the local government to win the fight against poverty. Yuyang District, Jingbian County and Hengshan District achieved poverty alleviation in 2002, 2012 and 2018 respectively.



Shaanxi Hengshan Agricultural Products Exhibition Center

## In Xinjiang, Helping the North and South Slope Areas of Tianshan Mountain Get Rid of Poverty

Since April 2005, we have undertaken the important task of targeted assistance for Aheqi County in Xinjiang Uygur Autonomous Region. Since May 2010, we have undertaken the targeted poverty alleviation work of Aheqi County. In more than ten years, we have given full play to the advantages of the energy industry, actively promoted the development of energy industry in Xinjiang, and continuously increased the assistance in culture & education, medical and health care, resettlement, industrial development and cadre training, making Huaneng's contribution to promote local economic development, social stability and long-lasting stability. In April 2019, Aheqi County was lifted out of poverty.



CHNG in Xinjiang for Industrial Poverty Alleviation

## In Qinghai, Helping the Qinghai Tibet Plateau Break Through the Seclusion

In order to implement the decision and deployment of the CPC Central Committee and the State Council on coordinating regional development and supporting Tibetan-related counties in Qinghai Province, we have carried out targeted support in Jianzha County since 2011. The projects constructed under our assistance involved 34 items and 9 categories, including industry, education, health, housing, talent training, social undertakings, culture and sports. We widely supported the development of various economic and social undertakings in Jianzha County, effectively enhanced the self-development ability of the local poverty-stricken people, and laid a solid foundation for the overall victory of the poverty alleviation campaign in Jianzha County, receiving a high appraisal from the local cadres and the masses. In April 2020, Jianzha county was lifted out of poverty.



Panoramic View of Our Targeted Supporting Jianzha County

## In Tibet, Helping Motuo County Lift out of Darkness

In 2004, as the first central state-owned power generation enterprise entering Tibet, we embarked on the historical journey of dedicating clean power, developing Tibet's economy and serving the national strategy. Rooted in Tibet for more than ten years with the Huaneng Tibetan Spirit of "keeping enthusiastic in tough plateau anoxic area and dedicating regardless of gain or loss", the task of bringing Tibet prosperous through hydropower development, and the aim of building power stations and highways, benefiting people's livelihood and seeking development, we aided to build transitional power supply in Ali and Lhasa free of charge, helped Motuo County get rid of the electricity shortage, built Paizhen-Motuo rural highway and implemented other poverty alleviation projects, effectively boosting Tibet's economic and social development by leaps and bounds.



CHNG Providing Electric Power Aid to Tibet

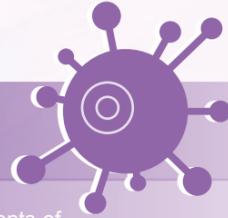
## In Yunnan, Helping Southwest Border out of Backwardness

Since 2006, we have carried out poverty alleviation activities in Yunnan. Giving full play to the advantages of the power industry, we implemented two rounds of "Hundreds, Thousands, and Ten Thousands" project successively along with the hydropower development in Lancang River Basin to greatly support local new rural construction and build Lancang River Hydropower Development Corridor and Economic Harmonious Development Zone. We carried out educational poverty alleviation and medical poverty alleviation projects implemented in Datianshan Village, Lishu Township, Yunxian County, and Baiyan Village, Dahe Town, Fuyuan County. From 2016 to 2019, we invested a total of 2 billion yuan to help the Lahu and Wa ethnic groups in Cangyuan, Gengma, Shuangjiang and Lancang counties get rid of poverty and realize a historic farewell to absolute poverty.



CHNG Building a New Village for "the Directly-entering-socialism Ethnic Groups"

# Making Overall Planning of COVID-19 Prevention and Control • Putting People's Lives First to Interpret the Great Love Among Humans



## Hot words in 2020 • COVID-19 Prevention and Control

Party committees and governments at all levels should resolutely implement the decisions and deployments of the CPC Central Committee on COVID-19 prevention and control, firmly implement the general requirements of "firm confidence, sharing weal and woe, scientific prevention & control, and precise strategy", make persistent efforts and fight bravely, resolutely curb the spread of COVID-19 with more firm confidence, stronger will, more decisive measures, and closer dependence on the people, and resolutely win the people's overall fight against COVID-19 epidemic.

— Xi Jinping stressed when surveying and instructing the COVID-19 prevention and control work in Beijing

We gave full play to the role of Party organizations and Party members to deeply implement COVID-19 prevention and control. All the staff acted upon the orders, responded quickly and took the initiative to ensure comprehensive mobilization and implementation. We have always insisted on the people first principle, and gave priority to the safety and health of employees. 13 people confirmed infection in the early stage of COVID-19 epidemic have all been cured, after which we have kept "zero" confirmed case. Our overseas employees remained "zero infection".

In this big fight and big test, we are not only the pioneer in guaranteeing safe power supply, but also the vanguard of fighting against COVID-19. Luo Jiageng, the shift supervisor of Operations Department of Huaneng Yangluo Power Plant, was awarded the title of **"National Advanced Individual in Fighting against COVID-19 Epidemic"**, Huaneng Yangluo Power Plant was awarded the title of **"Advanced Group of Central SOE in Fighting against COVID-19 Epidemic"**, Wang Fei from Shanghai e-commerce logistics branch, He Yaonian from Huaneng Beijing Co-generation Power Plant, and Sun Zhen from Pakistan Sahiwal Coal-fired Power Plant were awarded the title of **"Advanced Individual from Central SOEs in Fighting against COVID-19 Epidemic"**, Qiu Fengtao from Huaneng Yingcheng Power Station was awarded the title of **"Advanced Individual from Hubei Province in Fighting against COVID-19 Epidemic"**, and Shanghai e-commerce logistics branch was rated as **"the pilot supply chain innovation and application enterprise with stable global supply chain in resumption of work and production"** by the Ministry of Commerce.

## Sticking to the Front Line to Secure Power Supply

Our 473 grassroots power plants have been continuously generating electricity and supplying heat safely and stably, and 20 production coal mines started production immediately after the Spring Festival. Engineering and construction projects were commenced as early as possible to give full play to their leading role in driving the industrial chain. We entered Wuhan, Hubei Province, to fight against COVID-19 epidemic, strictly safeguarded the "lifeline" of the city, and ensured stable production and operation.

Huaneng Yangluo Power Plant is one of the thermal power plants with the largest installed capacity in Hubei Province. As the main power plant supplying power for the mainly affected area, Huaneng Yangluo Power Plant focused on both epidemic prevention and power supply. It established the Emergency Command Center for COVID-19 Prevention and Control, with the staff sticking to the production front line for careful monitoring and providing safe and stable power supply to the fight against the COVID-19 epidemic.

Huaneng Jingmen Thermal Power took strict safety measures, and fully put itself into the guarantee of power generation and heat supply. Each Party branch of Huaneng Yingcheng Power Station set up a Party member Commando to cope with COVID-19, and the members worked hard for many days in the front line of unit operation monitoring and equipment maintenance.



Scan the QR code to watch CCTV coverage titled "Huaneng Yangluo Power Plant Secures Stable Power Supply"



Scan the QR code to watch the Exhibition of the Fight against COVID-19 Epidemic named *Firm Confidence and Helping One Another in the Tough Situation*



During the period of COVID-19 prevention and control, Huaneng gave strong support to guarantee the material supply for the CPC Central Steering Groups to Hubei and other severely affected areas, organized the purchase of medical protection materials and medical treatment equipment both at home and abroad and donated them to the front lines in Hubei Province, and made great contributions to the complete winning of the people's overall fight against COVID-19 epidemic.

—CPC Central Steering Groups dispatched to Hubei and other severely affected areas



Huaneng Jingmen Thermal Power Plant



Huaneng Yangluo Power Plant

## Generously Aiding the Affected Areas

We actively fulfilled the responsibility and mission of a Central SOE. Our headquarters, grass-roots enterprises and overseas branches actively organized donations and did their best to help the COVID-19 affected areas. In January 2020, we donated 50 million yuan to the COVID-19 prevention and control front line through the special account of SASAC immediately after the outbreak of the epidemic. In order to help China win the fight against the COVID-19 prevention and control, all our subsidiary units, Party members and Trade Union members donated more than 100 million yuan in total throughout the year.

## Delivering Materials to the Affected Area

Shanghai e-commerce logistics branch opened the "green channel service" for truck transporting rescue materials and medical supplies to Hubei free of charge. The two network freight platforms, "Energy Logistics" and "Zhenhaoyun Smart Logistics", exempted transportation fees from consignors consigning emergency medical supplies, and provided drivers with PPE, route navigation and other services free of charge. In addition, after knowing that the ICU ward of Leishenshan Hospital needed engineering square tubes, we mobilized the source of goods through "Supply Chain Big Data System + Team Offline Search" and quickly sent the needed materials to the construction site of Leishenshan Hospital.

## Safely and Orderly Resuming Work and Production

We focused on both COVID-19 prevention and control and resumption of work and production, formulated the *Work Program for Responding to the COVID-19 Epidemic and Orderly Resumption of Work and Production*, and coordinated the work of "One Prevention and Three Guarantees" (preventing COVID-19, guaranteeing people's livelihood needs, economic growth and annual objectives).

We organized the practical activity themed "fighting against COVID-19, promoting production and being a pioneer", mobilized Party organizations at all levels and the Party members to take practical actions to promote COVID-19 prevention and control and resumption of work and production. To help Hubei revive after the epidemic, we formulated 20 measures to support Hubei provincial residents in the aspects of donation, equipment procurement, employment and post setting, and organized targeted procurement totaling 657 million yuan.

Our financial business sector actively implemented the national tasks of "six stabilizes (stabilizing employment, finance, foreign trade, foreign investment, domestic investment and market expectations)" and "six guarantees (guaranteeing the employment of residents, food and energy security, stability of industrial chain and supply chain, the operation of grassroots units, market players and people's basic livelihood)", and helped small and micro-sized enterprises in resumption of work and production. Huaneng Great Wall Securities issued the first COVID-19 Prevention and Control Bond among Securities Company listed in Shenzhen Stock Exchange with an amount of 1 billion yuan. Huaneng Alltrust Insurance provided COVID-19 insurance protection to 340,000 employees of power generation enterprises, and launched COVID-19 prevention portfolio products. Huaneng Guicheng Trust provided over 100 billion yuan low-cost loans to small and micro-sized enterprises and privately or individually-owned businesses in total.



Scan the QR code to read the Huaneng Party Leadership Group signed article titled *Showing Responsibility in Overall Promotion of COVID-19 Prevention and Control and Resumption of Work and Production* published in *Study Times*

# Realizing the Dream for a Beautiful China • Clear Waters and Green Mountains Can Bring Us Prosperity and Wealth



## Hot words in 2020 • Beautiful China

We should give high priority to protecting and rehabilitating the ecological environment of the Yangtze River, pay close attention to the rectification of outstanding problems in ecological environment, promote the urban sewage and garbage treatment, and strengthen the treatment of chemical pollution, agricultural non-point source pollution, ship pollution, and tailings pond. We should promote the treatment and utilization of urban and rural organic waste around Taihu Lake Region, take a series of supporting measures, provide reference for the joint protection and governance of ecological environment in the Yangtze River Delta Region, and make a demonstration for the treatment and utilization of organic waste in the whole China.

— Xi Jinping's Speech at the Symposium on Advancing Integrated Development of the Yangtze River Delta

In August 2020, in order to implement the Yangtze River Coordinated Protection Strategy proposed by General Secretary Xi Jinping, we set up Huaneng Yangtze River Environmental Protection Technology Co., Ltd. It is planned to build itself into a new technology and environmental protection industrialization company specialized in power generation with solid waste such as garbage and sludge along the whole Yangtze River Economic Belt through integration of scientific, and environmental protection and technological powers, with the aim of bringing an end to urban pollution.



Unveiling Ceremony of Huaneng Yangtze River Environmental Protection Technology Co., Ltd.

### Shu Yinbiao, Secretary of the Party Leading Group and Chairman of the Board of Directors of CHNG

The establishment of Huaneng Yangtze River Environmental Protection Technology Co., Ltd. is an important practice of Huaneng to thoroughly implement Xi Jinping's thought of ecological civilization and show responsibility as a Central SOE. It will definitely become an important milestone in the high-quality development of Huaneng Group.

- ⚙️ We should strive to integrate into the urbanization process along the Yangtze River, focus on the construction of new urban infrastructure, promote the harmless and recycling treatment of solid waste, and provide "Huaneng solution" for pollution control along the Yangtze River
- ⚙️ We should make efforts to integrate environmental protection technology of the Group, speed up the key technology research, conduct project demonstration and application promotion, facilitate the iterative upgrading of environmental protection technology, and achieve leapfrog development
- ⚙️ We should play a leading role to promote the integrated development of industrial chain, supply chain, value chain and innovation chain in the upper and lower reaches of the Yangtze River, help Yangtze River Economic Belt transit from old momentum to new momentum, and expand the domestic industrial circulation
- ⚙️ We should make efforts to deepen internal reform, organically integrate the strengthening of the Party's leadership with the improvement of corporate governance, and blaze a new trail in enterprise reform

# Knowing Huaneng Yangtze River Environmental Protection Technology Co., Ltd. from One Picture

## Name ✂️

Huaneng Yangtze River Environmental Protection Technology Co., Ltd. (Yangtze River Environmental Co. for short)

## Background 📄

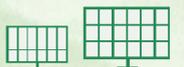
- ⚙️ In March 2016, the Political Bureau of the CPC Central Committee deliberated and approved the *Outline of Yangtze River Economic Belt Development Plan*, through which the ecological protection of the Yangtze River rose to the national strategic level
- ⚙️ In May 2016, General Secretary Xi Jinping stressed at the Symposium on Promoting the Development of the Yangtze River Economic Belt held in Chongqing that we should give absolute priority to ecological environment rectification of the Yangtze River, jointly focus on Yangtze River coordinated protection, and avoid large-scale development
- ⚙️ In January 2019, the Ministry of Ecology and Environment and the National Development and Reform Commission jointly issued the *Action Plan for the Protection and Rehabilitation of the Yangtze River*
- ⚙️ In June 2020, the *Report on the Work of the Government* made it clear to "promote the coordinated protection on Yangtze River Economic Belt" and "carry out major projects to protect and rehabilitate important ecosystems and promote the construction of ecological civilization"
- ⚙️ In October 2020, in order to implement the Yangtze River Coordinated Protection Strategy proposed by General Secretary Xi Jinping, and actively promote the CPC Central Committee's important deployment on promoting ecological civilization, we put forward the goal of "becoming the terminator of urban pollutants". Seizing this opportunity, we established Yangtze River Environmental Co. as the occasion demands and at the right moment

## Tenet 🏛️

Serving the general layout of national ecological civilization construction, to implement the Yangtze River Coordinated Protection Strategy, and to satisfy the needs of new technology and environmental protection industrialization of Huaneng

## Positioning 🌐

Yangtze River Environmental Co. is the only technology and environmental protection industry platform of Huaneng. Relying on Huaneng Clean Energy Research Institute and Xi'an Thermal Power Research Institute as the core technology R&D and technology upgrading platform, it is the integration of Huaneng's environmental protection technology. With the aim of building itself into a new technology and environmental protection industrialization company, it gives full play to the technological innovation advantages of Huaneng environmental protection industry, accelerates the demonstration and industrialization of core technologies, and integrates intelligent, digital and other modern information technologies



## Guidelines 💡

With Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era as the guidelines, the "environmental protection" and "science and technology" as the working basis, relying on Huaneng Group's technical superiority, Yangtze River Environmental Co. focuses on investment, construction and operation of coupled waste, sludge and biomass power generation projects. Giving full play to the technical advantages of ultra-low emission of coal power and coupled waste, sludge and biomass power generation, it took the lead in implementing technology demonstration and engineering application of waste and sludge coupling power generation to create a national example and model

## Goal and Vision 🌍

Yangtze River Environmental Co. will make full use of the advantages of coal power technology to build itself into a new technology and environmental protection industry with first-class technology, management and benefits. It will adhere to the policy of diversification of industrial positioning, integration of industrial development and marketization of industrial operation, and strive to develop into a leading enterprise in China in terms of technical level and business scale within 3 years



# Jointly Promoting Belt and Road Initiative • Helping Each Other and Benefiting the People Along the BRI Corridor



## Hot words in 2020 • Belt and Road Initiative

The "Belt and Road Initiative" is a bright road for us to move forward hand in hand rather than a private path for a certain side. The "Belt and Road Initiative" aims at development, advocates win-win results, and conveys hope. Looking to the future, we will continue to implement the "Belt and Road Initiative" in high quality together with all sides, practice the principle of extensive consultation, joint contribution and shared benefits, carry forward the open, green and anti-corruption concept, and strive to achieve the high standard, people-centered and sustainable development goals.

— Keynote Speech by Chinese President Xi Jinping at the Opening Ceremony of the Boao Forum for Asia Annual Conference 2021

To tell China's story and spread China's voice well, in November 2020, Huaneng Lower Sesan II Hydropower Station held the activities of "Cloud Open Day" themed "Energize where you are" and the release of *Sustainability Report of Chinese Enterprises in Cambodia*. SASAC of the State Council, Chinese Embassy in Cambodia, Cambodian Embassy in China, Stung Treng Provincial Government of Cambodia, Asia Vision Institute (AVI) of Cambodia, Central SOEs and other relevant units participated in the activities.

The *Sustainability Report of Chinese Enterprises in Cambodia* shows the good image of Chinese enterprises, especially Chinese state-owned enterprises, in respect of discipline and law-abiding, excellent operation, integration into local society, and active fulfillment of social responsibilities in Cambodia.

—Chairman of Asia Vision Institute of Cambodia:  
Chheang Vannarith



The Activity Site of "Cloud Open Day" and Release of the *Sustainability Report of Chinese Enterprises in Cambodia*

Under the guidance of Nick, a reporter from Cambodian mainstream media "Khmer Times", the "Cloud Open Day" activity fully displayed the charm of Huaneng Lower Sesan II Hydropower Station, the largest hydropower station in Cambodia. During the activity, Huaneng Lower Sesan II Hydropower Station was introduced in terms of production & operation, fight against COVID-19 and power supply guarantee, biodiversity protection, resettlement and social responsibility fulfillment. Its stories of adhering to the principles of amity, honesty, mutual benefit and inclusiveness, and extensive consultation, joint contribution and shared benefits in Cambodia, establishing a "new model" of long-term win-win energy cooperation between China and Cambodia, actively creating "Overseas Business Cards" for Chinese Enterprises in countries along the "Belt and Road Initiative", and shouldering the responsibility of building a bridge between the people of China and Cambodia were also told in the activity.



Scan the QR code to watch video and learn more information of the activity

Huaneng Lower Sesan II Hydropower Station serves as an important foundation for our international development platform featuring "one body and two wings", and an exemplary project of Huaneng Lancang River Hydropower Inc. for its business expansion in Southeast Asia. It is aimed at enhancing the ability of intercultural & international communication, building a work pattern of "one platform, two resources, three paths, and point-face integration", continuously improving the influence of international brands and providing a good external environment for the Company to develop overseas markets.

## One Platform to Promote Cultural Exchange

Sino-Cambodian Cultural Exchange Platform: Huaneng Lower Sesan II Hydropower Station

Huaneng Lower Sesan II Hydropower Station is the largest hydropower station in Cambodia, with a total installed capacity of 400 MW, accounting for about 14% of the total installed capacity in Cambodia. With the annual generating capacity of 1.97 TWh, it can meet the annual power demand of more than 2 million people. The Station has become an important platform for cultural exchanges between China and Cambodia through providing local clean energy services, fulfilling social responsibilities and exhibiting responsible corporate culture.

## Two Resources to Display Corporate Image

Media Resources: Cooperative Reporting with Local Media of the Target Country

The Station has been actively developing media resources, maintaining close communication with mainstream media such as NiceTV and Khmer Times in Cambodia, and cooperating with CCTV Cambodian Station, Xinhua News Agency, CCTV Vietnam Station, People's Daily Thailand Station and several other media to form a working mechanism mainly reporting Cambodia and covering Southeast Asia.

Think Tank Resources: Cooperative Research with International Think Tanks

We have reached cooperation with AVI, one of the three independent think tanks in Cambodia, to jointly complete two research subjects, i.e. Research on *Sustainable Development of Chinese Enterprises in Cambodia*, and Research on *Sustainable Development of CHNG in Cambodia*.

## Three Paths to Open up Communication Channels

Online Path: Construction and Operation of Overseas Social Media Accounts

We have opened two Facebook accounts to spread the stories of both Chinese and Cambodian employees and strengthen cultural interaction and integration. The number of followers of the accounts has exceeded 150,000, and the highest video hits has reached 1.3 million.

Offline Path: Regular Cultural Interaction Activities

We carry out various forms of Sino-Cambodian cultural activities every year, hold regular seminars for Cambodian employees, and organize cultural and sports friendship events between Chinese and Cambodian staff at important occasions such as Chinese and Cambodian traditional festivals.

Management Path: Establishing and Improving Overseas Public Opinion Control Mechanism

We have formed an overseas public opinion control mechanism featuring "one set of rules and regulations, one network linkage, and a series of management measures". No public opinion accident has occurred in the power station since its construction.

## Point-face Integration to Strengthen People-to-people Ties

Integration of Enterprise-local Society Collaboration: Building a Friendly Village Between China and Cambodia

Through in-depth communication with the local government and stakeholders, we have successfully completed the overall resettlement of 840 households, 3,690 people and four villages. It is the largest resettlement with the largest number of people in local history. In the process of resettlement, we put forward a combined compensation proposal for residential land and agricultural land, and provided 1000 m<sup>2</sup> homestead (including 80 m<sup>2</sup> housing) for villagers. We built schools, hospitals, temples, police stations and other institutions for the resettled villages, and provided all the infrastructure that the old villages lacked, such as drainage system, power grid and water wells. Lifted out of poverty continuously, villagers have established a harmonious enterprise-local society relationship with us. The resettled village has become a friendly village between China and Cambodia.

Management Convergence: Building a Bridge of Friendship Between China and Cambodia

The Station is in localized management mode. More than 220 Cambodian citizens have been employed to carry out daily work such as operation and maintenance, comprehensive management, and property logistics. During the peak period of construction, the Station provided more than 2,000 jobs for the local people. The Chinese and Cambodian staff have forged profound friendship in their work, and the Station has become a bridge of friendship between peoples of the two countries.



Resettlement Village of Huaneng Lower Sesan II Hydropower Station



Chinese and Cambodian Employees Participating in Long-distance Race

# Part I

## As a Role Model Among Chinese Companies, CHNG Sticks to the Original Aspiration to Make Great Achievements of the Era

The original aspiration and the mission of Chinese Communists is to seek happiness for the Chinese people and rejuvenation for the Chinese nation. This original aspiration and this mission, is what inspires Chinese Communists to advance forward. In our Party, each and every one of us must always breathe the same breath as the people, share the same future, and stay truly connected to them. The aspirations of the people to live a better life must always be the focus of our efforts. We must keep on striving with endless energy toward the great goal of national rejuvenation.

— Xi Jinping's speech at the 19<sup>th</sup> National Congress of the Communist Party of China

# 22

### • Optimizing and Coordinating the Industrial Layout

Coal production

76.07 million tons

Financing offered for main business by financial sector

136 billion yuan

Port throughput of shipping sector

63.45 million tons

# 24

### • Emphasizing on Improving the Quality of Development

Operating revenue

314.2 billion yuan

Profit

22.4 billion yuan

Net profit

14.7 billion yuan

# 28

### • Working Hand in Hand with Partners to Achieve Win-Win Results

Capital saving rate in procurement

21.36 %

SASAC six procurement indicators

100 %

Completing supplier evaluation

18,377 suppliers

# 32

### • Intensively Expanding the Overseas Market

Profit of overseas projects

2.128 billion yuan

Total overseas investment USD

14.332 billion

Total overseas installed capacity

9,444.4 MW

# 36

### • Building a Moderately Prosperous Society in All Respects

Total poverty alleviation funds invested

8.248 billion yuan

Poverty alleviation projects

1,572

Helping lift out of poverty

265,614 billion yuan

# 48

### • In the Face of Hardships and Dangers, Going All Out to Fight Floods and Provide Disaster Relief

## Optimizing and Coordinating the Industrial Layout



### International Trend



### Domestic Policy

"A successful enterprise must concentrate on its main business before reaching the peak of its development. Cross and mixed operation must go with the development of main business, rather than speculation for profit."

— Xi Jinping

### Huaneng's Response • Events in 2020

- ⚙️ Built up an efficient system of coal production, transport, marketing, storage and supply
- ⚙️ Set up three new energy funds with a subscription scale of 24 billion yuan in financial sector
- ⚙️ Completed the centralized management of Taicang Port, Haimen Port and Fujian Port in an orderly manner

## Focusing on the Development of Power Sector

CHNG took power sector as its core business, adhered to the green development philosophy, and continued to speed up structural adjustment. CHNG strove to vigorously develop hydropower, actively develop wind power, solar power and other forms of new energy, endeavored to develop nuclear power, optimized the development of coal-fired power, and continued to develop natural gas-fired power, so as to increase the proportion of low-carbon and clean installed capacity, and constantly enhance the efficient and clean utilization of conventional energy. In 2020, CHNG's total power generation reached 708.3 TWh at home, with a year-on-year growth rate of 0.37%; hydropower, wind power, photovoltaic and thermal power generation were 112.8 TWh, 46.5 TWh, 6.9 TWh and 542.1 TWh respectively; the installed capacity of wholly-owned and majority-owned power plants at home and abroad reached 196.44 GW, with a year-on-year growth rate of 7.47%.



Wholly-owned and majority-owned power plants at home and abroad with an installed capacity of

**196.44** GW

## Fully Developing Science and Technology Sector

CHNG strengthened its innovations in science and technology with increased capital input, fully leveraged its strength in technology and talents, and strove to grasp the core technologies with proprietary intellectual property rights. CHNG played a leading role in various major national technological projects in the energy sector, and explored a unique development path with Huaneng characteristics in development of science and technology.

Guided by the principle of "serving the core business, and geared towards production, leading edge and industrialization", CHNG boosted its innovation in institutions and mechanisms, and established a scientific research system comprising seven national key laboratories (R&D centers), two sci-tech research bases, and several company-level laboratories.

## Optimizing the Development of Coal Sector

CHNG gave high priority to effectiveness, leveraged the role of synergy effect of coal sector, and further optimized the development layout. CHNG maintained a reasonable development pace, actively integrated internal resource, and steadily promoted the specialized management of the coal sector. Hetaoyu Mine Auxiliary Shaft Excavation and Lining Project and Xin Zhuang Mine Main Shaft Excavation and Lining Project of Qingyang Coal Power Co., Ltd., were awarded **Quality Engineering in Coal Industry** and the highest award for construction project quality management in coal industry in China – **Engineering Award of "Sun Cup"**.

CHNG established an efficient system of coal production, transport, marketing, storage and supply to achieve the goal of unified supply of coal (transported by water) by Huaneng Fuel Company, and the establishment and formal operation of dispatching centers for all direct access areas by land. In 2020, CHNG completed a supply of 210 million tons of coal, creating a comprehensive benefit of more than 7 billion yuan. CHNG has successively launched coal direct supply business by land for 12 plants such as Luohuang, Qinbei and Jinggangshan, and performed the joint trial operation of Hetaoyu Mine and Chicheng Mine.

CHNG's profit in coal sector reached 2.579 billion yuan; the output of coal was 76.07 million tons, an increase of 1.57 million tons year on year; the sales volume was 32.38 million tons, an increase of 8.47 million tons year on year. The coal sector fully guaranteed the internal coordinated supply of coal. Coal enterprises have supplied 44.52 million tons of thermal coal for Huaneng's power plants.

## Effectively Developing Financial Sector

With Huaneng Capital Services Co., Ltd. as controlling parent company, CHNG holds and manages more than 10 financial or pseudo-banking enterprises, covering traditional financial fields such as securities, insurance, trust, fund, futures and leasing, and emerging financial fields such as carbon assets, private equity management and Internet finance.

CHNG remains committed to the philosophy of "capital management" and sets up a three-level management interface to lay a good foundation for further playing the supporting role of the financial sector. In 2020, CHNG continued to strengthen its financial innovation: setting up three new energy funds with a subscription scale of 24 billion yuan; CHNG developed a new model of equity financing, implemented a pilot program of issuing 8 billion yuan of limited holding type asset-backed notes, and promoted product standardization.

During the 13th Five-Year Plan period, CHNG continued to improve the layout in financial sector, and enhance the role of combination of industry and finance, offering a total of 136 billion yuan of financing for main business.

## Developing Transportation Sector Steadily

CHNG accelerates the development of logistics system integrating coal, road, port and transportation, exerts the advantage of specialized management as its main guideline, and strengthens unified and coordinated management. CHNG integrates industrial chain resources, promotes the development of large logistics system, optimizes real-time scheduling, develops cross-regional supply directly by land, and effectively promotes internal industrial coordination.

China Huaneng Group Fuel Co., Ltd., has established the Port and Shipping Management Department to rationally allocate resources, transport capacity and power plant demands, and complete the centralized management of Taicang Port, Haimen Port and Fujian Port in an orderly manner. CHNG further strengthens the cooperation of ports, and all the newly developed resources (transported by water) are transferred at Caofeidian Port, and resources to be transported from sea to rivers are transferred at Taicang Port.

In 2020, the shipping sector achieved a profit of 37 million yuan and completed 63.45 million tons of port handling capacity. Caofeidian Port Berth 6 Project has been approved, with the completed freight transport of 51.03 million tons, a year-on-year increase of 0.59%. Rui'ning Company completed 43.31 million tons of freight transport, and put as many as 80 vessels online, reaching a record high. Huaneng Coal Terminal Project at Taicang Port Area, Suzhou Port was awarded the **National Quality Engineering Award**, becoming the first water transportation project for CHNG to win this honor.



Huaneng Coal Terminal Project - Taicang Port Area, Suzhou Port

CHNG actively advanced the development of smart supply chain, and undertook logistics and transportation tasks within Huaneng in the whole year, with a total of 2,186 trips and 64,900 tons. CHNG continuously increased its investment in technical logistics facilities, and improved its full scene operation capacity: Nengxin 2.0 was launched, with an opening amount of over 10.6 billion yuan, and a total of 852 suppliers registered; the number of commodities in e-mail increased from 30,000 to 510,000, and online epidemic prevention, poverty alleviation and Huaneng supermarket were launched; a travel system "Nengchuxing" was developed, and it could preliminarily provide precise and efficient intelligent travel services. In 2020, Shanghai Huaneng E-business Co., Ltd. was rated as **"excellent"** in the mid-term evaluation of national pilot enterprises of supply chain innovation and application by the Ministry of Commerce.

Focusing on client needs in the power industry, Shanghai Huaneng has built an integrated smart supply chain service platform of "Huaneng Smart Energy Supply Chain", integrating procurement, e-commerce transactions, smart logistics, information technology and other service resources, providing all-round and full process supply chain services in a one-stop "integrated service" way, and actively empowering small and medium-sized enterprises. The overall efficiency of the supply chain is constantly improving.

— The Ministry of Commerce



# Emphasizing on Improving the Quality of Development



## International Trend



## Domestic Policy

"High-quality development is the fundamental requirement for economic work. High-quality development is the development that embodies the new development concepts and the economic development changes from 'Is it enough?' to 'Is it good enough?'"

— Xi Jinping

## Huaneng's Response • Events in 2020

- Established a management innovation expert pool and conducted management innovation project development
- Intensified efforts on litigation, and avoided or recovered losses of 1.554 billion yuan
- Sorted out 1,256 risk points, and improved 1,537 control measures

## Value Maintenance and Appreciation of Assets

CHNG made coordinated efforts to respond to COVID-19 and advance operation and development, and ensured a steady increase in operating performance. In 2020, CHNG achieved an operating revenue of 314.2 billion yuan, with a year-on-year increase of 2.6%, realized a profit of 22.4 billion yuan and a net profit of 14.7 billion yuan, with a year-on-year increase of 25.6% and 27.3% respectively - a growth rate faster than that of most comparable enterprises.

CHNG made a new breakthrough in "handling troubled enterprises". Compared with 2018, the loss of key loss-making subsidiaries decreased by 10.8 billion yuan, with a decrease rate of 62.4%, much better than the 12.4% target required by SASAC. CHNG actively disposed of 45 insolvent enterprises, canceled 16 enterprises and turned 23 enterprises from loss to profit. The number of loss-making grassroots enterprises decreased by 21 over the same period of last year, and the percentage of loss-making enterprises in the coal-fired power sector decreased by 10% year-on-year.



The loss of key loss-making subsidiaries decreased by

**10.8** billion yuan

## Carrying out Reform of State-owned Enterprises

CHNG thoroughly implemented the Three-year Action Plan for Reform of State-owned Enterprises issued by SASAC, formulated the *Implementation Plan of Three-year Action for Reform (2020-2022)*, and comprehensively completed 24 key reform tasks in 6 aspects throughout the year.

CHNG further promoted and implemented the "double-hundred action". Huaneng Xiongfei (subordinate to Huaneng Renewables) successfully introduced new investors and was put into operation. Great Wall Securities (subordinate to Huaneng Capital) completed IPO. Sichuan Energy Sales Co., Ltd. formulated the implementation plan of employee performance incentive mechanism. Xinneng Taishan fully implemented the tenure system and contractual management for managers and job bidding for managers, and has won **Grade A in the evaluation of three system reforms of the State Council Leading Group on SOE Reform**.

In 2020, CHNG developed the *Management Innovation Work Standard*, established a management innovation expert pool and conducted management innovation project development, achieving fruitful results in management innovation. CHNG was awarded **2 first prizes and 11 second prizes at the national level, and 2 first prizes and 10 second prizes in the power industry for its management innovation**, maintaining leading positions among enterprises of its kind in terms of quality and quantity of award-winning achievements.



Completed

**24**

key reform tasks in the year

## Promoting Corporate Governance According to Law

CHNG continuously advanced the law-based governance of the enterprise, implemented the goal and task of building a rule-of-law SOE in 2020, intensified efforts over litigation, handled 482 cases of legal disputes, and avoided or recovered losses of 1.554 billion yuan.

CHNG regularly carried out the basic task of rule of law, deepened the reform of audit system, strengthened internal audit supervision, and paid close attention to problem rectification, achieving 93% fulfillment of rectification. In 2020, the Audit Department of Huaneng Jiangsu Energy Development Co., Ltd., was awarded the title of **"National Advanced Group of Internal Audit"**.



Fulfilled

**93%**

of internal audit rectification



## Conducting a Theme Activity of "Learning the Constitution in the Enterprise"

During the 2020 national Constitution publicity week, in order to create a positive learning environment of respecting, studying, observing, and applying the law, CHNG actively conducted a theme activity of learning the Constitution in the enterprise.

During the activity, CHNG made publicity cards and display boards with the theme of publicizing and implementing the Constitution, distributed books about the Constitution. The leaders took the lead in learning the Constitution; the activity of answering questions about the Constitution was conducted by using mobile phones; employees were mobilized to participate in the special study on the Constitution via "XUEXI QIANGGUO" APP, thus to publicize legal knowledge to cadres and workers online and offline, keep the knowledge of the rule of law in mind, and enhance the awareness of the rule of law among all people.



Grassroots Enterprises Conducting a Theme Activity of "Learning the Constitution in the Enterprise"

## Conducting Integrity and Compliance Management

CHNG worked to promote the compliance management system, formulated *the Planning Scheme for the Construction of the Compliance Management System*, *the Implementation Scheme for the Construction of the Compliance Management System*, prepared *the Compliance Management Manual* and *the Compliance Management Measures*, and initially completed the preparation of the compliance risk database. In 2020, CHNG strictly implemented the decision-making arrangements of the National Development and Reform Commission and the National Energy Administration on the construction of the credit system, increased publicity and education, and worked to promote credit construction. CHNG headquarters, 13 regional branches and 98 grassroots power plants received **the AAA credit rating of CEC**.

## Reducing Cost, Improving Quality and Increasing Efficiency

CHNG made great efforts to improve quality and efficiency, carefully performed top-level design, and issued special action plans. CHNG formulated 36 key tasks and 181 specific work measures on 6 aspects: green transition for development, science and technology leading to innovation, excellent operation and steady growth, tackling difficulties and strengthening areas of weakness, highlighting key points to promote reform, stable operation and preventing risks, with a fulfillment rate of 99%, successfully overcoming the negative impacts of COVID-19 and achieving the goal of steady growth of economic benefits and high-quality development.

In 2020, CHNG made remarkable achievements in increasing revenue and reducing expenditures, and enhanced the centralized management of funds. The total cost of interest-bearing liabilities at the end of 2020 decreased by 0.64% year-on-year, saving financial expenses of 3 billion yuan. The increase in operating income was higher than that in cost by 1.3%. The ratio of profits to cost increased by 1.56% year-on-year. CHNG received a subsidy of 6 billion yuan on renewable energy and carried out condition maintenance of units, saving maintenance costs of 500 million yuan. A total of 157 unit-times of independent maintenance was made, and saved 200 million yuan.



Completion rate of quality and efficiency improvement tasks was

99%

## Intensifying Risk Prevention and Control

CHNG focused on enhancing prevention and control of major risks, conducted annual major risk assessment, and formulated 81 risk prevention and control measures, thus identifying seven major risks in epidemic prevention and control, work safety, environmental protection, market competition, capital management, overseas development and scientific and technological innovation. CHNG established an internal control inspection and risk notification mechanism, checked and randomly inspected the implementation of major risk prevention and control measures, implementation of management responsibilities, reporting and disposal of risk events, construction of internal control system, defect rectification, internal control evaluation quality, etc., and reported them quarterly.

CHNG actively built up an internal control system, revised the risk catalogue, improved 29 risk descriptions and adjusted 58 risk factors. CHNG sorted out 1,256 risk points in 892 business processes and improved 1,537 control measures.

## Building an Intelligent Huaneng

According to the "1+9+N" system design and the latest division of responsibilities of each department, CHNG developed the "2020 Information Management System Construction Plan", vigorously promoted the information application in the business management field, and strove to achieve the goal of "Digital Huaneng".

In 2020, CHNG made great efforts to build the industrial Internet, developed an industry-level platform, and four industrial Internet pilot applications deployed in Yuhuan Power Plant passed the scientific and technological review. Industrial Internet Project Phase I achieved full coverage in the hydropower sector, and covered 19 power plants of 10 regional branches in the thermal power sector, with a total of 41.5 billion pieces of data collected, 198 types of intelligent applications and 6,787 applications developed, and 149 million calls of application services made.

Huaneng Industrial Internet Project generally meets the acceptance technical standards, shows strong platform capability and outstanding industry attributes, and boasts obvious advantages in industrial models, artificial intelligence algorithms, and encryption chips.

— Beijing Municipal Bureau of Economy and Information Technology



# Working Hand in Hand with Partners to Achieve Win-Win Results



## International Trend



## Domestic Policy

"China is a country with a vast territory and large population. China has great differences in natural resource endowments in different regions, which is rare to see in the world. Balanced development across areas and regions has always been recognized as a major issue."

— Xi Jinping

## Huaneng's Response • Events in 2020

- Initiated the establishment of Red-Green Alliance of Xiong'an New Area
- Signed cooperation agreements with 5 enterprises, such as LONGI, SANY and Siemens
- Actively responded to impacts of COVID-19, and innovatively applied "centralized + remote" new procurement mechanism

## Facilitating the Green Development of Xiong'an New Area

At the China Xiong'an Ecological Civilization Forum 2020, CHNG cooperated with 12 central SOEs and Xiong'an New Area Ecological Environmental Protection Association to jointly establish the Red-Green Alliance of Xiong'an New Area. The Alliance adheres to the principle of "red traditions - staying true to the original aspiration, green mission - ecological civilization construction of Xiong'an", and integrates the ideology of ecological civilization into all walks of life, facilitating the green development of Xiong'an New Area.



Xiong'an Ecological Civilization Forum 2020

CHNG always regarded Hainan Province as a strategic place for high-quality development, and fully leveraged synergy advantage of the industrial sector. It introduced and registered 4 companies including Huaneng Supply Chain, Yankuang (Hainan) Intelligent Logistics, Taizhong (Hainan) Logistics and Huaneng Hainan Changjiang Nuclear Power Company, reorganized the international energy trading center, and implemented two major projects of Changjiang Nuclear Power Plant Phase II and Yangpu Gas-fired Power Project. In September 2020, CHNG signed a strategic cooperation agreement with Hainan Province to strengthen cooperation in power construction, clean energy development and other fields, continuously optimize Hainan's energy structure, improve the quality of energy security, and fully support the construction of Hainan free trade port.

## Supporting Regional Development

CHNG boosted the coordinated development of the Beijing-Tianjin-Hebei region, and responded to the construction of "Four Centers" in Beijing. According to the requirements for building a center for national innovation in Beijing as well as CHNG's science and technology guidance, we sped up the construction of Huaneng Talent Base - Beijing Future Science Park, and carried out the construction of the network security center, digital and intelligent technology and other science and technology industrialization.

In 2020, CHNG signed a strategic cooperation framework agreement with Tianjin Municipality on strengthening energy economy, and made it clear to enhance cooperation in new energy development, power generation/heat supply guarantee, comprehensive energy services and other related fields.



## Building Cooperation Platforms

The Company signed strategic cooperation agreements with Yunnan, Qinghai and other local governments in an effort to achieve high-quality development, industrial transformation and layout during the 14th Five-Year Plan period. The Company strengthened cooperation with upstream and downstream enterprises, universities and scientific research institutions, and has signed cooperation agreements with 5 enterprises, including LONGI, SANY and Siemens to conduct further collaboration in project development, scientific and technological innovation and energy services, thus to promote win-win results among all parties.

### With North China Electric Power University

The Company signed a strategic cooperation agreement with North China Electric Power University to jointly build a world-class laboratory of offshore wind power and smart energy system coordinating basic theoretical research, key technology research and development, and major project demonstration

### With Yunnan Province

The Company signed a cooperation agreement of energy economy with Yunnan Province to strengthen practical cooperation in green energy, green manufacturing, energy conservation and environmental protection, and to jointly build a new world-class green development hub

### With Qinghai Province

The Company signed a strategic cooperation agreement with Qinghai Province to push forward cooperation in green development, scientific and technological innovation, smart energy and other fields, and jointly promote the construction of Qinghai as an important national new energy industry base

### With Nanjing Municipality

The Company signed a strategic cooperation agreement with Nanjing Municipality to carry out an all-round cooperation in regional cooperation and development, further international cooperation, green development and the combination of industry and finance



The Company Signed a Strategic Cooperation Agreement with North China Electric Power University



The Company Signed a Cooperation Agreement of Energy Economy with Yunnan Province



The Company Signed a Strategic Cooperation Agreement with Qinghai Province



The Company Signed a Strategic Cooperation Agreement with Nanjing Municipality



The total procurement amount was **93.807** billion yuan

## Implementing the Responsible Procurement Policy

In 2020, The Company completed a total procurement amount of 93.807 billion yuan, saving a total of 25.477 billion yuan compared with the estimated budget, with a capital saving rate of 21.36%. All procurement indicators, including centralized procurement rate, on-line procurement rate, public procurement rate, e-bidding rate, suppliers' dynamic quantitative assessment rate and procurement quality control coverage rate, were all at 100%, achieved the SASAC's "advanced level" standard.

### Optimizing Procurement Management

The Company attaches great importance to procurement management, and takes "compliance management, technological innovation, and providing responsible products" as the basic requirements for supplier selection, and strictly implements the review process of "registration, application, audit, accreditation, publicity and listing" to ensure the quality of suppliers in the database. In 2020, the Company comprehensively optimized the procurement system and revised 25 procurement and materials management systems; optimized and adjusted level-1 centralized procurement catalogue, and further defined the scope of two-level centralized procurement; compiled 234 bidding documents for level-2 centralized procurement to effectively promote the structuring and standardization of procurement documents.

### Innovatively Applying "Centralized + Remote" New Procurement Mechanism

To ensure the normal implementation of procurement business in response to impacts of COVID-19, the Company issued three versions of guidelines for procurement management in corresponding pandemic stages, and formulated the decentralized remote bidding evaluation mechanism during the COVID-19 outbreak, so as to ensure the continuous and orderly procurement of all subordinate units during the pandemic outbreak. The Company set up a working mechanism combining centralized meeting and remote on-line bidding evaluation in the context of routine control and prevention of the epidemic. The Company also constructed remote bidding evaluation sub centers and venues. Kunming, Hulunbuir, Jinan and Shanghai sub centers were put into operation in succession to effectively assist the resumption of work, production and construction.

### Deepening Platform Application

The Company further strengthens the promotion and application of e-commerce platform, continuously enhances the operation and maintenance management, effectively increases the proportion of whole-process procurement, and improves the level of procurement transparency. By the end of 2020, a total of 135,420 suppliers have registered at e-commerce platform, including 75,271 formal suppliers and 60,149 potential suppliers.



Accumulative total of **135,420** registered suppliers at e-commerce platform

### Improving Procurement Quality

The Company continues to strengthen the management and information development of bid evaluation experts, accomplishes functions of experts online evaluation and random selection, and continuously carries out monthly benchmarking of expert management. In 2020, the attendance rate of experts was 38.42%, with a year-on-year increase of 12 percentage points.

The Company further strengthened the management of suppliers, organized and completed the comprehensive evaluation of 18,377 suppliers, including 15,052 grade A suppliers, 3,167 grade B suppliers, and 158 grade C suppliers. The Company warned grade C suppliers and urged them to find out problems and improve the quality.

# Intensively Expanding the Overseas Market



## International Trend



## Domestic Policy

The BRI maybe China's idea, but its opportunities and outcomes are going to benefit the world. The BRI is a long-term endeavor and a common cause of all its cooperation partners.

— Xi Jinping

## Huaneng's Response • Events in 2020

- ⚙️ The Company has established 7 overseas representative offices in countries including the UK, Pakistan, Myanmar and Cambodia
- ⚙️ Set up the Institute of Technology and International Standards (Beijing) Co. Ltd (ITIS) and successfully hosted the "International Standards Summit 2020"
- ⚙️ Steadily promoted the China Huaneng UK Minety Battery Storage Project, and completed cold and hot commissioning of the battery system

## Strengthening the Top-level Design

Building on international development platform featuring "One Main Body and Two Wings", The Company has firmly seized the opportunity of deepened Belt and Road cooperation to set up 7 overseas representative offices in the UK, Pakistan, Myanmar, Cambodia, Singapore, Australia and Kazakhstan. In this way, The Company's international business and cooperation achievements have been expanding with significantly enhanced business capabilities, and continuously improved ability of risk control.

The Company timely tracked global hotspot issues to grasp policy trends, paid close attention to new tendencies in the international energy market, and compiled 12 issues of cooperation dynamic information compilation to provide information supports for international development.



Set up  
**7**  
overseas representative offices



**100%**  
Visa Granted of Visiting groups



**6.442** billion yuan  
of procurement agreements signed  
at the China International Import  
Expo

## Improving Overseas Guarantee

The Company constantly improved the foreign affairs management system, formulated the *Foreign Reception Management Measures*, further standardized foreign exchange activities, and improved the management process and efficiency.

The Company strengthened the service guarantee of foreign affairs, and strictly controlled the matters related to entry and exit on business during the pandemic. In 2020, The Company dispatched a total of 52 batch-times, totaling 448 person-times of visiting delegations with 100% visa granted.

## Carrying out International Exchanges

In pursuit of the philosophy of "International Exchanges Serve the Overall Diplomacy of the Country", the Company has been keeping close contact with the World Economic Forum, Boao Forum for Asia, Global Sustainable Electricity Partnership (GSEP) and Global Energy Interconnection Development and Cooperation Organization, and has been actively attending activities of relevant international organizations to enhance the Company's international recognition and reputation.

In 2020, the Company attended the 3<sup>rd</sup> China International Import Expo (CIIEC) and conducted on-site signing activities with GE, Mitsubishi and Siemens. The Company also carried out on-line signing activities on intelligent and high-end equipment and off-site signing activities on coal, with a total of 13 procurement agreements valued 6.442 billion yuan. Due to its excellence in procurement, the Company was highly praised by SASAC and China International Import Expo Bureau, and was recommended by SASAC as **a star enterprise of procurement**



Contract Signing Activity of CHNG on Procurement of Imported Coal at the 3<sup>rd</sup> China International Import Expo

## Promoting the Development of Standards

As the chairman office of the IEC (International Electrotechnical Commission), the Company has attached great importance to service supports to IEC, and the establishment of innovation bases. The Company set up the ITIS, and successfully hosted the "International Standards Summit 2020".

The Company enhanced the development of international standardization system, taking the lead in releasing the *Outline of International Standardization Work Plan* in the energy industry. The Company formulated three working systems to fully motivate employees to participate in international standardization work. In 2020, the Company successfully released 2 international standards, initiated 5 international standards, and carried out international standard research in areas including new energy, co-generation, energy conservation and environmental protection, metal corrosion and other technical fields.

## Crafting Projects of Excellent Quality

The Company actively promoted international development and launched high-quality power projects, distributed in countries including the UK, Myanmar, Cambodia, and Pakistan, with coal-fired power plants, gas-fired power plants, and hydropower stations as the mainstay.

The Company's overseas sector has reached profitability for four consecutive years since 2017, and all overseas projects turned from deficits to profit in 2020, contributing 2.128 billion yuan, which hit the record high. By the end of 2020, the Company's total overseas investment reached USD 14.332 billion, and the wholly-owned and majority-owned installed capacity was 9.4444 GW.



Annual electricity generation of Huaneng Sahiwal Coal-fired Power Plant

6.54 TWh

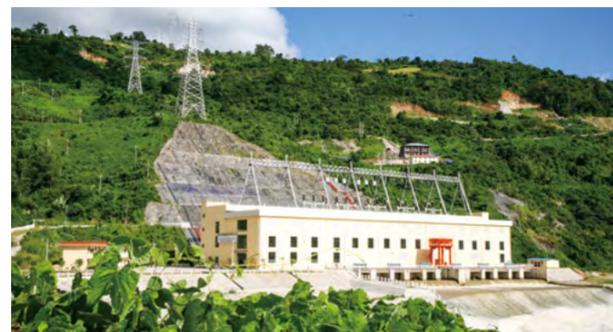
- ⚙️ Huaneng Sahiwal Coal-fired Power Plant generated 6.54 TWh of electricity, effectively filling the gap in power shortage in Pakistan during the COVID-19 outbreak, and providing strong guarantee for local economic recovery and living standards improvement
- ⚙️ Huaneng Lower Sesan II Hydropower Station provides Cambodia with about 2 TWh of clean energy annually to meet the power demand of more than 2 million people in a year, effectively alleviating the local power shortage
- ⚙️ Myanmar Shweli River I Hydropower Station generated 3.814 TWh of electricity, and the electricity supplied to Myanmar accounts for 1/3 of the country's national grid capacity. The station was awarded **"the Fighting against COVID-19 and Ensuring Power Supply Mark of Honor"** issued by the Ministry of Electricity and Energy of Myanmar in 2020
- ⚙️ Steadily promoted the China Huaneng UK Minety Battery Storage Project, and completed cold and hot commissioning of battery system
- ⚙️ Smoothly carry forward Singapore Jurong Island Desalination Plant Project and Singapore NESTE Expansion Project



Huaneng Sahiwal Coal-fired Power Plant



Huaneng Lower Sesan II Hydropower Station



Myanmar Shweli River I Hydropower Station



China Huaneng UK Minety Battery Storage Project

## Driving Local Development

Adhering to the concept of "constructing a power station and driving the local economy", the Company ensures the smooth operation of overseas projects while actively fulfilling its economic, environmental and social responsibilities in hosted countries to benefit the local people.

### Actively Fighting Against COVID-19 and Promoting Pakistan's Economic and Social Development

Huaneng Sahiwal Coal-fired Power Plant owns 199 regular employees and more than 300 temporary employees, paying taxes to the local government of more than USD 400 million. Facing the economic recession in result of COVID-19, The Company effectively promotes and improves local economic development and employment level.

In response to the severe outbreak in Pakistan, the Company was committed to providing free and high-quality education for the local people. Huaneng Ruyi Technical Training School actively fought against COVID-19, and re-arranged courses and implemented management in an orderly manner to ensure the successful graduation of students in practical training class and Chinese language training class. In February 2020, 18 students from the Chinese language training class took part in HSK-2 (Level II) examination, and all of them passed, with an excellent rate of 78%.

At the 12<sup>th</sup> Corporate Social Responsibility Summit of National Forum for Environment & Health (NFEH) of Pakistan, the Company won four awards: **the Best Social Responsibility Award, the Best Vocational Training Award, the Most Ethical Publicity**

**Award and the Most Sustainable Development Award.** In addition, the Company was also awarded **the Fire Safety Award 2020, Outstanding Environmental Contribution Award** and other honors, which greatly enhance CHNG's popularity and reputation in Pakistan.



Chinese Language Training at Huaneng Ruyi Technical Training School

### Carrying out Cleaner Production in Overseas Power Plants

The Company invested in the construction of the air monitoring station near the plant area, and actively signed an agreement with a third-party environmental monitoring company to monitor the environmental protection data around the power station in real time, so as to work in open and transparent ways. The emissions of sulfur dioxide, nitrogen oxides and dust were strictly controlled in the power station. Mercury content in the flue gas was less than one thousandth of the environmental protection standard of Pakistan, and the pollutant content was far lower than the standard value required by Pakistan, World Bank and developed countries in Europe and America.

The power plant strengthen the classification and recovery control of industrial sewage, coal contained sewage, oily sewage, and domestic sewage. After contact oxidation or harmless treatment in the

collection tank, the sewage was returned to the clean water tank and reused in the power plant to achieve "zero discharge" of sewage.



Green Huaneng Sahiwal Coal-fired Power Plant

Sahiwal Coal-fired Power Plant regularly submits its environmental protection data, and we have visited the power plant several times for spot inspection. Every time, its data are much better than the national environmental protection standards of Pakistan.



— Zahid Ahmed, Official of Pakistan Punjab Environmental Protection Department

# Building a Moderately Prosperous Society in All Respects



## International Trend



## Domestic Policy

The battle against poverty cannot be won easily. From a decisive achievement to an overall victory, difficulties and challenges we face remain formidable, and we must not slacken our efforts.

— Xi Jinping

## Huaneng's Response • Events in 2020

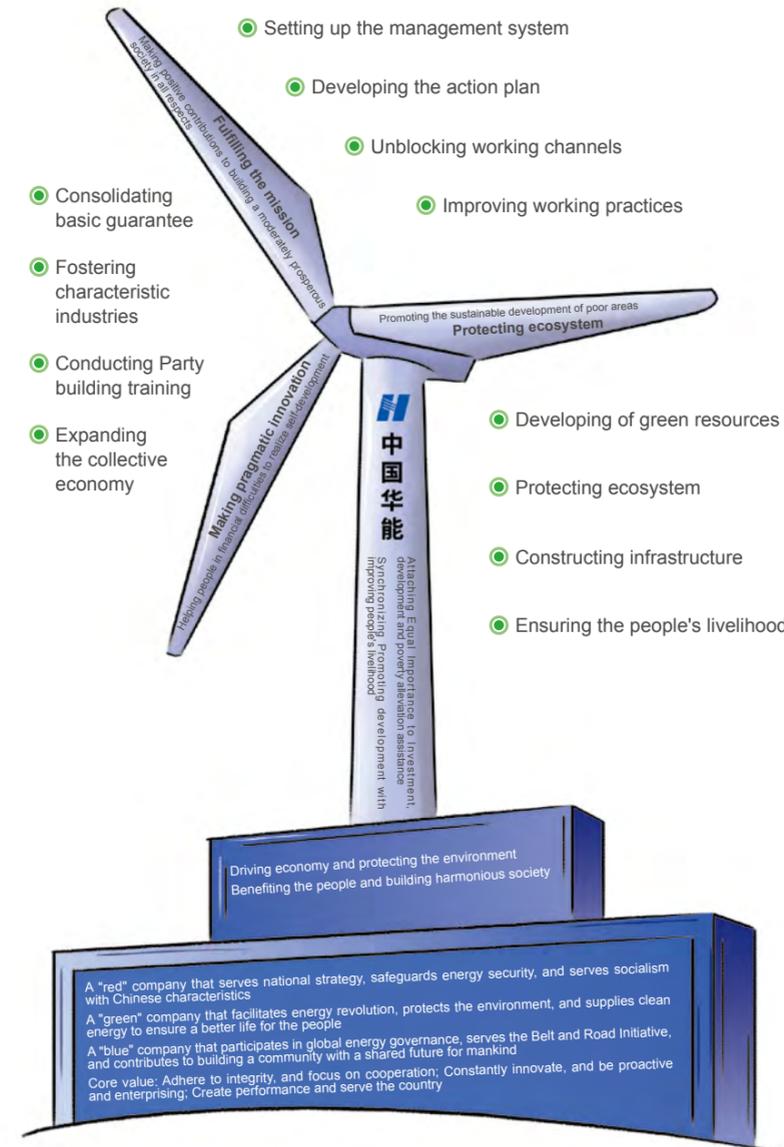
- ⚙️ Fulfilled the targets specified in the *Responsibility Agreement of Central Units on Targeted Poverty Alleviation (2020)*
- ⚙️ Lifted all poverty-stricken counties and villages supported by The Company out of poverty
- ⚙️ Invested 1.35 billion yuan in fixed-point assistance to Lancang County, Yunnan Province to achieve poverty alleviation

## Carrying out Targeted Poverty Alleviation to Demonstrate the Patriotism to the Nation

### Huaneng Characteristics • Innovate Management

#### Improving Top-level Organization

The Company established the poverty alleviation assistance work leading group, with the Party leading group deputy secretary and the Vice Presidents in charge serving as the deputy team leader. Main leaders and members of leading group make a special visit to poor areas every year for investigation and supervision. The Company organized functional departments, local enterprises and temporary cadres to make annual work plans based on actual situation, fully implemented main responsibilities, and regularly carry out functional supervision. The poverty alleviation assistance is included in the annual assessment scope of the Party building work responsibility system. An organizational system is formed to fulfill respective duties, and a work system is established to coordinate all interested parties, thus to generate a responsibility system with concentrated and joint efforts to tackle key problems. The guarantee system is subject to whole-process supervision and strict assessment.



Targeted Poverty Alleviation Model: Being Led by the Three-Color Culture and Empowered by Infrastructure Construction

### Building Characteristic Poverty Alleviation Model

In the process of targeted poverty alleviation, the Company has formed a distinctive working mechanism and explored a targeted poverty alleviation model featuring "Being led by the Three-Color Culture and Empowered by Infrastructure Construction". Applying wind turbine unit as the image symbol, the model implies the Company is committed to clean energy and new energy industries. The base, tower, and blades of the turbine and air flow fluctuations across the blades vividly reflect the whole connotation of the Company's poverty alleviation model based on "Being led by the Three-Color Culture and Empowered by Infrastructure Construction".



Scan the QR code, and check more information about The Company's poverty alleviation model

## Building Institutional Guarantee System

Since the 19<sup>th</sup> CPC National Congress, The Company has successively formulated and implemented the following files, including the *Management Measures for Poverty Alleviation Assistance*, *the Measures for the Selection and Management of Aid Cadres*, *the Notice on Matters Concerning Remuneration Package of Resident Cadres In Villages for Poverty Alleviation*, *the Implementation Plan for Special Governance of Work Style in Poverty Alleviation*, and the "Red Action Plan" *Work Scheme for Targeted Poverty Alleviation Campaign*. The Company continues to improve rules and regulations for poverty alleviation, takes the lead in poverty alleviation, and fully supports the poverty-stricken areas to win the fight against the battle.

In 2020, facing dual severe challenges caused by the formidable task of fighting against poverty and COVID-19, the Company formulated the *Work Scheme for Winning the Battle Against Poverty*, and required all subsidiaries to deeply understand the urgency of completing the arduous task of poverty alleviation, and set goals to surmount difficulties and strive to overcome the impact of COVID-19, thus to help poor areas to attain a complete victory in the fight against poverty.

## Poverty Alleviation Through Consumption

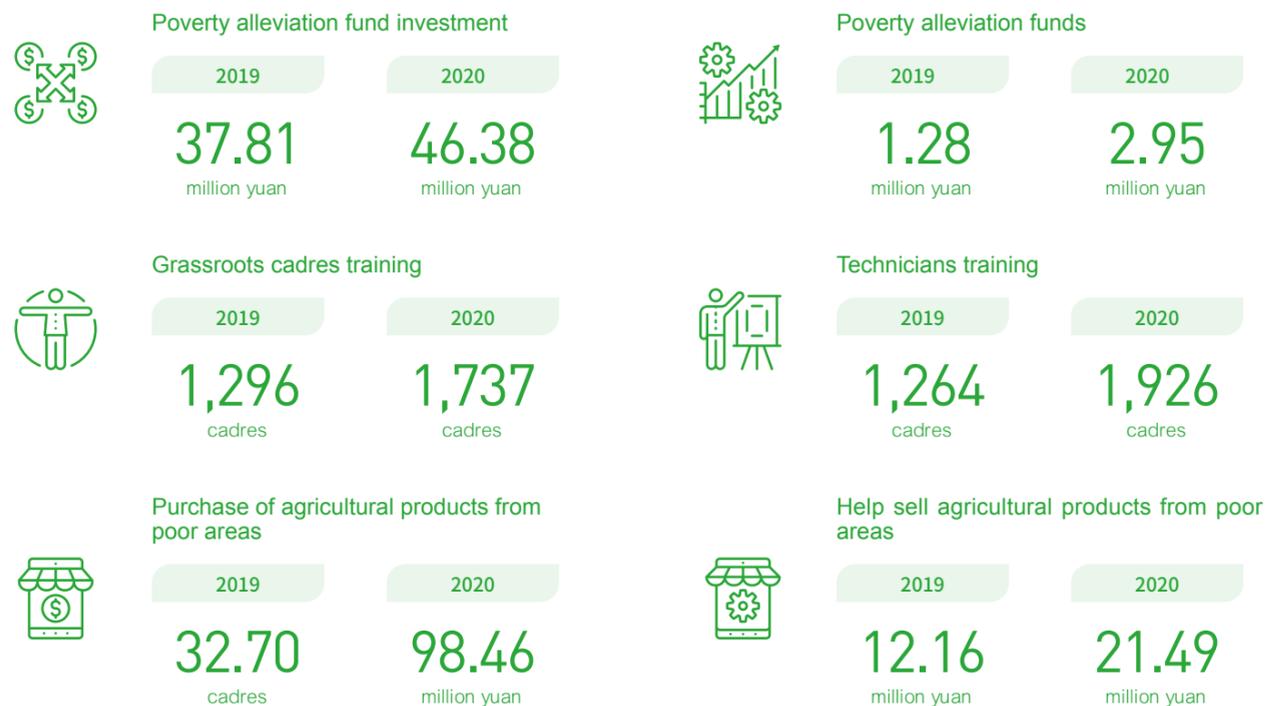
The Company incorporated "Internet+" with the poverty alleviation work, and actively implemented the *Notice on the Construction of E-commerce Platform for Central SOEs Consumption of Products from Poor Areas* issued by SASAC, and completed the construction of "Huaneng Poverty Alleviation Venue". The Company entrusted e-commerce enterprises to develop Huaneng order management system, and provided poverty alleviation products from poor areas to its subsidiaries online. The Company carried out consumption cooperation for poverty alleviation, and recommended the online selling of products from designated counties on the e-commerce platform of State Grid. The Company organized temporary cadres to sell products through live streaming at JD, Taobao, Huaneng Chengzhangbao and other e-commerce platforms, and sold poverty relief products of the National People's Congress, NDRC, more than 10 central SOEs and 14 energy enterprises online.

In 2020, the Company achieved full coverage of all its subsidiaries spending on products from poor areas, and all employees actively participated in poverty relief through consumption, with a total purchase of 98.46 million yuan of agricultural products from poor areas and help sell 21.49 million yuan of agricultural products from poor areas. The Company fully supported the sales of agricultural products in Hubei Province, and opened a special procurement channel on online order platform, with a total purchase of 3.77 million yuan.

## Sparing No Effort to Implement Targeted Poverty Alleviation

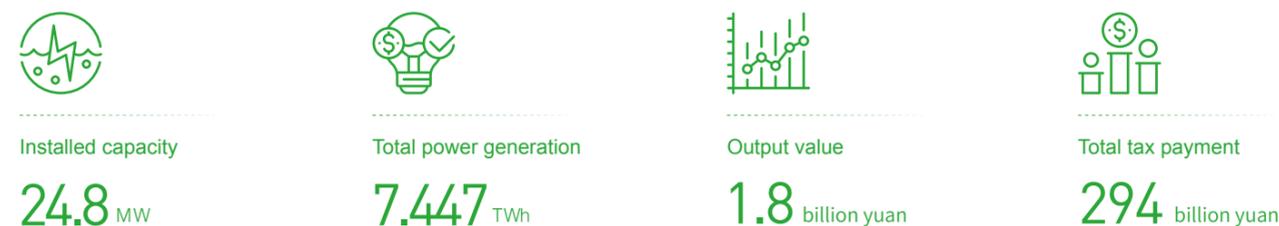
As a central SOE, the Company firmly implemented the work deployment of the CPC Central Committee and the State Council on targeted poverty alleviation for which the central units take responsibility, and help to lift Hengshan District of Yulin City, Shaanxi Province and Aheqi County of Xinjiang Uygur Autonomous Region out of poverty in September 2018 and April 2019. In 2020, the Company's six indicators, including targeted poverty alleviation investment, assistance funds introduction, grassroots cadres training, technical personnel training, purchase of agricultural products from poor areas, and assistance to sell agricultural products from poor areas were respectively 1.03, 2.27, 1.33, 1.48, 2.83, and 1.65 times the required values in the *Responsibility Agreement of Central Units on Targeted Poverty Alleviation (2020)*, fully fulfilling the targets.

### Big Data on CHNG's Performance in Targeted Poverty Alleviation



## Poverty Relief with Electricity and Developing Green Energy

The Company developed hydropower resources of the Tuoshigan River in Aheqi County, and invested 2.1 billion yuan in building Biedieli Hydropower Station with an installed capacity of 248 MW. Since put into operation, the station has generated 7.447 TWh of electricity, achieving an output of 1.8 billion yuan, paying taxes of 294 million yuan to local governments. In 2020, the Company paid taxes more than 29 million yuan. The Company injects momentum into the local mineral resources, water resources and agricultural development.



## Developing Characteristic Industries Suited to Local Conditions

The Company strongly supports the development of seabuckthorn industry in Aheqi County, and makes best use of more than 45,000 mu (about 741.35 acres) of newly-added irrigation area formed by the construction of Biedieli Hydropower Station to plant over 70,000 mu (about 11,532.12 acres) of seabuckthorn, effectively broadening the channels for farmers and herdsmen to increase their income, and greatly improving local ecological environment. The Company invested 23.2 million yuan in constructing Seabuckthorn Industrial Park and standardized factories. The Company successfully introduced 30 million yuan from mainland enterprises to construct a seabuckthorn deep-processing project, which was put into operation in 2020. More than 450 tons of seabuckthorn fruits harvested in the whole county was fully purchased. Farmers and herdsmen received income of 1.97 million yuan, an increase of 5.5 times over the previous year. The Company conducted "Gobi Seabuckthorn" brand promotion activities, and set up the experience hall of characteristic agricultural products in Aheqi County in Urumqi and Chengdu, with sales exceeding 10 million yuan this year. In 2020, 93 households from Biedieli Village participated in Seabuckthorn planting and generated income of 286,900 yuan, 137 households picked Seabuckthorn and generated income of 240,000 yuan. Halaqi Village has gradually organized 150 to 350 people to participate in Seabuckthorn picking for nearly a month, with labor income of more than 1 million yuan and village collective income increase of 120,000 yuan.



Seabuckthorn Picking in Aheqi County

The Company promoted the establishment of village joint-stock economic cooperatives in Biedieli Village, focused on the planting and management of seabuckthorn industry and apricot forest industry, and expanded marketing channels of agricultural and animal husbandry products. In 2020, the project on 300 mu (about 49.42 acres) of apricot forest industry cultivation in Biedieli Village was launched and 12,560 apricot seedlings were planted. In Halaqi Village, 200 mu (about 32.94 acres) of silage corn was successfully put into trial, with a yield of 3.5 tons per mu. The planting and breeding industry chain was extended, laying the foundation for the subsequent construction of the leading industry of "crop planting + breeding and fattening + slaughtering and processing + marketing".

In old revolutionary base areas of Northern Shaanxi, the Company actively explored the path to reduce poverty through the development of local industries and development modes of brand building + financial support underpinning industrial upgrading, mutual aid funds + cooperative organizations to drive stable income increase of poor households. In 2020, the Company supported the construction of the public brand "Northern Shaanxi Hengshan", and arranged funds to support the establishment of three standardized sub packaging centers of mutton, coarse cereals and rice, so as to effectively improve the quality of local agricultural products and the ability of commercialization. The Company established a brand development company, and set up demonstration stores and experience stores, constantly developing marketing resources and channels. The Company supported the standardized operation of specialized cooperative organizations, and transformed the assistance funds into collective assets, improving service mechanisms, and developing collective economy. The Company cooperated with Shaanxi Yulin Energy Group and other state-owned enterprises to jointly initiate the establishment of Yulin Industrial Poverty Alleviation Investment Fund, with a scale of 60.5 million yuan in the first phase, to support the leading industrial enterprises with the role of benefiting the poor through investment, among which, 20 million yuan invested by the Company was used to support Hengshan industrial project.

In 2020, Shaanxi Branch invested 5 million yuan in poverty alleviation fund, and invested in several projects, including: 2 million yuan in the poverty alleviation base project of 10,000 dairy goats breeding in Guanzhuang Town, Yaozhou District, Tongchuan; 3 million yuan in the collective economic project in Yidangwan Village, Dongkeng Town, Jingbian County. Tongchuan Dairy Goat Project has been completed and put into operation, and Jingbian Yidangwan Project has sped up constructing.

In the process of implementing poverty alleviation, CHNG fully leverages the role of the central SOE to sent excellent employees and increase capital investment. Focusing on industrial poverty alleviation, the Company takes the lead in establishing Yulin Industrial Poverty Alleviation Fund, and carries out basic projects designed to benefit the people and agriculture development. The Company also helps build the public brand "Northern Shaanxi Hengshan". It actually offers assistance to poverty alleviation and injects momentum for Yulin to win the battle against poverty.

—Yulin Municipal People's Government



Poverty Alleviation Base of 10,000 Dairy Goats in Guanzhuang Town, Tongchuan



Subsidized

2,266

students from poor families

### Meeting Basic Needs, Building a Better Life

The Company set up a special fund for Dongliang Project in Aheqi and Hengshan counties (districts), and assisted 2,266 students from poor families in 2020. The Company actively performed characteristic education and cooperated with China Ocean Development Foundation to carry out the "Student Aid Operation of Dongliang Project", donated a ocean library to Huaneng Tuohe Primary School in Aheqi County. The Company also organized ocean research summer camp activities to enable primary and secondary school students to get close contact with the ocean in coastal developed areas and understand the history and culture of the great motherland and the Chinese nation, thus to establish correct values of patriotism and serving the country.



Huaneng Tuohe Primary School Ocean Library



Donated

1.92

million yuan of Anti-epidemic supplies to Aheqi County

The Company has set up a special fund for Tongzhou (Mutual Supports) Project in Aheqi and Hengshan counties (districts). In 2002, The Company maintained health insurance for 15,315 people from poor families. During the COVID-19 outbreak, The Company donated anti-epidemic supplies valued 1.92 million yuan to Aheqi County, and donated 500,000 yuan to Hengshan District to purchase negative pressure ambulances, effectively improving local response to pandemic control and medical rescue capabilities.

The Company actively conducted professional technical training to promote the employment of people in financial difficulties. In Aheqi County, the Company organized grassroots cadres and technicians to investigate and study in its subsidiaries and developed areas, and carried out Party member education and hydropower specialty training. Efforts were made to train those who took the lead in becoming rich in rural areas. Farmers and herdsman who were willing to develop themselves were organized to visit and study in developed areas in Xinjiang to help them change their concepts of production and life to stimulate endogenous power. In 2020, Biedieli Village and Halaqi Village sent 97 migrant workers to work outside Xinjiang, and 42 migrant workers to work in Xinjiang, 10 people were employed in Biedieli Hydropower Station and other 112 people were employed locally.



### Tackling Difficulties to Aid Qinghai and Tibet

#### Driving Local Development by Developing Electricity

The Company invested 9.1 billion yuan to build and put into operation the Zangmu Hydropower Station, which is the first hydropower station on the Yarlung Zangbo River and the largest hydropower station in Tibet Autonomous Region, scoring a historic achievement in a single project with an installed capacity of 500MW in Tibet. The Company invested 7.83 billion yuan to build Jiacha Hydropower Station with an installed capacity of 360MW. In 2020, the Company achieved "three investments in one year". Jiacha Hydropower Station is the only large-scale hydropower station that put into operation during the 13th Five-Year Plan period in Tibet Autonomous Region.



Zangmu Hydropower Station

In Jianza County, Qinghai Province, the Company fully exerted the advantages of the energy and power industry and invested 8.8 million yuan to construct the 2.1 MW roof distributed photovoltaic power generation project for 251 households at relocation site in Dej Village. In March 2020, the project was connected to the grid and produced electricity, increasing the income of more than 4,000 yuan per family every year. The project effectively enables the relocated people steadily increase their income, laying a solid foundation for attaining a complete victory in the fight against poverty.



Roof Distributed Photovoltaic Power Project at Relocation Site in Dej Village

During the 13th Five-Year Plan period, the Company completed the Xining Cogeneration Project, which is the largest urban district heating project in Qinghai Province with the best operation effect and heating quality. The project provided heat for 300,000 people in an area of more than 11 million square meters in Xining. The Company invested 2.707 billion yuan to build the 500MW photovoltaic project (two phases) in Talatan, Hainan, which was connected to the grid successively in September and December 2020. The Company also built the 50MW Wind Power Project in Gonghe County, which was connected to the grid in November 2020.

### Solving Travel Difficulties with Ecological and Powerful Infrastructure

During the "13th Five-Year Plan" period, the Company invested 2.016 billion yuan to build the Paizhen - Motuo Rural Highway. Compared with the original route, the highway enables the distance between Paizhen and Motuo to be shortened by more than 160 kilometers. The highway forms a loop with Zhamu - Motuo Highway, providing strong supports for the development of the tourism economy in the Yarlung Tsangpo Grand Canyon.

The Company firmly sticks to the tenet of "No damage is the greatest protection". In order to minimize disturbances to the natural environment caused by the construction of Paizhen - Motuo Highway, Duoxiongla Tunnel, the key work of the highway project, was constructed by tunnel boring machine, and the tunneling was completed efficiently, safely and environmentally. The excavated earth and stone were applied for subgrade backfilling, and the piled slag was afforested by planting seedlings and sowing grass seeds. The accumulated slag for subgrade backfilling was about 0.55 million m<sup>3</sup>; the slag for geological disease treatment was about 0.46 million m<sup>3</sup>; the vegetation greening of slopes, temporary lands and slag yards was about 0.2 million m<sup>2</sup>, and 3,874 trees and shrubs were planted, thus realizing the parallel progress of highway construction and ecological protection.



Entrance of the Duoxiongla Tunnel



Paizhen - Motuo Rural Highway

### Alleviating Poverty Through Job Securing to Boost Income Increase

In Tibet, the Company actively absorbed local talents for employment and labor service arrangement, with more than 5,000 Tibetan compatriots have been employed for project construction, 604 posts offered for farmers and herdsman, 54 people offered with long-term property management posts, and 37 local farmers trained to be qualified electricians. People living around the projects were arranged to participate in the construction by doing transport work. More than 130 vehicles were mobilized for project transportation during the peak period.

Since the construction of Paizhen - Motuo Rural Highway, it has offered 110 labor posts for local people, coordinated the construction contractor to purchase about 1.5 million m<sup>3</sup> of sand and gravel aggregate in nearby village collective yards, arranged more than 500 posts for local people, and broadened channels for people to increase their income and become rich.

### Residing in Villages to Consolidate the Effectiveness of Poverty Alleviation

The Company actively responds to the calling for poverty alleviation in villages in Tibet Autonomous Region. From 2018 to 2020, the Company undertook the poverty alleviation work in Bangxin Village and Bangguo Village in Motuo County. A total of 15 key members were stationed to participate in poverty alleviation in villages. By promoting areas including education, medical care, public health, electricity, and industrial poverty alleviation, the Company established and implemented the poverty fund of 1.49 million yuan to help Bangxin Village and Bangguo Village eradicate poverty.



Panorama of Bangguo Village



Panorama of Bangxin Village

The Company invested a total of 2.5806 million yuan in poverty alleviation funds to carry out poverty relief and assistance in Qinghai Province: in Xiaheleshi Village in Gonghe County; in four poor villages in Haixi Prefecture including Kerr Agricultural Village, Yarihatu Village, Tuotuo Village and Saierxiang Village; and in Donghuayuan Village in Huanzhong County. In 2020, the Company eliminated villages with no collective economy, including an investment of 1.55 million yuan in agricultural products processing project in Xiaheleshi Village, with an expected annual profit of 200,000 yuan.

### Making Unremitting Efforts Relief Poverty

#### Taking Advantage of Main Businesses and Broadening Income Channels by Developing PV Power

From 2016 to 2020, Huaneng Guangdong Energy Development Co., Ltd. invested a total of 2.334 million yuan in Jintan Village, Dapu County, Guangdong Province, to construct the 357kW PV Power Poverty Alleviation Project, with an annual power generation of about 420,000kWh, and annual revenue of about 240,000 yuan. By 2020, the total income created by the PV power generation project was about 387,940 yuan, and the total per capita income of poor households was about 9,400 yuan.

Huaneng Northeast China Branch invested 550,000 yuan to construct the 100kW PV Power Generation Project in Yueshan Village, Xiuyan County, Liaoning Province, which will annually generate 136,000kWh of electricity after completion. Yueshan Village will benefit from the PV Power Project by more than 50,000 yuan per year, effectively consolidating the collective economy of the village.

Huaneng Nuclear Power Development Co., Ltd. constructed the 185kW PV Power Poverty Alleviation Project in Huhe Village, Longyan City, Fujian Province. With active communication and coordination, The Company implemented the poverty alleviation electricity price. The project increases the collective income of the village to 160,000 yuan per year for Huhe Village. Especially in 2020, under the influence of COVID-19, the PV power income played an important role as a cornerstone.

Shang'an Power Plant donated 1 million yuan to construct the 143kW Distributed PV Power Generation Project in Xihao Village, Zhangbei County, Hebei Province, which was connected to the grid in October 2019. The project increases the collective income of the village by more than 100,000 yuan per year, changing "blood transfusion" to "blood production" to stimulate new momentum to fight against poverty and completely solving the problem of having no collective income for the village.



185kW PV Power Project in Huhe Village, Longyan City



Distributed PV Power Project in Xihao Village, Zhangbei County

### Insisting on Teaching People How to Fish to Foster New Talents for Industries

Huaneng Northeast China Branch took development-oriented poverty alleviation in Yueshan Village, Xiuyan County, Liaoning Province by creating a willow root fish farming industry. With a start-up capital of 200,000 yuan, the project constructed building 2 fish ponds covering an area of 11 mu (about 1.81 acres). In April 2020, the first circle of willow root fish farming was completed, producing 5,500 kg fish and earning 187,000 yuan.

Huaneng Central China Branch donated 1.77 million yuan to construct the landscape along the "Wudang Flower Valley" in Shiziyuan Village, Danjiangkou City, Hubei Province, to promote industrial development. The branch constructed the Niutou Mountain Triangle Township Park Project, transforming muddy ditches by the roadside and built the project as the demonstration of the village's living environment. The branch implemented Wudang Flower Valley Peach Blossom Island Hut Project, which has brought direct economic income of about 20,000 to the village collective through house renting.



Willow Root Fish Farming Industry in Yueshan Village, Xiuyan County



Peach Blossom Island Hut, Shiziyuan Village, Danjiangkou City

Since 2017, Xi'an Thermal Power Research Institute Co., Ltd. (TPRI) has developed wild pepper planting industry in Hanjayao Village, Fufeng County, Shaanxi Province. The planting area exceeds 500 mu (about 82.37 acres), which help increase the income of 32 poor households and 37 ordinary farmers, with an average annual income increase of more than 5,000 yuan per household. In 2020, TPRI invested 55,000 yuan to implement the "Irrigation Electricity Improvement Project for Farms and Pepper Garden in Hanjayao Village", which greatly changed weak infrastructure conditions of the village and laid a good foundation for its further development.

Huaneng Lancang River Hydropower Inc. invested 1.35 billion yuan to help Lancang County, the largest "directly-entering-socialism ethnic groups" poverty-stricken county in Yunnan Province. Through the industrial assistance mode of "three establishments and one exploration", it vigorously cultivated characteristic industries and led the poverty areas to prosperity. In November 2020, Lancang County realized poverty elimination, altogether 47,800 households with 172,000 people benefited from the projects.

**Established a combination mode of "capital + local resources advantages":** that is, promoting the tea industry to improve quality and efficiency. By supporting 66 standardized tea and agricultural special products processing spots in 63 villages, the mode benefited 6,644 households with 25,639 people, including 4,560 households with 13,873 people registered.

**Established an interest linkage mechanism of "enterprises + poor households":** poor households in three villages, including Yunshan Village and Ganhe Village in Zhutang Township, put their support funds into Lancang Lahu Renja Food Co., Ltd.,. Breeding scale was expanded through the "four benefits" pattern - breeding pigs have "sale benefit", base employment has "salary", planting forage has "honorarium", and share dividends have "share benefits", which allowed farmers to obtain stable development industries.

**Established an industrial cluster model of "company + tourism base + poor households":** assisted the poverty alleviation project of assets income from industrial development of orah in Nuofu Township. The demonstration base of 1,000 mu (about 164.74 acres) orah industry attracted customers to purchase, so as to ensure the income of villagers' from product-selling, and increase comprehensive tourism income and maximize profits. The orah industry has driven nearly 200 poor households to increase their incomes continuously, and the income of villagers per household can reach 30,000 yuan.

**Explore the model of "Huaneng + technology + poor households":** that is, relying on the rich forest resources in Lancang County to put forward the demonstration and promotion of organic panax notoginseng under the forest and potato planting in winter. Explored a new way to increase production capacity of idle land in winter and increase income by the plants under the forest. The average yield per mu of potatoes is 3.3 tons, the output value per mu is more than 9,000 yuan, and the panax notoginseng under the forest is more than 4,400 mu (about 545.22 acres). Poor households increased income by 8,000 to 30,000 yuan every year, which directly lifted 3,324 people out of poverty in 844 households.



Scan the QR code, and check the documentary *Deep Roots Give Rise to Flourishing Leaves* about The Company's efforts to help Lancang County



Dividend Ceremony of Cultivation Project



Standardized Tea Planting

After five years of poverty alleviation assistance, Huaneng Lancang River Hydropower Inc. has accumulated valuable experience, formed Huaneng assistance mode, and played an important role in winning the battle against poverty in Yunnan Province.

—Member of the Party Group and Deputy Director of the Poverty Alleviation and Development Office of Yunnan Provincial People's Government: Yang Li

Huaneng Group has made a great contribution to Yunnan, at least as far as I know. The large-scale capital investment has played a very important role in fighting against poverty among the directly-entering-socialism ethnic groups. We have eliminated absolute poverty in the past, but we still have to revitalize the villages, and there is a lot of work to do in the next step. On behalf of our people, I would like to express my heartfelt gratitude to Huaneng Group for the help and support.

—Model of the times, academician of Chinese Academy of Engineering: Zhu Youyong

### Poverty Alleviation Must Begin with Education to Remove Root Causes of Poverty

Since 2018, Huaneng Gansu Energy Development Co., Ltd. has continuously donated grants to new college students via the "Talent Project". Up to 2020, more than 80 poor students have been supported with an investment 96,000 yuan, of which 60,000 yuan was donated to 60 college freshmen in 2020, with 1,000 yuan per person.

Huaneng Sichuan Hydropower Co., Ltd. focused on enhancing the endogenous driving force of long-term development in poverty-stricken areas, and launched the "Talent Project" to improve the rural education hardware. It implemented the Safe Drinking Water and Washing Room Project in the Central School of Kuasha Township, Aba County to solve the difficulties in drinking water and washing water for teachers and students. In Zhaojue County, the Sichuan company implemented projects such as safe drinking water and multimedia classrooms in the Central School of Wanchang Township, introduced high-quality educational institutions for online remote teaching, and donated money to rebuild the kindergarten in Tuanjie Village.

### Renovating the Living Environment and Improving Infrastructure Construction

Huaneng Nuclear Power Development Co., Ltd. planned and designed the improvement of the living environment in Huhe Village, Longyan City, Fujian Province. Demolished more than 150 latrine pits, pig houses, farm tool houses, and 3 dangerous houses and hollow houses, with a total area of more than 2,000 m<sup>2</sup>. In addition, the company established the road network inside the village, constructing new landmarks in Huhe Village including parking lots, small gardens, village signs, cultural walls, and exhibition halls, to build a trendy tourism village online.

Huhe Village can get rid of poverty as scheduled, and it is steadily consolidating and expanding the achievements of poverty alleviation and effectively aligning with rural revitalization. This is inseparable from the company's sincere help in talents, projects, funds and information, and the true dedication of resident cadres to take root at the grass-roots level, we would like to express our sincere appreciation for that!

—Organization Department of CPC Longyan Municipal Committee and Innovation Office of CPC Longyan City



Farming Culture Theme Park in Huhe Village, Longyan City Donated by The Company

Huaneng Fujian Seaport Co., Ltd. assisted the Widening and Hardening Project of 6 km Main Road in Xinge Village, Dehua County, Fujian Province. Then continued to carry out the main road security project, and installed anti-collision walls on the outside of roads to ensure the traffic safety of villagers and thoroughly solve the difficulties of crop transportation.

Huaneng Sichuan Hydropower Co., Ltd. donated 1 million yuan to construct roads to villagers' households in Yanggao Village, Aba County, which greatly facilitated their traveling. The company also donated more than 300,000 yuan to construct a safe bridge in Tuanjie Village, Zhaojue County, which completely solved the safety problem of villagers crossing the river, and was highly praised by villagers.



Household Hardening Road in Yanggao Village, Aba County



Safety Bridge in Tuanjie Village, Zhaojue County

Huaneng Gansu Energy Development Co., Ltd. carried out infrastructure construction and poverty alleviation in Zhuanglang County: a total of 65 solar street lights were installed in key areas such as main rural roads and public village areas to solve the safety of traveling at night. The company invested 1.736 million yuan to construct Shangshan Chaneye Road in Lianghekou Town, Dangchang County and roads in Bangfu Village, Zhuanglang County, completing 7.1 km of road hardening and 2.15 km of supporting canals throughout the year, bringing real convenience to local poor people.

### Cultivating Labor Skills and Stabilizing the Quality of Life Through Employment

TPRI invested 50,000 yuan to participate in the construction of the Agricultural Technology Training Center in Hanjayao Village, Fufeng County and provided corresponding audio-visual educational equipment, tables and chairs. After the completion of the Training Center in 2020, TPRI actively contacted experts in agricultural technology, and conducted trainings in fruit tree planting technology and chicken raising technology, with an accumulative total of 180 villagers participating in the training, effectively improving their abilities to achieve prosperity.

Huaneng Guangdong Energy Development Co., Ltd. implemented the Skill Training Project, which helped improve the breeding technology of poor households. The project promoted the development of small livestock breeding and planting in poor households in an orderly manner, which met the needs of increasing production and income, and continuously raised the income of poor households.

### Innovating in Financial Assistance Measures

Huaneng Guicheng Trust Co., Ltd. created a series of charitable trust brands of "Valuable Integrity and Charity", and actively carried out charitable and public welfare activities in the fields of epidemic prevention, poverty alleviation assistance and education assistance. In 2020, the Guicheng Trust Company launched 6 times of charitable donations successively, and altogether received was 2.6082 million yuan.

**Zuncheng Jinhua Charity Trust Plan:** During the epidemic, in response to the call of China Trustee Association for epidemic prevention, the Guicheng Trust Company donated 400,000 yuan through "Guotong Trust COVID-19 Prevention Charity Trust in China Trust Industry", which was especially used for epidemic prevention in Hubei Province.

**Zunyue Shengxin Charity Trust Plan:** The Guicheng Trust Company cooperated with the Love Save Pneumoconiosis Foundation to donate 101 ventilators worth 595,900 yuan to Hubei medical units, which strongly supported medical units in social assistance blank areas. The company also cooperated with China Youth Development Foundation, and donated 1.2 million yuan to specially subsidize 240 minor children of "countermarch people" in Hubei. The company donated another 100,000 yuan in cooperation with China Charity Alliance and Charitable Trusts Committee for the Road Hardening and Public Welfare Infrastructure Construction Project in Shilong Village, Caohai Town, Weining County, Bijie City, Guizhou Province, to facilitate the traveling of villagers.

**Shangyin Zhishan Charity Trust Plan:** The Guicheng Trust Company cooperated with Beijing Renze Foundation and donated 286,300 yuan specially used to subsidize medical staff of Jinyintan Hospital in Wuhan and send warmth and care to front line epidemic fighters.

**Huaxiaozi Charity Trust Plan:** The Guicheng Trust Company donated 16,000 yuan of mobile movie equipment and 5,000 yuan of outdoor fitness equipment to Guanfang Village and Fake Village, Bijie City, Guizhou Province, to enrich the spiritual culture and sports culture life of villagers.



Outdoor Fitness Equipment in Fake Village, Bijie City, Guizhou Province

## Charity Conveying Love and Warmth

The Company set up a youth volunteer platform, and formulated *Measures for the Administration of Three-color Sails Youth Volunteer Activities*, and carried out in-depth brand public welfare activities of "Three-color Sails" youth volunteers, calling upon all employees to actively participate. Activities involved donations to help students, emergency relief, environmental protection, caring for vulnerable groups and other public welfare fields to convey the Company's love and warmth to the society.

### Three-color Sails • Fighting Against the Epidemic

China Huaneng Group Fuel Co., Ltd. initiated the volunteer service of "Party Flag for Epidemic Prevention • Three-color Sails". Volunteers assisted community workers and medical staff in the front-line of epidemic prevention in the surrounding communities and hospitals, thus contributing to the fight against the epidemic. In addition, the company organized volunteers whose physical conditions met the requirements to donate blood, so as to relieve the short clinical blood supply during the epidemic, and solidly build a strong fortress of jointly fighting against the epidemic.



Volunteer Team of China Huaneng Group Fuel Co., Ltd.

### Three-color Sails • Charity Grants

Since its establishment, the "Three-color Sails" volunteer team has attached great importance to public welfare practices in education, focusing on the education of vulnerable groups such as disabled children. Also, the team organically combined public welfare activities with poverty alleviation assistance, and donated money to help students from time to time in counterpart villages.

The "Three-color Sails" volunteer team of Sichuan Branch of Huaneng Renewables Corporation Limited raised donations to "Zhaojue Education Fund" in Jiutieluogu Township, Zhaojue County, which is a poverty alleviation point in the village, so as to support the education in Zhaojue County. Volunteers and Local Poor StudentsVolunteers carried out cultural and sports activities and exchanges, and gave away stationery, sporting utilities, clothes and other items to students, which made contributions to poverty alleviation in Zhaojue County.



Donation for Education in Jiutieluogu Township, Zhaojue County

The "Three-color Sails" volunteer team of Huaneng Dongfang Power Plant carried out "A Little Drop of Water Becomes an Ocean, a Little Love Builds Hope" volunteer activities in Dongfang Special Education School. A series of activities, such as dancing for children and popularizing knowledge of electric power, enriched students' extracurricular life and brought different warmth to them.



"A Little Drop of Water Becomes an Ocean, a Little Love Builds Hope" Volunteer Activities

# In the Face of Hardships and Dangers , Going All Out to Fight Floods and Provide Disaster Relief

Currently, we have entered a critical period of flood control. Party committees and governments at all levels should bear their responsibilities and has the courage to act. Leading cadres at all levels should go deep into the front-line and take forward command, organizing the cadres and the masses to take more effective measures. Earnestly carry out the following work, including keep proper monitoring and early warning, inspection of dikes and reservoirs, emergency handling, and resettlement of affected people, etc., and do the utmost to ensure the safety of people's lives and property.

—Xi Jinping Gave Important Instructions on Further Flood Control and Disaster Relief

In the summer of 2020, affected by the continuous heavy rainfall, the water level in many places in southern China had been rising continuously, and many places had experienced severe floods, causing severe flood control situations. The Company resolutely implemented the important instructions of the CPC Central Committee on flood control and disaster relief, and immediately responded to the emergency, coordinating closely with local governments, and organizing emergency rescue in time. The Company implemented the concept of people first and life first in all aspects of flood control and flood fighting, and fully guaranteed the safety of enterprise employees and surrounding people. The Company successfully coped with the worst natural disaster in more than 20 years.

## United as One at the Forefront of Emergency Fighting

### In Jiangxi

The Qingyuan Mountain in the east of Huaneng Jinggangshan Power Plant was hit by a flash flood causing a landslide, which destroyed the 60-meter wall of the drainage ditch in the east of the power plant. The power plant immediately started the flood prevention emergency plan, and organized emergency commandos to rescue the emergency. The Operation Department adhered to the key equipment on the 0-meter floor and quickly blocked the leakage. The Fuel Department strengthened the coal bulkhead overnight to clean up the coal accumulated in the bucket wheel machine. The rest of the staff set up cofferdams and sandbags again at important flood control points for flood fighting. The flood gap was successfully blocked after 12 hours of fighting.



Cleaning and Strengthening of Coal Yard in Huaneng Jinggangshan Power Plant

### In Hunan

Huaneng Yueyang Power Plant received the message from the district flood control headquarters that the No. 2 flood peak of the Yangtze River arrived in Yueyang, and the power plant staff stationed in the Yangtze River levee responsible area immediately started the flood fighting. The members of flood control and emergency commandos of the power plant were divided into several groups, and accelerated the inspection of dikes in the responsibility area. The members checked hidden dangers in important parts such as culvert gates and contacts between both sides of buildings crossing dikes, without missing any place, and reported the latest situation at the first time. The peak of the No. 2 Yangtze River flood passed through Yueyang smoothly after nearly 11 hours of "strict guard".



Wharf of Yueyang Power Plant in Rapid Flow

### In Hubei

Enshi suffered the biggest flood in recent decades, causing many main roads flooded, and a large number of people and vehicles trapped, resulting in serious property losses. All the cadres and workers of Huaneng Enshi Hydropower Plant held fast to the frontline of flood control, strengthened the inspection and maintenance of equipment, and intensified all-round inspections of water conditions and geological conditions of dams, power plants and surrounding areas. Affected by the flood, entrance roads to Qinglong Hydropower Plant and Xiannvhu Hydropower Plant and to the dam collapsed in many places, and enclosing walls were damaged. The power plant quickly organized an emergency rescue team for flood control, hastened to the frontline without hesitation, carried out emergency repairs in the rain at the first time, and completed the desilting of the plant area and the restoration of the collapsed walls, thus ensuring the safety of the power plant during the flood season.



Entrance Road to the Dam Qinglong Hydropower Station was Damaged

### In Sichuan

The severe rainstorm caused the cracking and collapse of the panels in Xinde Dike in the reservoir of Fuijiang Mingtai Hydropower Plant of Huaneng Sichuan Hydropower Co., Ltd., which directly affected the safety of life and property of more than 5,000 people near the dike. All the 15 hole gates of Mingtai Hydropower Plant were opened in advance, and the reservoir resumed the operation from natural rivers to reduce the erosion of dams by river water. Party members in the commando team of flood control and rescuing stationed at Xinde Pumping Station for 24 hours, and the flood water behind the dam was continuously discharged to the Fujang River through four pumps. Fujang Company fully collaborated with the emergency department to reinforce the collapsed dam with large mechanical equipment and inspect the dam along the river. No levee break occurred after active and affective flood protection.



Huaneng Sichuan Hydropower Co., Ltd. Responding to Torrential Rain

## Uniting as One to Serve the People Regardless of Situations

### Yanliu Village, Pingjiang County, Hunan Province:

The flood caused 36 landslides, and crops, houses and roadbeds suffered huge damages. The resident cadres in Huaneng Yueyang Power Plant took the lead, together with the local construction team, successfully transferred nearly 40 people affected by the disaster as quickly as possible, and assisted the rescue team in rescuing an injured and trapped person for medical treatment.

### Yanxi Village, Lianhua County, Jiangxi Province:

The resident cadres in Huaneng Anyuan Power Plant actively joined the flood fighting and emergency rescue, successfully dredged 6.5 km roads, saved nearly 30 mu (about 4.9 acres) affected farmland, repaired 1.2 km damaged residents' drinking water pipelines, and solved the problems of drinking water for 145 people.

### Longkou Village, Poyang County, Jiangxi Province:

Poyang Lake has seen the largest flooding on record. Longkou Village was besieged by floods, with Duanping Dike being burst, the village being flooded, and the water level rising rapidly. The village suffered power, water and network outage, with 6 roads collapsing, 8 fish ponds being destroyed, 1,530 mu (about 252 acres) crops being submerged, and half of houses being flooded, altogether 2,368 people being affected. In order to ensure the villagers' safety, the poverty alleviation team of Huaneng Jiangxi Branch in the village has always adhered to the frontline of flood fighting: communicated with villagers overnight from door to door and successfully transferred 116 households with 473 people affected by the disaster. The branch coordinated disaster relief materials such as mineral water and food to ensure the basic need of the affected people. The branch purchased and rented 16 diesel generators to provide electricity and water for the affected people. The branch also worked with local governments overnight to build pontoons to solve the travel difficulties for the affected people. After the flood, Huaneng Jiangxi Branch actively invested to help the reconstruction of Longkou Village.



Resident Cadres Assisting Affected People to Transfer Materials

# Part II

**As an Energy Pioneer, CHNG Strives to Write a Vivid Chapter in Its Tireless Endeavors to Develop Electric Power**

In the new journey to achieve the great rejuvenation of the Chinese nation, there are bound to be arduous and heavy tasks, and there are bound to be difficulties and hardships and even terrifying conditions. We need to especially carry forward the spirit of persistent hard working. Perseverance is not a loud slogan, but the spirit of doing every little thing, completing every task and performing every duty. The road of perseverance will not be smooth, but often thorny and full of bumps. The stronger always rise from setbacks and never say never.

— Address by President Xi at the Gathering Marking the Centenary of the May Fourth Movement

## 52

• **Making Unwavering Efforts to Develop Main Businesses**

Domestic power generation

**708.3** TWh

Heat generation

**417** million GJ

Settled transaction power

**368.3** TWh

## 54

• **Improving the Ecology of Scientific and Technological Innovation**

Science and technology investment

**6.95** billion yuan

R&D cost

**1.34** billion yuan

**5,646**

patents applied

## 58

• **Caring for Employees' Work and Life**

**9.46** million yuan to help employees in need

**507,253** people

have been trained in the network college

International talent pool for more than

**450** people

## 62

• **Abiding by the Red Line of Safe Production**

**980** million yuan investment in work safety (technical transformation)

**68**

thermal power plants operating without accident tripping throughout the year

**2,216**

certified safety engineers

## 66

• **Effectively Strengthening Environmental Protection**

Approval of new energy projects exceeded

**13** GW

**295.34** g/kWh net coal consumption

Ultra-low emission units accounting for

**97** %

## 74

• **As a Pillar of the Great Power, CHNG's Nuclear Power Business Sets Sail**

# Making Unwavering Efforts to Develop Main Businesses



## International Trend



## Domestic Policy

Doing business is not just a matter of making money. For the real economy, taking the main business realistically without distractions is the obligation.

— Xi Jinping

## Huaneng's Response • Events in 2020

- Secured power supply to important areas such as Wuhan during the epidemic
- Withstood severe tests of the biggest flood in 20 years
- Successfully realized power security in important periods including NPC&CPPC and the National Day

The Company adheres to the essential responsibility of the power industry to ensure power supply. Facing the sudden outbreak of COVID-19 and the biggest flood in the past 20 years, all industrial sectors worked together. All employees braving difficulties, fighting against the epidemic and resisting disasters, ensured the power supply in Wuhan and other important areas during the epidemic, withstood the severe test of natural disasters, and successfully realized power security in important periods such as NPC&CPPC and the National Day. In 2020, the Company realized domestic power generation of 708.3 TWh, with a year-on-year increase of 0.37%, achieving growth against the trend. The Company realized heat supply of 417 million GJ, with a year-on-year increase of 10.34%. The annual settlement transaction power reached 368.3 TWh, accounting for 5.66% of the total settled power, with a year-on-year increase of 1.89%. The utilization hours of unified power generation equipment was 3,861 hours, ranking first in benchmarking.



3,861

Utilization hours of unified power generation equipment

The Company attaches great importance to the quality of power project construction, and implements the policy of "quality first in constructing a project of vital and lasting importance". The Company strengthens the fine management of the construction process, and ensures that the quality can be controlled and is under control to construct high-quality power projects. In 2020, Yantai Bajiao Power Plant, Anyang Tangyin Wind Farm and Zhongxiang Hujawan Wind Farm won the award of **National Prime-quality Project**. Two new 660 MW projects of Luoyuan Power Plant won the **China Power Quality Engineering Award**. Suzhou Gas Turbine Co-production Project won the **Award for Quality Installation Project in China** (Installation Star in China of Luban Prize for Construction Project).



Anyang Tangyin Wind Farm



Luoyuan Power Plant

## Successfully Responding to Typhoon and Securing Stable Power Supply

Hagupit, the No. 4 Typhoon in 2020 landed on the coast of Yueqing, Zhejiang Province. Under its influences, the instantaneous wind in Yuhuan Power Plant reached level 17, while superimposed on the astronomical tide with heavy wind, rain and waves, which is the most destructive typhoon since the construction of the plant, and strictly tested the safe operation of the units.

The power plant started the typhoon prevention plan in time and raised the response level to ensure the safety of staff, equipment and the power grid, and all the staff worked as one to stay on the frontline. During typhoon landing, the transmission lines occurred repeated reclosing, and units' transmission load was severely restricted. It was extremely difficult to control the stability of units. Members of the typhoon command headquarters were on duty overnight, and the typhoon prevention was carried out in an orderly manner. All four units in the power plant were connected to the grid, providing strong support for the safe and stable operation of the power grid, and successfully coping with the adverse effects brought by the typhoon.



Yuhuan Power Plant Fighting Against Typhoon

## Guarantee Power Supply During the National Day

In order to celebrate the 71<sup>st</sup> anniversary of the founding of the PRC and ensure safe electricity production, Rizhao Power Plant set up a special leading group and working group, which actively carried out safety inspections, comprehensively investigated all risks and hidden dangers in production and operation, adhered to 24-hour duty, and implemented a daily "zero report" information reporting system. The power plant compiled 84 specific security measures of 23 categories, covering aspects including production safety, security, anti-terrorism, cyber security and information security, which took all responsibilities level by level, and strove to ensure the safe and stable production and reliable power supply during the National Day.

# Improving the Ecology of Scientific and Technological Innovation



## International Trend



## Domestic Policy

The key is to improve the ecology of science and technology innovation, stimulate innovation and creativity, and create the platform for the majority of scientists and science and technology workers to show their talents, so that a steady stream of scientific and technological innovation results will emerge.

— Xi Jinping

## Huaneng's Response • Events in 2020

- First fully domestically-made Huaneng Revival DCS System with independent intellectual property rights in China
- Successfully developed PLC system with complete independent intellectual property rights of China
- First domestic offshore wind power intelligent operation and maintenance platform and new energy intelligent monitoring platform

## Improving of Top-level Design

The Company continuously optimized the layout of scientific and technological innovation, actively promoted the "Science Reform Demonstration Action", formulated the implementation plan, and implemented the promotion mechanism. The Company's annual investment in science and technology was 6.95 billion yuan, with a year-on-year increase of 30%. The R&D cost was 1.34 billion yuan, with a year-on-year increase of 8 times. The first science and technology fund was released, with an initial subscription of 1 billion yuan.



Initial subscription of the first science and innovation fund of

1 billion yuan



1,785 patents granted



Led and participated in 7 major scientific research projects of the industry

In 2020, the Company's scientific research achievements reached the highest level in history: 5,646 patents were applied, with a year-on-year increase of nearly 4 times, including 1,785 patents granted, which doubled year-on-year. The Company won 6 first prizes of **Provincial and Ministerial Level Scientific and Technological Progress Award**, with a year-to-year increase of 2 prizes. The Company won 4 second prizes and 5 third prizes of **China Electric Power Science and Technology Progress Award**. The Company won 2 first prizes, 2 second prizes and 3 third prizes of **China Energy Innovation Award** and won 5 **Chinese Patent Excellence Awards**.

## Focusing on Technological Breakthroughs

In 2020, the Company signed a "Military Order" on key technical R&D, and strictly implemented relevant responsibilities, realizing good progress in all core technical research tasks, and making major breakthroughs in some areas. The Company undertook 5 tasks of SASAC 1025 Special Tasks throughout the year. The Company led the High Temperature Gas Cooled Reactor Research Project, which is the major national science and technology project. The Company led 6 and participated in 1 major scientific research project of power industry of National Energy Administration, ranking the first among counterpart enterprises. Technology gives a boost to the vigorous development of China's electric power industry.

- Significant progress has been made in the national science and technology major project - Shidao Bay High Temperature Gas-Cooled Reactor Nuclear Power Project. The main circuit of the nuclear island has been basically completed and the double-reactor cold test has been completed



Shidao Bay High Temperature Gas-Cooled Reactor Nuclear Power Project

- The Integrated Vertical Architecture System of Huaneng Smart Power Plant based on industrial Internet technology has been constructed relying on Ruijin Phase II and Shidongkou No. 1 Plant, so as to create a leading domestic Smart Power Plant Model Project with Huaneng characteristics
- The Company took the lead in successfully developing matrix stacked advanced solar photovoltaic module in China, carried out the assembly and commissioning of the pilot production line in perovskite solar cells, and entered the first national echelon of cell conversion efficiency
- The Company carried out independent R&D of 700°C - level high temperature materials, and finished 2 heats of HT700P high-temperature alloy preparation and processing, which confirmed the industrialization-level hot-working process route of HP-LP rotor parts
- The Company finished a 50 Nm<sup>3</sup>/h wind power dynamic electrolytic hydrogen production demonstration project and realized long-term dynamic operation within a power range of 30-105%



Wind Power Dynamic Electrolytic Hydrogen Production Demonstration Project

## Transforming Scientific and Technological Achievements

Focusing on major technical requirements for high-quality development, the Company speeds up its major technical innovation and demonstration, and has made significant breakthroughs in bottleneck technologies, including the first fully domestically-made DCS system, and the PLC system with complete independent intellectual property rights of China.

-  The Company developed the first fully domestically-made Huaneng Revival DCS System with independent intellectual property rights in China, based on the domestic chips, operating system and core components one year earlier than the original plan. This system has been successfully put into use in 1,000 MW units in Yuhuan Power Plant and in 350 MW units in Fuzhou Power Plant respectively, which indicates the complete autonomy and controllability of high-parameter and high-capacity coal power core control equipment



Scan the QR code, and check CCTV's report on the application of the first complete domestically-made Huaneng Revival DCS System in Yuhuan Power Plant



Yuhuan Power Plant



Fuzhou Power Plant

-  The Company successfully developed the PLC system with complete independent intellectual property rights of China. It has been put into demonstration application in the thermal power auxiliary control system of Shantou Power Plant, and the main control systems of Jilin Tongyu Wind Power Plant, Dingbian Wind Power Plant, and Shanxi Shenkouzi Wind Power Plant respectively, which indicates The Company has achieved significant breakthroughs in R&D of core control equipment of renewable energy

## Establishing Scientific Research Platform

The Company has established a relatively complete technical innovative system mechanism, and initially created the scientific and technological innovation system, which takes Xi'an Thermal Power Research Institute and China Huaneng Group Clean Energy Technology Research Institute Co. Ltd. as well as the professional technical center as its core. The system combines industry, universities and institutes, and covers the main business sector. The system integrates the top-level design by the headquarters and joint implementation by industrial (regional) companies and institutes. In 2020, The company set up the Academic Committee, Science and Technology Advisory Committee, Nuclear Technology Institute and Hydropower Technology R&D Center to vigorously promote smart technical researches on offshore wind power operation and maintenance. The Company also developed the first offshore wind power smart operation and maintenance platform and new energy smart monitoring platform in China.

## Technical Innovations by Employees

The Company actively responded to the national development strategy of "mass entrepreneurship and innovation initiative", paid attention to mass technical innovation, and included the "mass entrepreneurship and innovation" into the technical innovation assessment system. The Company deeply excavated the existing innovation results by employees, promoted authorization of 82 new patents, and applied 104 new patents. In 2020, "Liu Bin Innovation Studio" of East Power Plant was chosen by All-China Federation of Trade Unions as the third-batch "National Model Workers and Craftsmen Talent Innovation Studio".

The Company improved the brand project "Huaneng Creator, Huaneng Craftsmen". The Company selected and rewarded 10 Huaneng creators and 12 Huaneng craftsmen for the first time, and organized the qualification and naming of the first 6 Huaneng creator studios and 8 Huaneng craftsmen studios. The Company also gave full play to the demonstration, guiding and "mentoring" of Huaneng creators and Huaneng craftsmen.

-  The Company solicited and appraised technical innovation results of employees in 2019. Out of 491 results collected, the Company appraised, selected and honored excellent 180 achievements. The Company appraised and selected "Top 10 Great Technical Innovation Results by Employees" from the 1153 prized results of the recent 4 years
-  The Company actively recommended excellent results to China Energy Chemical and Geological Union and China Electricity Council. 94 achievements were entitled as **excellent technical innovation achievements of national energy chemical and geological system and the national electric power system**. Both the quantity and quality of the results were much higher than past years, and took the lead among counterpart enterprises



104

newly-added patents applied



Employees were rewarded for

180

technical innovation results

# Caring for Employees' Work and Life



## International Trend



## Domestic Policy

All our work must be based on well realizing, keeping and improving fundamental interests of the overwhelming majority of people. Our major work and decisions must be based on conditions of people and must be down to earth.

— Xi Jinping

## Huaneng's Response • Events in 2020

- Selected 80 employees to 2020 International Talent Development Plan
- Carried out the first nuclear power labor emulation: Shidao Bay: "Gathering Strength to Conquer Difficulties Cup" Labor Emulation
- Carried out labor emulation in the operation field for the first time: "Keeping Growth, Promoting Income Increase" Electricity Marketing Labor Emulation

## Guarantee of Basic Rights and Interests

The Company strictly abides by the Labor Law, the Labor Contract Law and other laws and regulations, and pays social insurance in strict accordance with relevant regulations, protecting personal privacy of employees, and constantly improving the basic management of labor and employment. By the end of 2020, on-the-job employees of the whole Company were 124,628, the overall labor productivity was 903,000 yuan per person, and the employee turnover rate was 5%.



The overall labor productivity was

**903,000**

yuan per person

 <p><b>Guaranteeing Remuneration and Welfare</b></p>	<p>The Company kept improving its salary management, enhanced gross payroll sort management, and actively carried out salary system reform, delivering wages to the staff on time, and ensuring rational growth of income of the staff. The Company improved the enterprise annuity management system, further enhanced and standardized the employee welfare guarantee system, insisted on equal pay for equal work, and paid higher salaries to front-line and production employees. The average paid vacation of employees was 10 days, varying based on years of working.</p>
 <p><b>Deepening Democratic Management</b></p>	<p>The Company promoted the standardized operation of the Labor Union, and the establishment rate of labor unions in subsidiaries was 96%, and that of grassroots companies was 85%. The Company implemented the system of transparency in power plant affairs. The establishment rate of the power plant affairs disclosure list system of subsidiaries was 94%, and that of the grassroots companies was 92%. Songyuan Thermal Power Corporation and Liaocheng Thermal Power Corporation were entitled as <b>national advanced corporation of democratic management in transparency in plant affairs</b>. Jingtangshan Power Plant was entitled as <b>the advanced sample corporation of democratic management in transparency in plant affairs</b>.</p>
 <p><b>Ensuring Employment Equality</b></p>	<p>The Company insisted on the employment policy of equality between genders and equality among all nationalities. The ratio between male and female employees was 3.49:1. The Company protected legal rights and interests of female employees and dispatched workers. The Company enhanced its recruitment quality for graduates, and clearly stated the conditions and procedures for receiving and arranging jobs for retired soldiers.</p>
 <p><b>Building the "Home for Staff"</b></p>	<p>The Company organized the appraisal and commendation of model home of staff (small home), excellent workers of the Labor Union and excellent work programs of the Labor Union in order to arouse enthusiasm among grassroots staff. The Labor Union of the headquarter, and that of Yangliuqing Thermal Power Plant, Xing'an Thermal Power Plant, and Yichun Thermal Power Plant were entitled as <b>"National Model Home of Staff"</b>. Three grassroots companies were entitled as <b>"National Model Small Home of Staff"</b>. Two employees were entitled as <b>"National Excellent Worker of the Labor Union"</b>. The establishment rates of the Labor Union of subsidiaries and grassroots companies reached 95.8% and 92.4% respectively, and the setting rates of Labor Union offices reached 95.8% and 80.1% respectively.</p>
 <p><b>Helping Employees in Difficulty</b></p>	<p>The Company enhanced the application for poor employees and took targeted assistance measures. The Company raised 9.46 million yuan, and helped 764 poor employees, being a good backup force trusted by employees.</p>
 <p><b>Caring for Female Employees</b></p>	<p>The Company implemented <i>the Special Rules on the Labor Protection of Female Employees</i> to ensure the rights and interests of female employees, including child delivery and lactation. The Company also organized the "Reading Women's Day" activity, where 103 pieces of works in total were granted with prize. Both the quantity and ratio of rewards reached a record high. Four employees were entitled as <b>reading volunteers of the "Reading Women's Day"</b>, and The Company was granted with <b>the Special Organization Prize</b> for four consecutive years by the event organization committee.</p>
 <p><b>Showing Consideration for Special Talents</b></p>	<p>The Company drove the building of international talent team salary system, further aroused enthusiasm of staff stationed aboard for work, and provided multi-dimensional supports for them. The Company clearly stated the living subsidy standard for poverty alleviation cadres staying stationed in villages and included this standard in the total payroll management.</p>

## Improving Professional Skills

The Company strictly implemented the 2020 training plan, and set up group-level hydropower centralized control operation and emergency training room. Regional companies and grassroots companies actively carried out various management, special technologies and skills training to effectively enhance the special skills of staff and help their career development.

- ⚙️ The Company actively educated grassroots companies, gave training resources and regional advantages into full play, and invited famous professors and experts to deliver lectures in grassroots companies and Party Schools
- ⚙️ The Company carried out various online trainings, and provided courses, including Epidemic Prevention and Control, Management Competency Upgrading for Managers, Orientation lectures, Guide for Employees to Apply for Patents, etc. The Company organized 1,430 online training classes via the Networking Academy throughout the year, trained 507,253 person-time in total, and organized 4,223 online tests
- ⚙️ The Company accelerated international talent development, and set up an international talent bank with over 450 people. The Company selected 80 most talented employees to its 2020 International Talent Development Plan, and set up two international talent training courses-- Investment Management and Engineering Management, focusing on themes related to serving the "Belt and Road Initiative" construction

The Company kept focusing on serving central work, caring employee development, selecting and developing high-tech talents fitting in the word first-class companies when carrying out labor and skill competitions. By cultivating the "2+3+5" Labor and Skill Competition, the Company strives to build a career development platform for staff.

### "2+3+5" Labor and Skill Competition

#### Carried out two nation-wide and industry major labor competitions

Shidao Bay High Temperature Gas-Cooled Reactor Nuclear Power Plant Demonstration Project organized the "Gathering Strength to Conquer Difficulties Cup" Labor Emulation, which was the first labor emulation of the nuclear power industry of the Company, and helped the high-quality and safe development of the nuclear power industry

"Keeping Growth, Promoting Income Increase" Electricity Marketing Labor Emulation was the first labor emulation of the business filed, which drove the daily electricity energy production and monthly electricity production and achieved consecutive progress

#### The Company undertook and participated in three national and industry major skill competitions

**In the Relay Protector Final of the 12<sup>th</sup> National Power Industry Vocational Skill Competition**, all the 10 participants of the Company were granted with a prize, and **both individual and the team first places** were taken by our staff

**In the Professional Skills Competition for Turbine Repairers in Large Hydropower Plants of National Electric Power Industry**, 13 of the 15 participants of the Company were **granted with a prize**

**In the "Jiake Cup" International Welding Competition**, the Company won **the golden prize for team** for the first time

#### The Company held five high-quality staff skill competitions

Skill Competition for Centralized Control Men-on-duty of Subcritical Coal-fired Units

Skill Competition for Auxiliary Equipment Diagnosis and Overhaul

Skill Competition for Secondary Overhaul of Hydropower Equipment

Skill Competition for Cyber Security

Skill Competition for Coal Industry Staff



Opening Ceremony of the "Gathering Strength to Conquer Difficulties Cup" Labor Emulation



"Keeping Growth, Promoting Income Increase" Electricity Marketing Labor Emulation



Supported employees in epidemic area of Hubei Province with a special fund of

**35.68** billion yuan

disbursed from the cost and expenses

## Boosting Talent Development

The Company actively explored multiple channels for technical and skill talents to develop, and provided 1% of the total payroll as a special fund. The Company promoted grassroots companies to build the double-channel promotion mechanism where post sequence takes dominant place and special technology post sequence takes auxiliary place. During the "13th Five-Year Plan Period", the employees with an intermediate certificate or above increased by 9%, and those with an qualification above technician increased by 13%.

The Company enhanced selecting, building and publicity of advanced models. In 2020, the Company entitled three collectives and seven individuals as "Huaneng Model", including Gao Shiwang from China Huaneng Group Clean Energy Technology Research Institute Co. Ltd., Li Qiansheng from Dalian Power Plant, Fu Liang from Haikou Power Plant, Zheng Guijie from Dalate Power Station, and Wang Jianhong from Yimin Open Pits won the title of **"National Model Worker"**. The Financial Department of Shanghai Ruining Shipping won the title of **"National Women Red Banner Collective"**. One employee won the title of **"Energy Model"**. Two employees won the title of **"Craftsman of Great Country" of the national energy chemical and geological system**. Four families (collectives and individuals) won **"National Five-virtue Family"**, **"National Most Beautiful Family"**, **"National Advanced Collective of Family Work"**, and **"National Advanced Individual of Family Work"** respectively.

## Paying Attention to the Health of Staff

Facing the sudden outbreak of COVID-19 in 2020, the Company always prioritized physical and mental health of all the employees. The Company immediately collected masks and other materials to help the employees in the severely affected areas in Hubei Province, set up a special fund of 35.68 million yuan disbursed from cost and expenses, and initiated the "Love Donations" of 5.24 million yuan from employees, so as to ensure uninterrupted supply of protective equipment for power and heat supply employees in Hubei Province during the spring festival. The Company purchased protective equipment for the employees in Beijing when the epidemic suddenly hit Beijing in Xinfadi, and organized nucleic acid tests and vaccinations. The Company sent a letter of sympathy to all the employees staying in Pakistan, and provided materials for epidemic prevention for free. The Company also delivered a special fund of sympathy totaling 2.6 million yuan to overseas employees for better epidemic prevention. During the COVID-19 outbreak, the Company carried out special activities according to mental situations of the staff, including Stress and Emotion Management, Psychological Counseling for Overseas Employees, and "A Letter to Home", etc., and explored to carry out Parenting Psychological Counseling Lectures and Health Consultations via online platforms, which were praised by the employees.

## Enriching the Life in Spare Time

In order to actively respond to the COVID-19, the Company organized various recreational and sports activities, including culture, art, reading, and sports, and originally carried out flexible and diverse activities, like "Walking Online or in Cloud". These activities enriched cultural life of the staff, comprehensively presented their images, and enhanced cohesion of the Company.

- ⚙️ The Company undertook the 2020 National Tennis Friendly Competition for Electric Power Industry, which attracted 188 participants from 16 companies around China. Eight participants from four teams of the Company won prizes
- ⚙️ Tongxiang Gas Turbine Staff Study was selected to **"National Exemplary Base of Staff Study of the Labor Union"**



Annual Spring Festival Gala and Ethics Lecture of Yuhuan Power Plant



"Grand Learning" of Staff of Fujian Provincial Federation of Trade Unions was carried out in Luoyuan Power Plant

# Abiding by the Red Line of Safe Production



## International Trend



## Domestic Policy

We must establish and improve the safe production responsibility system. Enhance key responsibilities of The Company and deepen major inspection for safe production. Seriously learn lessons from accidents, and pay attention to drawing inferences about other cases from one instance, in order to comprehensively promote safe production.

— Xi Jinping

## Huaneng's Response • Events in 2020

- ⚙️ No major or above security incidence occurred, and effectively defended natural disasters, including flood, water-logging, and typhoon
- ⚙️ Matigou Coal Mine has kept 6100 consecutive days of safe production, and was entitled as the "Double Top Ten" national coal industry
- ⚙️ The Company carried out a series of activities, including "Nuclear Safe Management Improvement Year", "Nuclear Emergency Management Training and Exercise"

## Consolidating the Foundation for Safety



The Company insisted on public safety based on the rule of law, and drove the construction of the safe production system. The Company revised and compiled 17 systems, including *Management Measures for Safe Production Supervision*, and *Management Measures for Safety Performance Appraisal*, and finished the establishment of standard systems for safe production in all of thermal power plants and large and medium-sized hydropower stations. In 2020, no major or above incident occurred, and the Company effectively defended natural disasters, including flood, water-logging, and typhoon.

Renewable energy infrastructure construction projects that will be put into operation this year have the characteristics of large quantity, tight time schedule, high pressure, and with various safety risks. Therefore, the Company implemented safety inspections to 11 project fields and kept very strict safety supervisions in order to ensure work safety.

 <p><b>Carrying out Patrol and Assessment</b></p>	<p>Compiled the <i>Management Measures for Patrol and Assessment of Safe Production Responsibility System</i> and the <i>Standard for Assessing Implementation of Safe Production Responsibility System</i>. Established and improved the long-term mechanism for assessing patrol inspection of safe production responsibility system</p> <p>Completed patrol inspections and assessments on 18 companies throughout the year, with 80 points on average, and 12 points higher than that of 2017</p>
 <p><b>Carrying out Special Programs to Address Safety Problems</b></p>	<p>Special examinations and supervisions in Nanjing Power Plant, Nanjing Thermal Power Plant, Jinling Power Plant and Jinling Gas Turbine Power Plant</p> <p>Field investigation without notice and report in Dezhou Thermal Power Plant, Hohhot Thermal Power Plant, and Jinqiao Thermal Power Plant</p>
 <p><b>Doubling Prevention Mechanism</b></p>	<p>Launching safety evaluation</p> <p>Carried out dangerous point analysis and risk pre-control for field operation, and established a risk identification and pre-control database</p> <p>Set down <i>Execution Guide for Hierarchy Control of Risks in Safe Production</i>, and revised <i>Measures for Troubleshooting and Treatment of Incidents and Hidden Dangers in Safe Production</i>, to further standardize risk control and hidden danger finding and solving</p> <p>Carried out special treatment programs, including reducing outsourcing teams, treating dangerous chemicals, and fighting rule-breaking</p>
 <p><b>Enhancing Emergency Capacity</b></p>	<p>Finished emergency capacity evaluation on all the power companies</p> <p>The study and application of the significant incident scenario design by Changchun Thermal Power Plant and Chongqing Liangjiang Power Plant won the first prize for scientific and technological innovation from China Electricity Council</p>
 <p><b>Driving Safety Improvement by Technology</b></p>	<p>Won <b>the improvement prize for safety technology</b>, one first prize and 14 second prizes for <b>scientific and technological innovation</b></p> <p>Enhanced information management of safety in project field and used "cloud safety supervision" platform in related projects</p>

## Improving Equipment Safety

The Company paid attention to equipment safety management, and finished evaluation of 777 units (stations), taking the lead in the industry in equipment reliability and thermal power energy efficiency index. In 2020, no equipment examination and statistics accidents occurred in the Company. Nine Category-one troubles of power production equipment occurred, five fewer year on year. 97 times of unplanned outages of hydropower and thermal power units occurred, 25% lower year on year. The average unplanned outage time per unit hit the bottom of the history, and no unplanned unit outage occurred in 68 thermal power plants throughout the year, including Weihai Power Plant and Dongfang Power Plant. The equivalent availability factor of hydropower and thermal power units was 94.49%, 0.14% higher than that at the end of the "12th Five-Year Plan" period.

## Safety in Coal Industry

The Company continues to strengthen control in coal safety, and solidly carries out activities including the three-year action of special rectification of work safety, and activities including "learning regulations, ensuring implementation, and reinforcing management" and "protecting two festivals and two Sessions and the 100-day safety campaign". The Company implemented the "Internet + on-site" control mode to ensure that work safety can be controlled amid the epidemic. In 2020, the Company's safety work in the coal industry was generally smooth, without any large accidents or above occurring.

- ⚙️ The headquarter, Coal Business Unit, Huating Coal Company and Dalai Nur Coal Company were awarded as **Safe and Efficient Group (Mine) in Coal Industry**
- ⚙️ 14 coal mines, including Yanbei Mine and Lingquan Mine, were rated as **premium safe and highly efficient mines**
- ⚙️ Matigou Coal Mine has been in safe production for 6,100 consecutive days, setting a new record for long-cycle safe production in the coal industry, and was awarded as one of **the "Double Top Ten" coal mines in the coal industry in China**
- ⚙️ Lingdong Coal Mine was promoted to **the 1<sup>st</sup>-class national standardized safe-production mine**
- ⚙️ Matigou Mine, Lingdong Mine and Tiebei Mine were awarded as **advanced coal mines**

### Lessons Learned

#### Course of the Event

On October 13, 2020, Li, a worker on duty in the No.1 Well Project Department of Yuwang Coal Mine, irregularly stood in a gangue pile in front of the bucket in the process of directing the scraper loading in the upper section of the air returning inclined alley. The steel wire rope broke at the knot between the auxiliary rope and the rake bucket during the return operation of the scraper, and then the tail rope bounced back and hit Li, who was wounded. The mine management started the emergency plan and sent Li to the hospital adjacent to the mine in the shortest possible time, but resuscitation efforts failed and Li eventually died.

#### Causes of the Event

- ⚙️ Inadequate management of mechanical and electrical equipment
- ⚙️ Inadequate safety risk management and hidden danger investigation and management
- ⚙️ Inadequate safety and technical management
- ⚙️ Inadequate employee safety education and training
- ⚙️ Inadequate supervision on construction units

#### Handling of the Event

This event has constituted a general production safety accident, and relevant penalties were imposed on the accident unit and persons in charge in accordance with The Company's *Measures for Rewards and Punishments for Coal Mine Work Safety* and other relevant regulations.

- ⚙️ Diandong Mining Branch received an economic penalty of 1% of the annual salary. Two main responsible persons received a notice of criticism and an economic penalty of 3% of the annual salary. Four relevant responsible persons received a warning and a certain amount of economic penalty
- ⚙️ The No.1 Well Project Department of Yuwang Coal Mine received an economic penalty of 3% of the annual salary. Two main persons in charge were given a major demerit and an economic penalty of 30% of the annual salary. One person in charge was given a demerit and an economic penalty of 30% of the annual salary. Three persons responsible were given a demerit and an economic penalty of 10% of the annual salary
- ⚙️ The acts of other responsible personnel of the coal mine shall be established and penalized, and the construction unit and supervision unit shall be penalized in accordance with the contract

#### Reflections

- ⚙️ We should further elevate political stances and fully implement the responsibility for work safety
- ⚙️ We should deeply learn lessons from this accident, conduct a comprehensive and in-depth investigation and treatment of hidden dangers
- ⚙️ We should strengthen the technical management of safe operation
- ⚙️ We should enhance the safety management of outsourced teams
- ⚙️ We will step up checks on the "three violation behaviors", and firmly put an end to violations
- ⚙️ The activities of "protecting the two festivals, protecting the Two Sessions and the 100-day safety campaign" should be solidly carried out

## Safety in Nuclear Power Sector

The Company's nuclear power work safety was generally stable and the safety management system was further improved. The Company issued the *Five-Year Plan for Nuclear Safety Culture Construction in Nuclear Power Industry* and *Three-Year Action Plan for Special Rectification in Nuclear Power Industry*, and strictly carried out safety rectification, implemented the work safety responsibility system for all employees. The Company also carried out a series of activities including "Nuclear Safety Management Improvement Year", "Nuclear Emergency Management Training and Special Exercises" and "Nuclear Safety Science Popularization on the National Security Education Day" to help enhance the nuclear safety awareness of employees and the public.

## Cultivating Safety Awareness

The Company actively improves the safety education and training platform system and carries out the education and trainings based on "one standard for one post". The Company intensified the training of safety management personnel, and the coverage of training on safety management for the main persons in charge of secondary companies increased from 39% to 53%. The number of registered safety engineers increased from 1,263 at the end of the 12th Five-Year Plan period to 2,216. Targeted training has been conducted, and video training lectures and results exchanges have been held, including "Guidelines for the Implementation of Hierarchical Management and Control of Risks related to Work Safety" and "Essential Work Safety System for Infrastructure Construction".



Coverage of training on safety management for the main persons in charge of secondary companies reaches

53%

### Conducting Professional Safety Training

Haikou Power Plant invited experienced lecturers who have been engaged in the special equipment industrial management and training to deliver the professional knowledge of hoisting and scaffold use for all staff. During the training, lecturers introduced in detail the technical regulations for lifting operation and the safety operation procedures for lifting operators, explained the proper erecting scaffolding, the supervision management and acceptance of scaffolding, which effectively enhanced the safety awareness of staff.



Work Safety Training at Haikou Power Plant

### Carrying out Wind Turbine Fire Emergency Drill

In June 2020, in order to further strengthen the emergency management of work safety accidents and improve the emergency preparedness capability, Huaneng Renewables Corporation Shandong Branch held an observation activity of wind turbine fire emergency drill at Hekou Wind Farm. The drill was carried out in strict accordance with the emergency plan procedures in an orderly manner, which effectively enhanced the emergency response capability of all staff and played a good demonstration role for the future emergency response to wind turbine fires. A total of more than 40 employees from all departments of the branch and wind farms observed the drill.



Observation Activity of Wind Turbine Fire Emergency Drill

# Effectively Strengthening Environmental Protection



## International Trend



## Domestic Policy

We shall protect the ecological environment like protecting our own eyes, treat the ecological environment like treating our own life, build the foundation of ecological civilization and pursue green development together.

— Xi Jinping

## Huaneng's Response • Events in 2020

- ⚙️ Cold test of the dual reactors was completed at one shot at the Shidao Bay High Temperature Gas-cooled Reactor Demonstration Project, a major national science and technology program
- ⚙️ Hainan Changjiang Nuclear Power Plant Phase II Project was approved, officially granting the company as the fourth power generation enterprise in China with the qualification of constructing large pressurized water reactors
- ⚙️ The Company has formed two sludge and waste coupled power generation technical routes with independent intellectual property rights

## Strengthening Environmental Management

The Company has always been problem-oriented to diligently solve the difficulties and key issues in the current environmental protection work, made every effort to promote ecological development and pollution prevention & control, earnestly carried out risk investigation in environmental protection, and further improved the accuracy of working measures, with environmental protection achievements constantly emerging, and environmental protection indicators continuing to be industry-leading.

The Company has been improving the construction of the standard system, compiled the national standard of *Decentralized Wind Turbine Generators* and 9 industry technical standards such as *Technical Specification for Electromagnetic Compatibility of Wind Turbine Electrical System*, and formulated 6 enterprise technical standards, enhancing the Company's influence in the industry.



The Company continuously strengthens the construction of environmental protection early warning and emergency mechanism, solidly and effectively conducts environmental protection risk inspection and treatment, and strictly implements the *Comprehensive Emergency Response Plan for Major Emergencies*. Subsidiaries of Huaneng Group regularly carry out routine drills to ensure the possible risks brought about by emergent environmental issues are minimized.

## Establishing the Environmental Monitoring System at Power Station

There are a lot of environmental measurement points in Nuozhadu Hydropower Station, and relevant works were carried out mainly based on manual monitoring, posing problems such as long time interval, time-consuming, untimely data collection and poor data continuity. To improve the current situation, the hydropower station has established an environmental monitoring system carrying environmental monitoring instruments with technologies, such as sensor and the Internet of Things to realize automatic collection and analysis of environmental monitoring data such as noise, air and dust in the production site, which greatly improved work efficiency and laid a solid foundation for further consolidating the green development of the power station and creating an international leading hydropower station.



Nuozhadu Hydropower Station

## Adjusting Energy Structure

During the "13th Five-Year Plan" period, the Company's renewable energy development capacity has been steadily increasing, with a total capacity of 15.5 GW of renewable energy put into operation, which is about 1.4 times more than that during the 12th Five-Year Plan period, and the profit contribution of renewable energy to the Company's power business has increased from 10% to 50%.

The Company has accelerated the strategic layout featuring "two-lines" (north line and east line) and "two-integrations" (integration of wind, photovoltaic, coal, electricity transmission and consumption, and integration of offshore wind power investment, construction, operation and maintenance), and its renewable energy development hit the best level in history. In 2020, the Company's approved capacity of renewable energy projects exceeded 13 GW, the capacity started construction exceeded 10 GW, and the newly-installed capacity exceeded 10 GW, realizing "three 10 millions". The Company overfulfilled the year-round target, and the annual newly-installed capacity in 2020 was the sum of those installed during the first four years of the "13th Five-Year Plan" period.

The Company continuously strengthens the whole process management of renewable energy projects, completing 147 new energy project investment decisions throughout the year, totaling 14.53 GW of capacity, of which 5.6351 GW were approved, 7.4734 GW were set up as projects, and 0.861 GW were terminated from the preliminary projects, forming a positive rolling development pattern of "reserving a batch and developing a batch", laying a solid foundation for the sustainable development of renewable energy.

- ⚙️ The Company has seen substantial progress in base projects. The Energy Base in Eastern Gansu with ultra-high voltage as supporting project was included in the "14th Five-Year Plan" of the National Energy Administration, and 3.22 GW renewable energy was approved
- ⚙️ By promoting the construction of new energy production operation and maintenance platform and renewable energy intelligent operation and maintenance center, the Company has basically realized the functions of operation monitoring, production supervision, decision support, production reports, etc

As the leading energy enterprise in China, Huaneng has been persistently focusing on scientific and technological innovation, vigorously developing renewable energy, enhancing independent innovation, planning nuclear power breakthroughs, and actively laying out environmental technology industry, making positive contributions to guaranteeing China's stable energy supply, power network security and facilitating ecological environmental protection.



—Zhang Jianhua, Minister of National Energy Administration



**Hydropower**

During the "13th Five-Year Plan" period, the layout of the company leading the development of large hydropower bases in the southwest has gradually taken shape, and the company's business in the hydropower industry has reached a new level. The company has completed 8 hydropower stations, including Miaowei Hydropower Station, Dahuaqiao Hydropower Station, Huangdeng Hydropower Station, Lidi Hydropower Station, Wunonglong Hydropower Station, Lower Sesan II Hydropower Station, Gyaca Hydropower Station at the middle reaches of the Yarlung Tsangpo River, and Yamansu Hydropower Station on the Taushgan Darya River, with an installed hydropower capacity of 7 GW put into operation and a cumulative profit contribution of 23.54 billion from the hydropower segment, making profitability continue to improve.

In 2020, the Company had 604 MW of hydropower projects being put into operation, and the preliminary and construction works were steadily advanced. The Comprehensive Plan for Hydropower Base at the Upper Reaches of the Lancang River was jointly approved by the National Development and Reform Commission and the Ministry of Water Resources, and the four-party agreement on delivering electricity generated by hydropower from the Southeast of Tibet to Guangdong-Hong Kong-Macao Greater Bay Area was reached. Huaneng's Leading Group for the Development of Yarlung Tsangpo River Downstream and its office were established, and the hydropower base at the lower reaches of the Yarlung Tsangpo River was officially included in the national "14th Five-Year Plan".

- ⚙ The preparation of Rumei Hydropower Station has been actively conducted
- ⚙ Milin Project has started the pre-feasibility study work
- ⚙ Zangmu Hydropower Station has realized 10TWh of accumulative power generation
- ⚙ Yamansu Hydropower Station project has been put into operation, making it the largest hydropower power station in the Aksu Prefecture of Xinjiang
- ⚙ Gyaca Hydropower Station has successfully put three units into operation in one year, further enhancing the company's development advantages in Tibet



**Wind Power**

In 2020, the Company has started the construction of 1.8 million kW offshore wind power in Jiangsu, Shandong, Zhejiang, Liaoning and other provinces. Among them, Jiangsu Offshore Wind Power Base has seen progress in its development in an orderly manner, and put into operation 800 MW of projects, 3.1GW of offshore wind projects are under construction.

- ⚙ Part of turbines in Dalian Zhuanghe Offshore Wind Farm was lifted into place
- ⚙ Jiangsu Qidong 800MW offshore wind power project started construction
- ⚙ Ningxia Yanchi Huanbao 150MW wind power project was put into operation
- ⚙ Shangdu 1.6GW wind power project of Inner Mongolia Base was approved
- ⚙ Zhanhua Qingfeng Lake Wind Farm won the title of "2019 5A Wind Farm in National Wind Farm Operation Index"
- ⚙ Puyang Phase I 500MW wind power project, the company's largest individual wind farm on plain area was put into full operation
- ⚙ Zichang wind power project with the installed capacity of 300MW was connected to the grid for power generation. It is the largest high-tower wind farm in mountainous area built and put into operation in one shot in China



**Biomass**

In 2020, the Company obtained approval of a total of 3 biomass projects with total capacity of 160MW.

- ⚙ Nong'an Biomass Power Plant's No. 2 expansion unit was officially put into commercial operation
- ⚙ Jiyang Biomass Cogeneration Project completed "72+24" hours of continuous trial operation, marking the completion and operation of the company's first biomass project built by its own efforts



**PV Power**

In 2020, the Company was granted approval of 6.2124 GW of photovoltaic power capacity, and carried out the merger and acquisition of 26 high-quality photovoltaic projects with the capacity of 1.12GW in three batches.

- ⚙ Zhejiang Qinggang 100MW Fishing and Photovoltaic Combined Project in tidal flat area was filed
- ⚙ The world's largest individual floating photovoltaic power plant - the 200MW Dingzhuang Reservoir Photovoltaic Power Project Phase I in Dezhou started construction
- ⚙ Ningxia Qingtongxia Leibiyao Ash Yard Photovoltaic Compound Project was connected to the grid and put into operation. It was included in the National 2020 State-subsidized PV Projects for Open-bidding
- ⚙ Huaiyin Power Plant's Sihong 100MW PV Pioneer Power Generation Project was connected to the grid, becoming the company's first **national PV pioneer project** in Suzhou, achieving 65.65GWh of power generation in 2020
- ⚙ Several photovoltaic projects were connected to the grid and put into operation, including 100MW in Jimsar, Xinjiang; 300MW in Hainan Prefecture, Qinghai; 150MW in Ximo, Ruicheng County, Shanxi; 100MW in the Dalai Nur Mine, Inner Mongolia; 100MW in Shuilongshan, Tongyu, Jilin



**Nuclear Power**

The Company formulated the *Medium- and Long-Term Development Strategic Plan for the Nuclear Power Industry (2021-2035)*, for the first time clarifying the strategic positioning, development goals and implementation path of the Company's business in the nuclear power industry, and compiled sub-plans and special work programs such as the implementation plan for nuclear power site development work.

In 2020, the Company achieved a strategic breakthrough in its development of nuclear power industry, and the development pattern of "three coastal nuclear power bases" has taken shape on all fronts. In order to build a high-quality nuclear power talent team, the company founded the Research Institute of Nuclear Power Technology, and carried out the recruitment and selection of technical experts, providing a strong talent guarantee for the construction of demonstration projects.

- ⚙ Shidao Bay High Temperature Gas-Cooled Reactor Demonstration Project, a major national science and technology program, completed dual reactors' cold test, and has entered into the heat test of the dual reactors
- ⚙ Hainan Changjiang Nuclear Power Plant Phase II Project was approved, marking the company officially become the fourth power generation enterprise in China with the qualification of constructing large pressurized water reactors



**Gas Power**

- ⚙ Dongguan Gas Turbine Phase I Project, the first large-scale energy project invested and constructed by the company in the Guangdong-Hong Kong-Macao Greater Bay Area, has formally entered commercial operation
- ⚙ The No. 2 unit of Jiangyin Gas Turbine Thermal Power Co., Ltd. successfully completed the full load test run for 168 hours. The two sets of co-generation units of the plant completed the test run and were formally put into operation

Jiangyin Gas Turbine Thermal Power Co., Ltd. is considered a typical demonstration of Huaneng's cooperation with local governments. It is hoped that the power plant and the local government will work closely to promote the optimization and adjustment of industrial structure through heat supply, and to achieve mutual benefits.

—Li Yi, Deputy Director of Jiangsu Provincial Bureau of Energy



Gyaca Hydropower Station



Dalian Zhuanghe Offshore Wind Farm



Huaiyin Power Plant's Sihong 100MW PV Pioneer Power Generation Project



Jiangyin Gas Turbine Thermal Power Co., Ltd.

## Saving Resources and Energy

### Reducing Energy Consumption

In 2020, the Company completed 295.34 g/kWh of coal consumption for power supply, a decrease of 2.21 g/kWh year-on-year, and the service electricity consumption rate reached 3.73%, a drop of 0.05 percentage point year-on-year. The Company's seven main unit types, including 1,000MW ultra-supercritical, 600MW ultra-supercritical, 600MW ultra-supercritical wet-cooling and 600MW ultra-supercritical air-cooling, led the industry in coal consumption for power supply.

### Building a Circular Economy

The Company actively carries out the construction of circular economy, and improves the utilization rate of industrial "three wastes" and waste heat and energy, so as to create a new model of harmonious environmental-economic development.

#### The Company Has Developed Sludge and Waste Coupled Power Generation Technologies with Independent Intellectual Property Rights to Help Develop the Circular Economy

In 2020, the Company formed 2 sludge and waste coupled power generation technical routes with independent intellectual property rights, and made demonstrated applications in Suzhou Thermal Power Plant, Yangliuqing Power Plant and Luohuang Power Plant, etc.

**Qinhuangdao Qinre Power Generation Co Ltd.:** Having undertaken the construction of CFB boiler unit coupled with the incineration of city's high moisture sludge project, which is the first project at home and abroad to apply the 300MW-class large CFB boiler coupled with wet sludge (80% moisture) for direct combustion without drying pretreatment to generate power, realizing the daily treatment of 800 tons of wet sludge, thoroughly solving the problems of harmless treatment, reduction, and recycling of sludge in Qinhuangdao, a coastal tourist city.

**Suzhou Thermal Power Plant:** Having completed the engineering demonstration application of coal-fired circulating fluidized bed boiler coupled with city sludge's direct burning in the furnace, which can process 100 tons of wet sludge (60% moisture) per day, with the processing operation cost less than 80 yuan/ton, effectively solving the disposal problem of urban sludge and providing clean and stable green power for neighboring people.

**Yangliuqing Power Plant:** Having completed the third phase units' coal coupled with sludge power generation project, which is the first project at home and abroad to apply the front drying carbonization treatment technology in 300MW-class large pulverized coal boilers to directly burn wet sludge (80% moisture), with two new integrated processing systems having a treatment capacity of 250 tons/day and a daily treatment capacity of 500 tons wet sludge (80% moisture).

**Luohuang Power Plant:** Having completed the first phase of the coal coupled with sludge power generation project, which can dispose of nearly one-third of the total amount of sludge generated in Chongqing each year, while increasing biomass electricity by 49 GWh, with significant environmental and economic benefits.



Sludge Power Generation Project of Qinre Power Generation Co Ltd.



Sludge Power Generation Project of Suzhou Thermal Power Plant



Sludge Power Generation Project of Yangliuqing Power Plant



Sludge Power Generation Project of Luohuang Power Plant

## Carrying out Clean Production

### Winning the Battle Against Pollution

The Company has strongly stepped up source control, compiled the *Guidance on Wastewater Discharge Control*, and used it as a basis to carry out the feasibility study for sewage treatment renovation in more than 100 power plants.

The overall average pollutant emission concentration of the company has been maintained at a stable level of ultra-low emission, and the company's ultra-low emission units accounted for 97% of the capacity by the end of 2020, completing 113% of national ultra-low emission retrofitting tasks defined by the "13th Five-Year Plan". The emission performance of sulfur dioxide, nitrogen oxides and dust of thermal power units is 0.072g/kWh, 0.139g/kWh and 0.010g/kWh, respectively, a decrease of 73%, 52% and 84%, respectively compared to that at the end of the 12th Five-Year Plan period, having made a contribution to the country's establishment of the world's cleanest coal power system. The Company's coal-fired unit ultra-low emission retrofit case was successfully **selected into the Davos World Economic Forum's White Paper of Innovations from the Energy Sector 2010-2020**, which is the only technology on clean and highly-efficient utilization of coal in the White Paper.

#### Coal-fired Units Achieve Zero NOx Emissions During Startup

Huaneng Changxing Branch in Zhejiang carried out a technical research on "zero NOx emission during start-up of 660MW ultra-supercritical coal-fired units". The flue gas temperature before grid connection was raised from about 280°C to 320°C without any changes in equipment system or major adjustments in unit operation mode through measures such as dynamic adjustment of flue gas baffle, increase of feedwater temperature and phased control of total air volume, achieving the target of no over-emission of pollutants during the start-up of the unit. With strong operability, outstanding significance of emission reduction and considerable economic benefits, the result won **the first prize of the National Electric Power Industry Equipment Management Innovation Achievement**.

#### Co-treatment of Flue Gas Desulfurization and Wastewater

The Ruijin Power Plant carries out a co-treatment project of flue gas desulfurization and sewage for its Phase II 2×1,000MW units, using power plant's circulating disposal sewerage and chemical wastewater as make-up water during the process for the desulfurization system, reducing the consumption of fresh water by about 220 tons/hour through water gradient utilization. The resulting desulfurization sewage is first evaporated and concentrated by low-temperature flue gas waste heat, and then thoroughly dried by the waste heat of high-temperature flue gas; the products from dried sewage go into fly ash for comprehensive utilization, which can realize zero emission of desulfurization sewage, with sulfur dioxide emission concentration ≤ 20 mg/m<sup>3</sup> and dust emission concentration ≤ 5 mg/m<sup>3</sup>, better than the ultra-low emission requirement.

#### Promoting a Network for Waste Recycling

Zhejiang Yuhuan Power Plant, aiming at the disposal of solid waste in Taizhou, Wenzhou and other urban clusters, actively promotes the effective use of "urban calorific mineral" resources, and conduct exploration and practice with local enterprises on the intensification and reclamation of "municipal sludge and urban solid waste" collection and storage solutions, such as developing an online platform for collection and storage of kitchen waste and food waste. Later, general industrial solid waste will also be included into the platform to ensure that the platform files, collects and disposes of multiple types of solid waste, so that the whole industrial chain process can be traced, found and monitored, making a "waste-free city" come true.

### Helping Achieve Carbon Neutrality

The Company has developed the *Management Measures for Greenhouse Gas Emission Reduction*, established a three-tier carbon emission management system, developed and established a comprehensive information platform for carbon asset management, which further improves the dynamic management of carbon emission data. One of the 14 enterprises in the pilot carbon trading areas has the longest continuous completion period of carbon trading performance of consecutive seven years. In 2020, the carbon emission intensity of the thermal power supply of the Company was about 830g/kWh, which is 36g/kWh lower than that at the end of the "12th Five-Year" Plan Period.

- ⚙️ Demonstration of post-combustion flue gas CO<sub>2</sub> capture at Beijing Thermal Power Plant and Shanghai Shidongkou No.2 Power Plant
- ⚙️ Demonstration of pre-combustion CO<sub>2</sub> capture at Tianjin IGCC
- ⚙️ The Company has developed the first 1,000 tons/year phase-change carbon dioxide capture industrial facility in China, which was successfully put into operation in Changchun Thermal Power Plant, with its main technical specifications reaching the international leading level

## Promoting Environmental Awareness

### Working on Green Offices

Through a series of green office measures, the Company guided the employees to start from small things to reduce energy consumption in daily life and enhance their awareness of environmental protection.

- ⚙️ Strictly control air conditioning temperature, and promote the use of energy-saving electrical appliances
- ⚙️ Standardize the use of official vehicles, and strictly control the purchase of official vehicles and fuel consumption of the vehicles
- ⚙️ Purchase, apply for and use office consumables according to demand; replace toner cartridges when they are used up, and print on both sides of the paper
- ⚙️ Substantially simplify meetings and briefings, comprehensively promote video conferences, and reduce energy consumption caused by business travels
- ⚙️ Promote informatization and paperless office work, reduce paper printing by setting up a WLAN for office affairs

### Spreading Environmental Protection Concepts

The Company makes efforts to strengthen publicity and education of green concepts, cultivate employees' awareness of ecological protection, advocate a frugal and low-carbon lifestyle, and actively organize employees to participate in environmental public welfare activities and environmental protection knowledge training. The Company has set up a communication platform for stakeholders to better respond to the demands of relevant parties.

### Carrying out Mountain Trash Collecting Campaign Themed "Beauty of Labor"

In April 2020, in order to enhance employees' awareness of environmental protection, cultivate their team spirit and promote a healthy and civilized lifestyle, Anhui Wind Power Branch organized a campaign themed "Beauty of Labor" for employees to collect trash in the mountainous area in Huaining at which the company's Longchi Project is located. During the activity, the staff picked and sorted all kinds of mountain trash by hand, which helped purify the natural environment and made them be more aware of the importance of environmental protection.



Mountain Trash Collecting Campaign Themed "Beauty of Labor"

## Implementing Ecosystem Conservation

During the construction of power stations, the Company comprehensively considers all the relevant requirements concerning power generation, flood control, water and soil conservation, aquaculture, tourism development, etc., implements environmental protection measures for project construction, and strives to protect the surrounding environment and biodiversity, so as to achieve a harmonious unity of project development and the ecological environment.

- ⚙️ The fish lifting facility at Huangdeng Hydropower Station is the first such facility officially operated in China with the highest lift height in the world, having a significant effect on the conservation of indigenous fish in Lancang River
- ⚙️ The Yarlung Tsangpo River midstream fish stocking station built by the Huaneng Yarlung Tsangpo River Branch has achieved regular proliferation and releasing of fish for six consecutive years, with a total stocking of more than 660,000 fingerlings
- ⚙️ The Lingquan open-pit mine of Dalai Nur Coal Company has completed 12.1 square kilometers of environment governance, and the vegetation coverage of the whole area has reached 40.6%, entering **the list of green mines of Inner Mongolia Autonomous Region**
- ⚙️ Yimin open-pit mine has a total greening area of more than 19,000 mu (about 3130.15 acres), achieves the reclamation rate of the drainage field of 98.56%, and the greening rate of 96.82%, making both the mine area and the grassland green, and realizing beauty and development together
- ⚙️ During the construction of the Gaolong Hill Wind Farm, the "zero-disturbance to lower slope" technical solution was adopted to maintain the original ecology of the lower slope to the maximum extent and protect the local natural landscape



Fish Lifting Facility at Huangdeng Hydropower Station



Yarlung Tsangpo River Branch's Stock Proliferation and Releasing Activities



Reclamation of Lingquan Open-pit Mine



New Vegetation Restoration Area at Yimin Open-pit Mine



Gaolong Hill Wind Farm

# As a Pillar of the Great Power, CHNG's Nuclear Power Business Sets Sail

Generations of workers in the nuclear industry have made outstanding contributions to national security and economic construction through hard work and innovation, promoting China's nuclear industry starting from scratch and developing gradually, and making remarkable achievements for national security and economic development. The nuclear industry is a high-tech industry of strategic significance and acts as an important cornerstone of national security. We should insist on safe development and innovative development, adhere to the peaceful use of nuclear energy, and comprehensively enhance the core competitiveness of the nuclear industry, writing a new glorious chapter in China's nuclear industry.

—Xi Jinping gave important instructions on the occasion of the 60<sup>th</sup> anniversary of the founding of China's nuclear industry

The construction of the Huaneng Shidao Bay High Temperature Gas-cooled Reactor Demonstration Plant, a major national science and technology program, started construction in December 2012, and the cold test of the dual reactors was completed in November 2020. During these years, Shidao Bay Project experienced nearly 100 months of trials and hardships, and Huaneng's nuclear power staff showed silent perseverance for countless days and nights.

In 2020, the COVID-19 epidemic pressed the "pause button" for all industries, and Shidao Bay Project, as a demonstration project, became one of the first companies to resume work and production amid the difficult situation. Huaneng's nuclear power staff aim at grid-connected power generation in 2021, and resolve to fight the decisive battle. In June 2020, the company held a series of meetings to push forward the work of the demonstration project, clarifying the responsibility target of "Annual Critical Tasks of Two Stages + Five Key Constraints Requiring Breakthroughs+ Two Special Focal Points". Henceforth, all outstanding issues concerning the project progress are highlighted and supervised in a top-down manner. All workers employees aimed at the target of "2+5+2" and did their best to fight this battle, with all the power supply, water supply, gas supply, ventilation and air conditioning, communication and fire-fighting systems of the project plant being put into operation. On July 7, the company was granted the maritime real estate right certificate; on July 14, the permit for marine water and underwater activities was issued; on July 16, the water intake-outlet project was fully started; on July 17, the repair work of internal leakage of the first domestic helium valve was completed independently; on July 18, the technical problem of chemical cleansing in secondary loop of nuclear power plant was overcome; on July 22, 6,712 cables with a total length of 382 kilometers were laid, three days ahead of schedule, across thousands of bridges through many areas of the nuclear island; on July 25, Shidao Bay Project entered the commissioning stage; on October 19, the first major node victory was achieved at the commissioning stage; the cold function test of the first reactor was successful, marking the first comprehensive test of the reactor performance, which is a milestone for the commercial operation and commissioning of the demonstration project and the realization of the fourth-generation nuclear power technology; on November 3, the cold function testing of the dual reactors was completed 14 days ahead of schedule, marking the successful passing of the cold testing of the dual reactors and the comprehensive test of the core system construction quality, laying a solid foundation for the subsequent key nodes such as the heat function tests.

Born in a great era, Huaneng is leading the innovative development of nuclear power technologies, and Huaneng's nuclear power staff are striving towards the goal of promoting the safe, coordinated and rapid development of the nuclear power industry, contributing to the development of nuclear energy in China and the world.

As the world's first high-temperature gas-cooled reactor project with a role of commercial demonstration, Shidao Bay demonstration project is a major landmark of independent innovation in China's nuclear power industry, and has received care and encouragement of the Party and State leaders. Undertaking this major national science and technology program is a glorious mission and a major political task entrusted to Huaneng by the Party and the country, and is a concrete embodiment and dynamic practice of Huaneng's focus on "the top priorities of the country". It is Huaneng's undeniable responsibility to complete the construction of the demonstration project with high standards and high quality; it's Huaneng's bounden duty to advance the research and development of key nuclear power technologies.

—Shu Yinbiao,  
Chairman of China Huaneng Group

It is entirely appropriate to list the high-temperature gas-cooled reactor as a major national demonstration project since the completion of the high-temperature gas-cooled reactor will be a milestone in the energy progress for humans. At a time when we are making such rapid progress, it is more important than ever to think calmly and creatively. Especially on issues of the energy revolution, energy transition, rather than thinking of ways to use coal, natural gas and petrochemicals. We should think about how to make transitions elsewhere. As a flagship in China's power generation sector, I hope Huaneng can continue to take the lead in energy transition.

—Lu Qiang, Academician of the Chinese Academy of Sciences, expert in automatic control and power system dynamics

## Chronicle of Shidao Bay Project

- On March 1, 2004, a project team was set up by Huaneng Group, CNNC and Tsinghua University
- On February 9, 2006, the Company's project was officially included in the list of National Science and Technology Major Projects by *National Medium- and Long-Term Program for Science and Technology Development (2006-2020)*
- On January 23, 2007, Huaneng Shandong Shidao Bay Nuclear Power Co., Ltd. was registered at the Administration for Industry and Commerce of Rongcheng City, Shandong Province
- In September 2009, the environmental impact assessment report was approved
- On March 1, 2011, the demonstration project was approved at the State Council Office Meeting



The First Reactor Pressure Vessel was Lifted into Place



The First Steam Generator was Lifted into Place

- On December 4, 2012, the construction permit for civilian nuclear facility was granted
- On December 9, 2012, the construction officially began as the first concrete was poured for the nuclear island
- On March 20, 2016, the first reactor pressure vessel was lifted into place
- On October 14, 2016, the power receiving of 110 kV plant power had a one-off success.
- On June 19, 2017, the inversely feeding of 220KV power had a one-off success.
- On October 31, 2018, the first steam generator was ready for shipment, marking the R&D and manufacturing challenges in the key equipment of the high-temperature reactor demonstration project having been fully overcome
- On January 27, 2019, the first steam generator was lifted into place

- On August 3, 2019, the steel roof of the nuclear island was lifted and topped off, marking the lifting of all large pieces of nuclear island equipment into place
- On July 25, 2020, the project comprehensively entered commissioning stage
- On October 19, 2020, cold functional test of the first reactor succeeded in one shot, marking the successful test of reactor performance for the first time
- On November 3, 2020, the cold functional test of the dual reactors succeeded in one shot, marking the successful completion of the cold test of the dual reactors 14 days ahead of schedule for the demonstration project, and the quality of the nuclear island core system construction was fully tested



Scan the QR code to watch CCTV coverage of Shidao Bay Nuclear Power Plant



# Corporate Social Responsibility Management

## Responsibility Organization

### Responsibility Governance

The Company has established a Social Responsibility Management Committee. The Planning & Development Department leads and is responsible for all works related to corporate social responsibility, takes the lead in the deliberation and decision-making of major issues, forming a mechanism for organizing social responsibility management in a top-down manner with clear division of labor. A Social Responsibility Division was set up under the Planning & Development Department. In every other Headquarters department, an employee is appointed to take charge of social responsibility issues, and in each subordinate unit, a social responsibility contact person is assigned. Thus, a social responsibility work system has taken shape from the upper to lower levels, promoting the fulfillment of social responsibilities in the departments and subordinate units.

Organizing Units	Centralized Planning	Integration & Implementation	Main Responsibility Issues
The Company's Board of Directors	Planning and Development Department (social responsibility, poverty alleviation, rural vitalization and high-quality development)	Finance and Assets Management Department	Quality and Efficiency Improvement
		Enterprise Management and Legal Compliance Department	Risk Control, Law-based Corporate Governance
		Marketing Department	Fair Competition, Fair Trade
		Safety Supervision Department	Safe Production
		Production Management and Environmental Protection Department	Guaranteeing Power and Heat Supply, Energy Saving and Environmental Protection
		Technology Innovation and Digitalization Department	Scientific and Technology Innovation
		Material and Procurement Management Department	Responsible Procurement, Supply Chain Management
		Renewable Energy Business Unit	Energy Structure Adjustment
		International Cooperation Department	Partnership, Belt and Road Initiative
		Organization Department of the Party Leading Group (Human Resources Department)	Employees' Career Development
		Party Building Department (Publicity Department of the Party Leading Group)	Strengthening Party Leadership
		Labor Union	Assistance for Employees in Need, Enriching Cultural Life
		News and Brand Management Center	Responsibility Communication, Brand Building

## Responsibility Planning

Social Responsibility Planning of Huaneng ( 2018-2020 )

	Within the Company		Outside the Company	
<b>Goals</b>	Strengthening responsibility management in the Company	Promoting the integration of secondary companies responsibilities	Build a platform for internal and external communication	Enhance the publicity of corporate responsibility image
<b>Path of Implementation</b>	Improve the social responsibility regulation system Continuously carry out training on responsibility knowledge Continuously carry out selection & appraisal of excellent cases	Carry out research on the CSR performance of secondary companies Establish a social responsibility demonstration base Encourage the publication of social responsibility reports	Continue to publish social responsibility reports Pragmatically complete surveys on responsibility issues Regularly carry out CSR exchange seminars	Participate in external social responsibility activities Lead the completion of CSR communication activities Make the voice of CSR heard through media

## Responsibility Concepts

The Company integrates the concept of social responsibility with the corporate brand construction, complies and implements the *Brand Strategy Outlines of China Huaneng Group Co., Ltd. (2020)*, in which the brand slogan of "Energy of China" is set forth for the first time and the image positioning of "industry leader to actively promote the energy revolution, protect energy security, impulse power resource innovation, lead the industry and empower a better life" is clearly defined. The Company will promote its employees to seek unity in thinking and work together, undertake the mission and responsibility as the pillar of a great power, and advance the high-quality development of the Company in a new era.

<b>Brand Slogan</b>	Primary Slogan: Energy of China Secondary Slogan: Energy of China Drives the Future. Energy of China Lights Up the World
<b>Image Positioning</b>	Responsibility practitioner for the government, innovation leader for the partners, value co-creator for the employees, and pioneer of creating a better life for the public
<b>Corporate Mission</b>	A "red" company that serves national strategy, safeguards energy security, and serves the need of Socialism with Chinese characteristics A "green" company that undertakes energy revolution, protects the environment, and supplies clean energy to ensure a better life for the people A "blue" company that participates in global energy governance, serves the Belt and Road Initiative, and contributes to building a community with a shared future for mankind
<b>Strategic Objectives</b>	Speed up the building of a world-class modern clean energy company featuring "Three Colors, Three Strongs and Three Excellents"
<b>Core Value</b>	Adhere to Integrity, and focus on cooperation Constantly innovate, and be active and enterprising Create performance, and serve the nation

## Responsibility Regulations

Classification of Regulations	Main Regulations
<b>Basic Management Regulations</b>	<i>Work Scheme for the Red Action Plan of Targeted Poverty Alleviation, Management Measures for the "Three-color Sail" Youth Volunteer Activity, Assessment and Evaluation Measures for the Party Building Work Responsibility System</i>
<b>Regulations of Related Issues</b>	<i>Administrative Measures for Management of Science and Technology Projects, Evaluation Standards for the Implementation of Production Safety Responsibility System, Implementation Plan for Pollution Prevention and Control (2018-2020), Opinions on Accelerating the Selection and Cultivation of Internationalized Talents, Administrative Measures for Support and Assistance for Workers in Difficulty, etc</i>

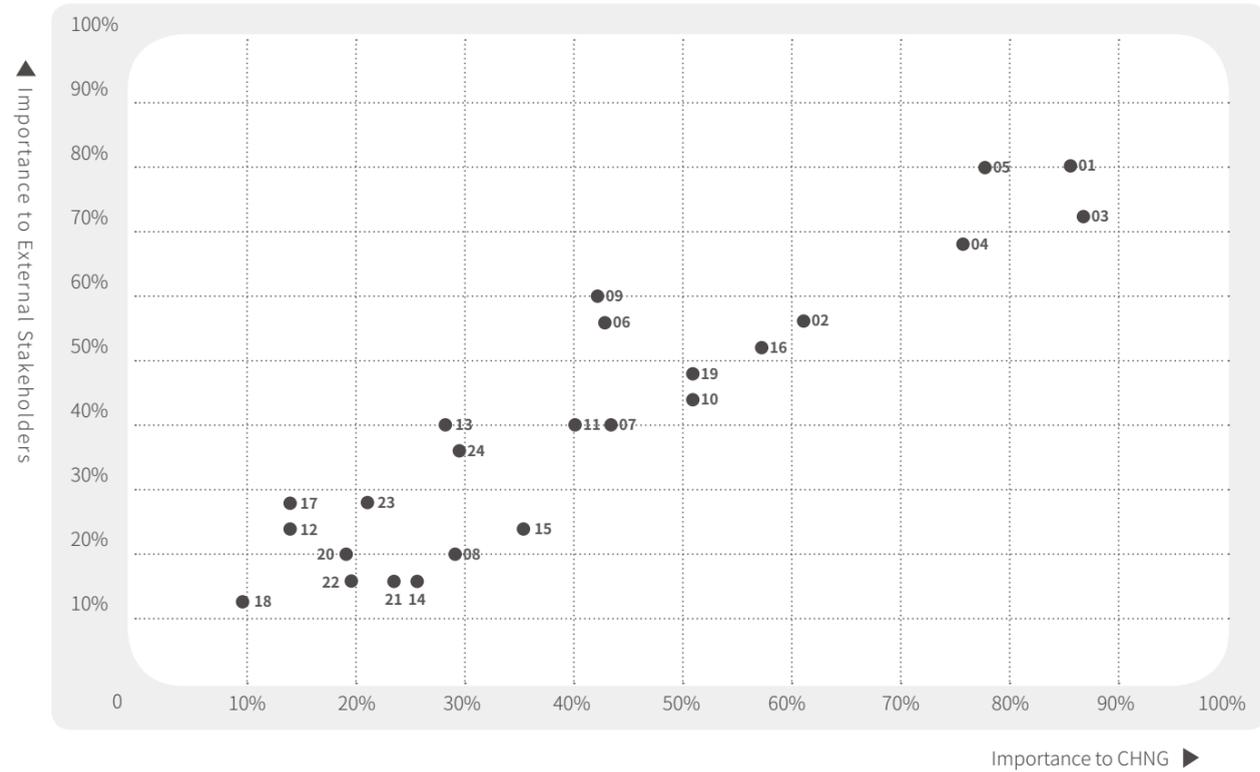
## Responsibility Integration

### Core Responsibility Topics

The Company actively responds to the Unified Sustainability Reporting Standard of Global Reporting Initiative (GRI), ESG Reporting Guide of HKEX, *Guidelines on Corporate Social Responsibility Reporting for Chinese Enterprises of Chinese Academy of Social Sciences (CASS-CSR4.0)* and other standard initiatives, conducts internal and external stakeholder surveys in conjunction with actual conditions of the industry and enterprise, clarifies the core issues of corporate social responsibility, defines the boundaries of the Report, and effectively responds to the concerns of stakeholders.



Scan the QR code to have more information about "CHNG's Survey on Key Social Responsibility Topics 2020"



- 01 Securing Power Supply
- 02 Preserving and Increasing the Value of Assets
- 03 Attaching Importance to Work Safety
- 04 Adjusting Energy Structure
- 05 Deepening Technological Innovation
- 06 Reducing Greenhouse Gas Emission
- 07 Decisively Fighting against Poverty
- 08 Participating in the Fight Against COVID-19
- 09 Conducting Operation in Compliance with Laws and Regulations
- 10 Intensifying Risk Prevention and Control
- 11 Carrying out Cleaner Production
- 12 Keeping Aligned with the National Strategies of Rural Revitalization
- 13 Participating in the Implementation of BRI Initiative
- 14 Driving Industry Development
- 15 Optimizing Industrial Layout
- 16 Caring for Employees
- 17 Stringently Implementing the Responsible Purchasing Policy
- 18 Building Cooperation Platforms
- 19 Employees' Career Development
- 20 Expanding International Market
- 21 Strengthening Enterprise's Party Building
- 22 Learning the History of the Party Building
- 23 Organizing Public Welfare Activities
- 24 Building a Responsibility Brand
- 25 Fulfilling Responsibility Communication

### Responsibility Process

The Company attaches great importance to the integration of social responsibilities, encourages subsidiaries to publish social responsibility reports, focuses on promoting listed companies to disclose social responsibility related information in strict accordance with the requirements of the stock exchanges, and actively carries out social responsibility communications. As of the end of 2020, a number of secondary companies including Huaneng Power International and Huaneng Lancang River Hydropower have released CSR reports to the public.

As a major state-owned backbone energy company of China, the Company has joined the activities of a number of domestic and foreign industry organizations including the International Electrotechnical Commission (IEC), Global Energy Interconnection Development and Cooperation Organization (GEIDCO), Chinese Society for Electrical Engineering, China Electricity Council, etc. to effectively interact with the stakeholders, and actively promote the fulfillment of social responsibilities in China's power industry.

## Responsibility Performances

In order to effectively improve the integration of social responsibility into production and operation, the Company listed social responsibility work in *the Assessment and Evaluation Measures for the Party Building Work Responsibility System*, and urged secondary companies to strictly carry out social responsibility work.

The Company held the 4<sup>th</sup> Selection & Appraisal of Excellent Cases and the 2<sup>nd</sup> Selection Event Activity of the Most Beautiful Responsibility Performance Pictures, with cases and pictures submitted by 42 subsidiaries. Through online voting and expert scoring, ultimately, the "2020 Annual Excellent Responsibility Cases and the Most Beautiful Responsibility Pictures" were selected, with the list of award winners included in the Company's sustainability report for public disclosure. Besides, WeChat public account "Responsible Huaneng" showed the winning cases and pictures to establish a pioneering role model, promoting subordinate units to better fulfill their social responsibilities.

Outside the Company, Huaneng actively participated in different social responsibility-related selection & appraisal activities, with a lot of awards won for its outstanding performance in responsibility management and practices.

### CHNG - Responsibility Performance in 2020

- ☀ In July 2020, *Sustainability Report 2019 of China Huaneng Group Co., Ltd.* was rated five-star (the highest level) by China Corporate Social Responsibility Report Rating Expert Committee, and thus the Company became the only domestic power generation company that has obtained five-star rating for nine consecutive years
- ☀ In November 2020, the Company won **the title of Top Ten State-owned Enterprises** at the Press Conference of the 3<sup>rd</sup> Beijing Responsibility Exhibition and *Blue Book of Corporate Social Responsibilities (2020)* held by China Social Responsibility 100 Forum. The Blue Book states that the Company's social responsibility development score is 86.9, ranking the 6<sup>th</sup> among the top 300 enterprises and the 4<sup>th</sup> among the top 100 state-owned enterprises, and is rated as a five-star enterprise in terms of carrying out responsibility
- ☀ In November 2020, the Company won **the Most Influential Responsibility Brand Award** at the Golden Bull Award for Social Responsibility Ceremony sponsored by China Social Responsibility 100 Forum
- ☀ In November 2020, the Company won **the Overseas Social Responsibility Excellent Case Award** for its "Sesan River Water Lights Up Cambodia" case at the 2020 Chinese Enterprise Overseas Image Summit sponsored by China Foreign Languages Publishing Administration under the guidance of the Publicity Department of the CPC Central Committee, State-owned Assets Supervision and Administration Commission of the State Council, and All-China Federation of Industry and Commerce
- ☀ In December 2020, Huaneng Power International Inc. won the 10<sup>th</sup> China Securities Golden Bauhinia Awards 2020 -- **Outstanding Listed Company Award on the 30<sup>th</sup> Anniversary of the Capital Market**
- ☀ In January 2021, the Social Poverty Alleviation Department under the State Council's Poverty Alleviation Office launched a case study project of targeted poverty alleviation of enterprises. Huaneng Lancang River Hydropower's case "Huaneng's 'Three Establishments and One Exploration' Opens Up the Road to Poverty Alleviation Through Industry Development in Lancang Area Industry" passed the preliminary review and expert review, and was published on the official website for public review. Eventually, the case was listed among the **"50 Best Cases of Targeted Poverty Alleviation of Enterprises"**
- ☀ In January 2021, the Xinjiang Branch's Fanghuiju (Visit the People, Benefit the People and Bring Together the Hearts of the People) Work Team residing in Bedel Village, Akchi County, was awarded the honorary title of **National Advanced Group for Poverty Alleviation** by the Central Committee of the Communist Party of China and the State Council
- ☀ In January 2021, the Ministry of Civil Affairs issued the List of the 11<sup>th</sup> China Charity Award, and the Company won **the Donation Enterprise Award of China Charity Award**, and Huaneng Lancang River Hydropower Inc. won **the Charity Project and Charitable Trust Award of the China Charity Award** for its the "Hundreds, Thousands, and Ten Thousands Project" action

### Responsibility-assuming Capability

The Company attaches great importance to the improvement of the capability to assume responsibilities. The relevant managerial personnel of the Group and subsidiaries have been actively participating in the activities, such as the "Responsibility Officer Training Program" organized by the China Social Responsibility 100 Forum, to raise the social responsibility awareness of personnel in charge of social responsibility management and CSR report compilation, and increase their understanding and master of relevant theories as well as report preparation standards and methods. Within the Company, emphasis has been put on the CSR report as the focal factor. Special training sessions on social responsibility have been carried out at the company headquarters for four consecutive years from 2018 to 2021, with the aim to further motivate the departments and subordinate units to perform responsibilities and improve the quality of reports.

The Company actively participates in social responsibility-related research projects led by SASAC, and works with relevant research institutions at home and abroad to support the completion of such projects as Research on Social Values of Chinese and South Korean State-owned Companies, Research on Targeted Poverty Alleviation Model of Central SOEs and Research on Sustainable Development of Chinese Enterprises in Cambodia, helping Chinese enterprises to fulfill their social responsibilities.

# Responsibility Communication

## CSR Report

The Company has innovated in communication methods, expanded communication channels, deepened communications with stakeholders, built a mechanism for social responsibility communication, and continuously improved the integrated system of "daily, regular, and special" communications to ensure comprehensive, timely and accurate disclosure of the Company's responsibility performance to the public.

Communication Category	Communication Methods
Daily Communication	Open a Social Responsibility Column on the Company's Official Website Open the WeChat Public Account "Responsible Huaneng"
Regular Communication	Organize Internal and External Stakeholders to Participate in the Activities in Power Plants' Open Day Prepare the Annual Sustainability Report Participate in the Report Issuance Conference of Central SOEs Organized by SASAC
Special Communication	Organize Internal and External Stakeholders' Special Social Responsibility Surveys in the Company Prepare Special Report on Poverty Alleviation of the Company Convene Poverty Alleviation Report Issuance Conference

### Grassroots Enterprises of the Company Focus on the Communication with Shareholders and Constantly Carry out the Open Day Activities

**Rizhao Power Plant:** In December 2020, the research team from Rizhao Daily visited the plant for learning. The plant staff explained the knowledge, such as, How to Generate the Electricity, How an Enterprise fulfills its social responsibilities, and How to use electricity safely in daily life, arousing students' strong interest in learning.

**Fuzhou Power Plant:** In November 2020, more than 200 local teachers and students visited the plant to carry out social practice activities focusing on the theme of "Science & Technology and Enterprise" to understand basic electric power knowledge and the Ultra-clean Emission technology, making students experience the charm of science and technology in practice.

**Shidao Bay Nuclear Power Co., Ltd.:** In April and August 2020, Shidao Bay Nuclear Power Co., Ltd. respectively carried out a series of activities of nuclear power science popularization and education as well as communication activities with the general public about nuclear power, and invited the public and the family members of employees to learn nuclear power-related science knowledge in nuclear power plant, to create a harmonious, stable and healthy environment for nuclear power development.

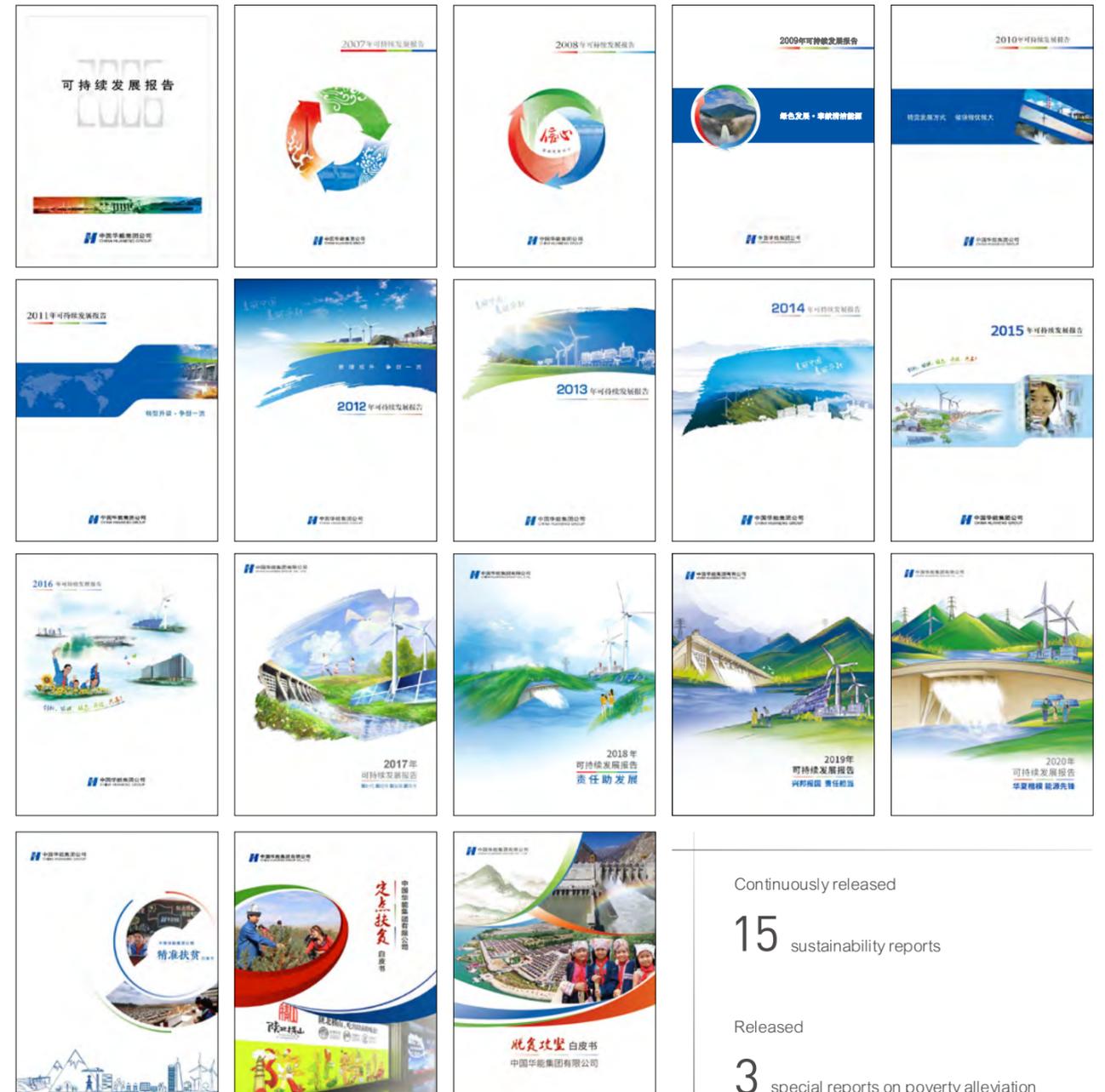
**Huaneng Daqing Thermal Power Plant:** 100 students from Fuqiang School of Daqing visited the plant. They were shown the Huaneng's "Three-Color" corporate culture concept, and were introduced the plant's efforts in production safety, environmental protection and high-quality heating, etc.



Communication with the General Public About Nuclear Power in Shidao Bay Nuclear Power Co., Ltd.



Research Activities in Huaneng Daqing Thermal Power Plant



Continuously released  
**15** sustainability reports

Released  
**3** special reports on poverty alleviation



CCTV reported the releasing of CHNG's White Paper on Poverty Alleviation in the China Social Responsibility 100 Forum activity



Scan the QR code to view the long figure version of CHNG's White Paper on Poverty Alleviation

### Stakeholder Participation

Stakeholders	Expectations for the Company	The Company's Response
Government	Responding to National Strategies	Serving the National Strategies
	Conducting Operation in Compliance with Laws and Regulations	Persisting in Steady Operation
	Securing Power Security	Securing Power Supply
Shareholders	Preserving and Increasing the Value of Assets	Improving Economic Efficiency
	Avoiding Economic Risks	Strengthening Risk Prevention and Control
	Keeping Communication	Conducting Regular Communications
Employees	Improving Welfare Benefits	Guaranteeing Basic Rights and Interests
	Guaranteeing Personnel Safety	Ensuring Work Safety
	Employees' Career Development	Carrying out Employee Training
	Balancing Work and Life	Caring for Employees' Lives
Customers	Guaranteeing Project Quality	Strengthening Quality Management
	Improving Customer Services	Improving Service Systems
	Innovating Engineering Technology	Encouraging All-involvement Innovation
Industry	Carrying out Technical Exchanges	Attending Industry Conferences
	Sharing Professional Experience	Strengthening Daily Liaison
Community	Supporting Community Building	Helping Poverty Alleviation
	Carrying out Public Welfare Activities	Building Public Welfare Brand Image
Business Partners	Complying with Business Ethics	Implementing Transparent Procurement
	Achieving Mutual Benefits and Win-Win Results	Carrying out Strategic Cooperation
NGO	Participating in Social Groups	Actively Participating in Activities
	Abiding by Association Charters	Offering Advice and Suggestions

## CHNG's Blueprint for the 14th Five-Year Plan

Looking back on the past, CHNG has become a key state-owned enterprise and the pioneer and leader in electric power industry in China. By virtue of 35-year hardworking, CHNG has now grown strong, owned powerful strength, created numerous brilliant achievements and established a solid foundation for another take-off.

Looking ahead, the period covered by the 14th Five-Year Plan is the first five years for China to embark on a new journey to build a modern socialist country in all respects and towards the second centenary goal. It is also a new stage for the Company to build itself into a world-class modern clean energy enterprise. High-quality development needs our concerted and determined efforts.

### Strategic Target: Building a World-Class Modern Clean Energy Company

#### Strategic Task: Six New Leads

- ⚙️ A new lead in scientific and technological innovation: highlighting scientific and technological innovation, being a strong force to enhance our national strategic scientific and technological capability, and becoming the industry leader in scientific and technological innovation
- ⚙️ A new lead in green transition: adhering to green transition as the main guidance, seizing the opportunity without time loss in progressing, speeding up and realizing leapfrog development
- ⚙️ A new lead in benefit and efficiency: upholding the principle of improving the benefits and efficiency as well as creating value, significantly improving quality and efficiency, and maintaining the best level in the industry in China
- ⚙️ A new lead in internationalized development: upholding the internationalized development direction, accelerating our efforts to create a new development pattern, and endeavoring to be the harbinger for the "Belt and Road Initiative" green energy cooperation
- ⚙️ A new lead in corporate governance: establishing a benchmark and setting up a model in the reform of state-owned enterprises with the goal of modernizing the corporate governance system and capability
- ⚙️ A new lead in quality of Party building: taking enhancing the Party's political building as the overarching principle, comprehensively improving the quality of Party building, and faithfully transforming the advantages of Party building into governance, competition and development advantages



# Appendixes

## Selected Outstanding Corporate Responsibility Cases in 2020

In January 2021, the Company launched the 4<sup>th</sup> Selection and Appraisal of Excellent Responsibility Cases. A total of 42 subsidiaries actively participated in the event, with 53 cases submitted, involving multiple social responsibility issues, e.g. unswervingly making main business better, faithfully enhancing environmental protection, expanding overseas market, building a moderately prosperous society, etc. After the initial review and two rounds of expert scoring, 15 outstanding cases reached the final. In the final session, the Company made the Social Responsibility Survey of China Huaneng Activity open to the public. After a week of fierce competition, the winning cases were finally selected by voting.



Scan the QR code to view more information about the 4<sup>th</sup> Excellent Responsibility Case Selection and Appraisal Event of CHNG

Ranking	Case	Submitted by	Case Picture	QR code link for the full text of the case
1	Explore a new production mode and create a new path of development	Huaneng Renewables Corporation Limited	 Self-regular Inspection	
2	Focus on the infrastructure for people's wellbeing and endeavor to win the battle against poverty	Huaneng Sichuan Energy Development Co., Ltd.	 New Unity (Tuanje) Village Supported by the Company	
3	Stay true to the principle that lucid waters and green mountains are invaluable assets, and build green smart mines	Huaneng Coal Industry Co., Ltd.	 Up to 80% Green Area in Hetaoyu Mine	

Ranking	Case	Submitted by	Case Pictures
4	Writing a new chapter of moderately prosperous society on red earth	Huaneng Nuclear Power Development Co., Ltd.	 Panorama of Huhe Village Supported by the Company
5	Build people's livelihood projects and boost economic development, facilitating Huaneng's red gene be deeply rooted in the fertile soil of the snow-covered plateau	Huaneng Tibet Hydropower Development Investment Co., Ltd.	 A Section of Pai - Motuo Highway

Ranking	Case	Submitted by
6	Huaneng Smart Supply Chain, the integrated smart supply chain service platform, assists the Company in developing main business	Huaneng Energy & Communications Holding Co., Ltd.
7	Huaneng's work team residing in Bedel Village won the honorary title of "National Advanced Group for Poverty Alleviation"	Huaneng Xinjiang Energy Development Co., Ltd.
8	Build a unified water-transported coal management system and promote the integrated supply chain management mode	China Huaneng Group Fuel Co., Ltd.
9	Huaneng's "Honesty • A Journey of Philanthropy" charitable trust has gradually become systematic	Huaneng Capital Services Co., Ltd.
10	Huaneng's "Three Establishments and One Exploration" opens up the road to poverty alleviation by developing industries in Lancang County	Huaneng Lancang River Hydropower Inc.
11	Take hold in Sahiwal and keep constant development in Pakistan	China Huaneng Group Co., Ltd. Shandong Branch
12	'Cleanse' sludge, orders received by Luohuang Power Plant - coal & sludge coupled power generation project in Luohuang Power Station	China Huaneng Group Co., Ltd. Chongqing Branch
13	Largest individual battery storage project in Europe - UK Minety Project	China Huaneng Group Hong Kong Limited
14	Strengthen infrastructure management, and hit a record high in renewable energy production scale	Huaneng Shaanxi Power Generation Co., Ltd.
15	Enhance exploration and practice of construction, operation and maintenance management of wind power engineering in mountainous regions via establishing the "Four Front Lines" Party Building leading project	Huaneng Fujian Energy Development Co., Ltd.

## Excellent Works Selected in the Appraisal of the Company's Most Beautiful Responsibility Pictures in 2020

In January 2021, the Company launched the second selection and appraisal of the most beautiful responsibility pictures. After the initial review and two rounds of expert scoring, 15 outstanding pictures reached the final. In the final session, the Company made the "Social Responsibility Survey of China Huaneng 2020" open to the public. After a week of fierce competition, the results were finally obtained via voting.



Scan the QR code to view more information about the 2<sup>nd</sup> Most Beautiful Pictures Selection and Appraisal Event of China Huaneng

- 1 Huaneng Renewables Corporation Limited: Rotating at -30 °C (by Li Shuainan)
- 2 Huaneng Sichuan Energy Development Co., Ltd.: Good Harvest from Unity (Tuanjie) Village Sheep Breeding Cooperative
- 3 Huaneng Lancang River Hydropower Inc.: People's Road to Prosperity - Panorama of Highway Along the River
- 4 China Huaneng Group Co., Ltd. Northeast Branch: Jianchang PV Project - Benefit the Local People
- 5 China Huaneng Group Co., Ltd. Shandong Branch: Dongying Hekou Wind Farm (by Sun Kangkang)
- 6 China Huaneng Group Fuel Co., Ltd.: Panorama of Fujian Seaport Co., Ltd. (By Zheng Shoulang)
- 7 China Huaneng Group Co., Ltd. Central China Branch: Log Cabin on Peach Blossom (Taohua) Island

- 8 Huaneng Coal Industry Co., Ltd.: Coal Supply Guarantee for Power Plants of the company during Covid-19 Epidemic
- 9 China Huaneng Group Hong Kong Limited: UK Minety Battery Storage Project
- 10 Huaneng Hulun Buir Energy Development Co., Ltd.: Raising Sheep for Profit (by Yang Jian)
- 11 Huaneng Fujian Energy Development Co., Ltd.: Aerial Photo of Luoyuan Power Plant (by Jia Hongqiang)
- 12 Huaneng Jiangsu Energy Development Co., Ltd.: Taicang Power Plant PV Station
- 13 China Huaneng Group Co., Ltd. Henan Branch: Puyang Wind Power (by Ji Xiaojing)
- 14 China Huaneng Group Co., Ltd. Jiangxi Branch: Blooming Flowers (by Chen Xiaoxiong)
- 15 China Huaneng Group Co., Ltd. Hainan Branch: Clean Energy and Green Development



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## About China Huaneng

China Huaneng Group Co., Ltd. (referred to as China Huaneng) is a key state-owned enterprise established with the approval of the State Council.

China Huaneng has a registered capital of 34.9 billion yuan, with the main business scope covering: power development, investment, construction, operation and management; electricity (heat) production and sales; development, investment, construction, production, sales of industries and products related to finance, coal, transportation, new energy, environmental protection; and industrial investment, operation and management.

For many years, the Company has been steadfastly implementing national strategic deployments, earnestly performing the economic, political, and social responsibilities as a central SOE, and adhering to the "Three-color" corporate mission. The Company has gradually formed the strategic positioning of accelerating the building of a world-class modernized clean energy enterprise featuring "Three Colors, Three Strongs, and Three Excellents", with power as the core business, synergy among various energy sources, innovation as the guiding force, finance as the supporting business, and a global layout, thus making contributions to guaranteeing the nation's energy security, promoting energy transition and upgrading, and improving the development of national economy.

The Company owns 51 secondary units, more than 460 tertiary enterprises, and 5 listed enterprises (namely, Huaneng Power International Inc., Inner Mongolia Mengdian Huaneng Thermal Power Corp. Ltd., Shandong Xinneng Taishan Power Generation Co., Ltd., Huaneng Lancang River Hydropower Inc., and China Great Wall Securities Co., Ltd.).

At the end of 2020, the total installed capacity of wholly-owned and majority-owned power plants was 196.44GW, and the production capacity of coal was 85 million tons per year. The company's total asset was close to 1.2 trillion yuan. The Company was ranked No. 248 among Fortune Global 500, up 18 places as compared to the previous year. SASAC has awarded the Company A-level performance assessment results for 16 times, among which 12 were awarded in consecutive years, and A-level tenure assessment results of the person-in-charge of central SOE for five times, being the top among comparable power generation enterprises in China.



Scan the QR code to watch the Company's promotional film *Power of China*

### Organizational Chart

Work Organs of the Party Organization		
Discipline Inspection and Supervision Team	Organization Department of the Party Leading Group (Human Resources Department) ● Retiree Affairs Office	Office of the Leading Group for Inspection Work
Party Building Department (Publicity Department of the Party Leading Group)		Labor Union
Functional Departments		
General Office (Office of the Party Leading Group, Office of the Board of Directors)	Planning and Development Department	Finance and Assets Management Department
Enterprise Management and Legal Compliance Department	Marketing Department	Fuel Management Department
Safety Supervision Department	Production Management and Environmental Protection Department	Technology Innovation and Digitalization Department
Material and Procurement Management Department	International Cooperation Department ● International Standardization Office	
Audit Department	Renewable Energy Business Unit	
Units Directly Affiliated to the Group		
China Huaneng Group Party School (Education and Training Center)	Energy Research Institute	
IT Center	News and Brand Management Center	Audit Center

Industrial Companies			
Huaneng International Power Development Corporation (Equity Management Center)	Huaneng Power International Inc. (Thermal Power Construction Center, Engineering Technological Economy Management Center)	Huaneng Renewables Corporation Limited	
Huaneng Nuclear Power Development Co., Ltd. (Nuclear Power Business Unit)	Huaneng Energy & Communications Holding Co., Ltd.	Huaneng Coal Industry Co., Ltd. (Coal Business Unit, Coal Chemical Management Office)	
China Huaneng Group Fuel Co., Ltd.	Huaneng Capital Services Co., Ltd.	China Huaneng Finance Co., Ltd.	
China Huaneng Group Clean Energy Research Institute Co., Ltd. (New Energy Technology R&D Center)	Huaneng Properties Co., Ltd. (Huaneng Integrated Industry Co., Ltd.)	China Huaneng Group Hong Kong Limited (Huaneng Overseas Enterprises Management Co., Ltd., Overseas Business Unit)	
Xi'an Thermal Power Research Institute Co., Ltd. (Technology Innovation Center)	Integrated Energy Services Co., Ltd.		
China Huaneng Group (Hong Kong) Treasury Management Holding Limited	Huaneng Yangtze River Environmental Technology Co., Ltd.		
Regional Branch Companies			
China Huaneng Group Co., Ltd. Xiong'an Branch	China Huaneng Group Co., Ltd. North China Branch (GreenGen Co., Ltd.)	China Huaneng Group Co., Ltd. Northeast Branch	China Huaneng Group Co., Ltd. East China Branch (Maintenance Center)
China Huaneng Group Co., Ltd. Central China Branch	Huaneng Guangdong Energy Development Co., Ltd.	China Huaneng Group Co., Ltd. Hebei Branch	China Huaneng Group Co., Ltd. Shanxi Branch
China Huaneng Group Co., Ltd. Jilin Branch	China Huaneng Group Co., Ltd. Heilongjiang Branch	China Huaneng Group Co., Ltd. Anhui Branch	Huaneng Fujian Energy Development Co., Ltd.
China Huaneng Group Co., Ltd. Jiangxi Branch	China Huaneng Group Co., Ltd. Henan Branch	China Huaneng Group Co., Ltd. Hunan Branch	Huaneng Zhejiang Energy Development Co., Ltd.
China Huaneng Group Co., Ltd. Hainan Branch	China Huaneng Group Co., Ltd. Shandong Branch	China Huaneng Group Co., Ltd. Chongqing Branch	China Huaneng Group Co., Ltd. Guangxi Branch
China Huaneng Group Co., Ltd. Guizhou Branch	China Huaneng Group Co., Ltd. Qinghai Branch	Huaneng Jiangsu Energy Development Co., Ltd.	North United Power Co., Ltd.
Huaneng Sichuan Energy Development Co., Ltd.		Huaneng Ningxia Energy Co., Ltd.	
Huaneng Lancang River Hydropower Inc. (China Huaneng Group Co., Ltd. Yunnan Branch)		Huaneng Tibet Hydropower Development Investment Co., Ltd. (China Huaneng Group Co., Ltd. Tibet Branch)	
Huaneng Hulun Buir Energy Development Co., Ltd.		Huaneng Xinjiang Energy Development Co., Ltd.	
Huaneng Shaanxi Power Generation Co., Ltd. (China Huaneng Group Co., Ltd. Northwest Branch)		Huaneng Gansu Energy Development Co., Ltd.	
Companies Directly Managed by China Huaneng Group			
Huaneng Tendering Co., Ltd.		Huaneng Information Technology Co., Ltd.	

## Key Performance Table

Safety Responsibility Performance						
Indicator Name	Unit	2016	2017	2018	2019	2020
Investment in Production Safety (Technological Upgrading)	100 Million Yuan	2.11	4.17	5.43	11	9.8
Major Equipment Accident	Case	0	0	0	0	0
General Equipment Accident	Case	0	0	0	0	0
Accidents of Personnel Injury and Casualties	Case	4	4	2	6	10
Category 1 Obstacle	Case	21	15	17	14	9
Number of Unplanned Outages (hydro & thermal power)	Case	75	151	184	130	97
Unit Equivalent Availability Factor (hydro & thermal power)	%	94.69	94.19	94.21	94.22	94.49
Environmental Responsibility Performance						
Indicator Name	Unit	2016	2017	2018	2019	2020
Total Investment in Environmental Protection	100 Million Yuan	59.00	42.00	17.27	24.82	10.20
Total Investment in Energy-saving Technological Upgrading	100 Million Yuan	8.90	3.55	4.14	4.50	4.88
Low Carbon Clean Energy Installed Capacity	10MW	4797	5325	5858	6163	7192
Low Carbon Clean Energy Proportion	%	29.00	31.00	33.18	33.72	36.61
Hydropower Installed Capacity	10MW	2104	2226	2607	2697	2756
Wind Power Installed Capacity	10MW	1632	1785	1863	1996	2530
Photovoltaic Installed Capacity	10MW	157	243	318	400	645
Coal Consumption for Power Supply	g/kWh	302.35	300.11	298.72	297.55	295.34
Auxiliary Power Ratio	%	4.11	4.01	3.97	3.78	3.73
Ash Comprehensive Utilization Rate	%	86.21	81.40	76.45	75.92	75.64
Sulfur Dioxide Emission Performance for Thermal Power Generation	g/kWh	0.189	0.100	0.074	0.072	0.072
Nitrogen Oxide Emission Performance for Thermal Power Generation	g/kWh	0.223	0.164	0.146	0.141	0.139
Smoke and Dust Emission Performance for Thermal Power Generation	g/kWh	0.035	0.018	0.012	0.011	0.010
Installed Capacity of Ultra-low Emission Units	10MW	6921	10562	11249	11526	11605
Proportion of Ultra-low Emission Units	%	59	90	95	96	97
Fresh Water Consumption for Power Generation	10,000 Tons	52855.71	56745.66	58596.54	57396.49	54020.88
Unit Water Consumption for Power Generation	kg/kWh	1.03	1.09	1.04	1.06	1.00

Economic Responsibility Performance						
Indicator Name	Unit	2016	2017	2018	2019	2020
Installed Capacity	10 MW	16554	17182	17657	18278	19644
Thermal Power Installed Capacity	10 MW	12662	12928	12869	13185	13712
Power Generation	100 GWh	6216	6496	7026	7057	7083
Coal Production Capacity	10,000 Tons/Year	6733	7790	7760	8260	8500
Coal Production	10,000 Tons	6220	7107	7086	7450	7607
Total Assets	100 Million Yuan	10029	10396	10733	11261	11875
Total Operating Income	100 Million Yuan	2461	2607	2786	3062	3142
Total Profit	100 Million Yuan	139	119	144	178	224
Asset-Liability Ratio	%	82.49	78.88	76.98	73.70	69.61
Total Number of Personnel in Science and Technology	People	2163	2993	1966	2388	1381
National Authorized Patents	Item	455	541	648	777	1785
Among Them: Patents for Invention	Item	122	199	163	121	135
Scientific and Technological Achievements Award at Provincial/ Ministerial Level and above	Item	31	22	21	21	39
SASAC Performance Appraisal	Level	A	A	A	A	A
Social Responsibility Performance						
Indicator Name	Unit	2016	2017	2018	2019	2020
Paid Taxes	100 Million Yuan	293	228	255	267	297
Number of In-Service Employees	People	143810	138473	135329	131579	124628
Number of New Employment throughout the Year	People	7051	4754	4475	4222	4196
Number of Female Employees	People	35096	33929	32415	30319	28783
Female Manager Ratio	%	32	32	38	32	31
Labor Contract Signing Rate	%	100	100	100	100	100
Collective Contract Coverage	%	100	100	100	100	100
Social Insurance Coverage	%	100	100	100	100	100
Labor Union Membership Rate	%	100	100	100	100	100
Employee Health Check and Health File Coverage	%	100	100	100	100	100
Training Time per Employee	Hour	71	64	85	70	86
Employee Training Coverage	%	70	66	78	79	80
Total Amount of Donation	Ten Thousand Yuan	57598	55609	60377	73120	28205
Employee Volunteers	Person-times	80500	80750	80843	80710	80055

## Indicator Index

Table of Contents	GRI Standard	ESG	CASS-CSR4.0	Page	
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CHNG Successfully Completes the Tasks in the 13th Five-Year Plan	GRI201,203,302		P3	P01	
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<b>Making Overall Planning of COVID-19 Prevention and Control • Putting People's Lives First to Interpret the Great Love Among Humans</b>	GRI203	B8.2	S4.8	P14	
<b>Realizing the Dream for a Beautiful China • Clear Waters and Green Mountains Can Bring Us Prosperity and Wealth</b>	GRI306	A3.1	E1.3,E1.7	P16	
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<b>Part I: As a Role Model Among Chinese Companies, CHNG Sticks to the Original Aspiration to Make Great Achievements of the Era</b>	Optimizing and Coordinating the Industrial Layout	GRI201	M1.6,M2.1,M2.4,M3.6	P22	
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	Improving the Ecology of Scientific and Technological Innovation	GRI201	A1.5	M2.4-M2.7,E1.3	P54
	Caring for Employees' Work and Life	GRI201,401-406	B1.1,B1.2	S2.1,S2.2,S2.4,S2.6,S2.8-S2.14,S2.16-S2.18,S2.20	P58
	Abiding by the Red Line of Safe Production	GRI410	B2.3	S3.1-S3.3	P62
	Effectively Strengthening Environmental Protection	GRI102,301-307	A1.1,A1.2,A1.5,A2.1,A2.3,A3.1	M2.10,E1.1,E1.2,E1.5,E1.9,E1.10,E2.2-E2.5,E2.11-E2.16,E2.18,E2.19,E2.24,E2.25,E3.1,E3.3,E3.4,E3.6	P66
	As a Pillar of the Great Power, CHNG's Nuclear Power Business Sets Sail	GRI302	A3.1	E2.6	P74
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## Expert's Comments

As an important state-owned backbone enterprise, in 2020, CHNG optimized the industrial layout, emphasized on improving the quality of development, intensively expanded the overseas market, made unwavering efforts to develop main businesses, effectively strengthened environmental protection, and made contributions to the sustainable development of the power industry.

The 2020 Sustainability Report of China Huaneng Group Co., Ltd. (hereinafter referred to as the "Report") is the 15<sup>th</sup> sustainability report issued by CHNG to the public, reflecting the understanding and action of CHNG in terms of sustainable development, and is also an answer delivered by CHNG employees to all sectors of the society and the general public according to its rich sustainable development practice.

**In terms of information disclosure, the Report is rich in content and detailed in data.** The Report is themed on "Role Model Among Chinese Companies and Energy Pioneer", and penetrated by several hot issues including "Securing Power Supply, Adjusting Energy Structure, Deepening Technological Innovation, and Optimizing Industrial Layout". From policy to concept, and from action to performance, the Report goes through a progression in an orderly way, while introducing a number of supporting materials, such as data, pictures, cases, and third-parties' testimony. In this way, as an active response to the concerns and expectations of stakeholders, the Company's excellent management and key practices in the field of sustainable development in 2020 is summarized objectively and systematically, demonstrating the corporate responsibility and commitment.

**In regard of framework construction, the Report is logical and closely related to the times.** At the beginning, the Report focuses on five responsibilities, i.e. "Strengthening Party Building · Continuing to Push Forward Great New Undertaking", "Decisively Fighting Against Poverty · Painting a Magnificent Picture of Rural Revitalization", "Making Overall Planning of COVID-19 Prevention and Control · Putting People's Lives First to Interpret the Great Love Among Humans", "Realizing the Dream for a Beautiful China · Clear Waters and Green Mountains Can Bring Us Prosperity and Wealth", "Jointly Promoting Belt and Road Initiative · Helping Each Other and Benefiting the People Along the BRI Corridor". It reveals that as a central SOE, CHNG follows the pace of the Party on the major issues such as Party building, poverty alleviation, epidemic prevention and control, Beautiful China and Belt and Road Initiative, and CHNG spirit and action are keeping pace with the times and combined with national needs. The main content of the Report is divided into two parts: "As a Role Model Among Chinese Companies, CHNG Sticks to the Original Aspiration to Make Great Achievements of the Era" and "As an Energy Pioneer, CHNG Strives to Write a Vivid Chapter in Its Tireless Endeavors to Develop Electric Power", elaborating the latest progress and achievements of CHNG in the field of sustainable development from two dimensions, namely, the responsibility for external stakeholders and the consolidated internal responsibility. The two parts respectively end with "In the Face of Hardships and Dangers, Going All Out to Fight Floods and Provide Disaster Relief" and "As a Pillar of the Great Power, CHNG's Nuclear Power Business Sets Sail", vividly presenting the highlights of the responsibilities shouldered by CHNG in 2020. "Responsibility Management" is explained separately

in a section of this Report. In the context of "Three Steps and Ten Methods" of the latest corporate social responsibility management, the top-level design of the Company's sustainable development work is interpreted from three aspects of "Responsibility Organization", "Responsibility Integration" and "Responsibility Communication".

**In terms of details, the Report keeps improving and shows originality.** Two creative sections "CHNG Successfully Completes the Tasks in the 13th Five-Year Plan" and "CHNG's Blueprint for the 14th Five-Year Plan" are respectively arranged at the beginning and end of the Report, echoing the front and behind in structure, connecting the preceding and the following in content, skillfully highlighting the extraordinary background of 2020. In twelve separate sections, the Report is guided by the speeches of General Secretary Xi Jinping, and combined with the United Nations' Sustainable Development Goals, the major events and key data of the Company, presenting CHNG's active practice in following the international development trend, implementing the national policy and promoting the central deployment. QR codes are printed in the Report to link news, videos and cases which are related to the content of the Report, so as to provide readers with pleasure and sense of scene, and effectively extend the breadth and depth of the Report. The Report will be published in Chinese, English, video and other versions to broaden the communication channels and effectively enhance the communication effect with stakeholders.

2021 marks the beginning of the 14th Five-Year Plan, and China will embark on a new journey of building itself into a modern socialist country in all aspects. At the new stage of development, CHNG will always bear in mind its responsibility and mission, be brave in reform and innovation, and firmly grasp the theme of high-quality development. Moreover, based on safety development, centered in quality and efficiency, led by green transition, powered by reform and innovation, and guaranteed by Party building, CHNG will speed up the building of a world-class modern clean energy company with global competitiveness, and make new and greater contributions to realizing the China Chinese Dream of embarking on a new journey of building China into a modern socialist country in all aspects and achieving the great rejuvenation of the Chinese nation!

Party Secretary and Executive Vice  
President of China Electricity Council

## Rating Report

### Rating Report for 2020 Sustainability Report of China Huaneng Group Co., Ltd.

Entrusted by China Huaneng Group Co., Ltd., experts have been selected from China Corporate Social Responsibility Report Rating Expert Committee to form a rating group to rate The 2020 Sustainability Report of China Huaneng Group Co., Ltd. (hereinafter referred to as the "Report").

#### I. Basis of Rating

Guidelines for Corporate Social Responsibility Reporting (CASS-CSR4.0) of the Chinese Academy of Social Sciences and China CSR Report Rating Standards (2020) of China Expert Committee on CSR Report Rating.

#### II. Rating Process

1. The rating team reviews and verifies the Confirmation of Processes of the Corporate Social Responsibility Report and relevant evidential documents submitted by the team that compiled the Report;
2. The rating team evaluates the process for writing the Report and the content of the Report, and drafts and finalizes this rating report;
3. The Vice President of the Expert Committee, the leader and experts of the rating team jointly review and sign the rating report.

#### III. Conclusion

##### Process (★★★★★)

The Company set up a social responsibility management committee with the President and Deputy Secretary of the Party Leading Group as the person-in-charge to review the content of the Report. The Social Responsibility Office of the Planning and Development Department took the lead in setting up a report compilation team. The director general of the department took control of overall direction and key issues, and the Company's board of directors was responsible for the final review. The Report's functional role and values were explicitly defined as an important instrument to disclose duty performance information in line with relevant requirements, improve the social responsibility management system, and build the corporate brand image. The substantive issues were identified according to international and domestic social responsibility standards, industry-wide benchmarking analysis, major company issues, stakeholder investigations, etc. The Company facilitated its subsidiaries including Huaneng Power International, Lancang River Hydropower, and Great Wall Securities to publish their respective CSR reports for the vertical integration of social responsibilities. The Report will be published on the Company's official website and incorporated in the "Collective Issuance of Social Responsibility Reports of Central SOEs" for several releases. It will be presented in different forms including electronic file, printed version, Chinese and English versions, and video version. All these prove its outstanding process performance.

##### Materiality (★★★★★)

The Report systematically discloses key topics for discussion in the power industry, such as securing power supply, production safety, occupational health management, developing green power, saving energy resources, developing circular economy, reducing "three wastes" emission, etc. with detailed narration and excellent materiality performance.

##### Integrity (★★★★☆)

From the perspectives of "As a Role Model Among Chinese Companies, CHNG Sticks to the Original Aspiration to Make Great Achievements of the Era" and "As an Energy Pioneer, CHNG Strives to Write a Vivid Chapter in Its Tireless Endeavors to Develop Electric Power", the main body of the Report discloses 87.84% of the core indicators of the power production industry with remarkable integrity performance.

##### Balance (★★★★★)

The Report disclosed negative data including "number of major equipment accidents", "number of general equipment accidents", "number of accidents involving personnel injuries and casualties", "number of Category 1 obstacles", "number of unplanned outages", "employees turnover rate", etc. with detailed description of the causes, countermeasures and introspection of the death accident of the mines, with excellent balance performance.

##### Comparability (★★★★★)

The Report discloses the comparative data for 3 consecutive years of 52 indicators, such as "total profit", "total number of scientific and technological personnel in science and technology", "number of new employment throughout the year", "social insurance coverage", "wind power installed capacity" and "total investment in energy-saving technological upgrading"; horizontal comparison was also made based on data, such as ranking "No. 248 in Global 500", making an excellent comparability performance.

##### Readability (★★★★★)

The Report is themed on "Role Model Among Chinese Companies and Energy Pioneer" and divided into two volumes systematically. It covers the Company's philosophy in performing corporate responsibilities for key stakeholders including state, industry, partners, environment, employees and community, as well as the Company's actions and performance, and interprets the Company's in-depth understanding of the fulfillment of social responsibilities in response to the concerns of interested parties. The cover employs the hand-painted illustration design to outline the characteristic business scenario integrating main business elements, highlighting the industry features and elevating the distinctiveness of the Report. The related statements of President Xi Jinping are quoted at the beginning of each chapter, with outline of the key performance, facilitating readers to quickly comprehend the key information. Third-parties' testimony is referred to as support of effective performance of corporate responsibilities. QR codes are printed in the Report for extended reading of in-depth interpretation, offering an access to deeper communication and higher communication value and achieving better readability.

##### Innovativeness (★★★★★)

The Report starts with focus on five major responsibilities to respond to the hot political issues including Party building, poverty alleviation, epidemic prevention and control, ecological development, and Belt and Road Initiative, interpreting the original aspiration, mission and responsibilities of CHNG as a central SOE. The Report starts with a special section "CHNG Successfully Completes the Tasks in the 13th Five-Year Plan", concentrating on the performance results made by the Company during the 13th Five-Year Plan period and highlighting the value pursuit of the Company. CHNG compiled and released special reports on poverty alleviation, focusing on the performance action and results of poverty alleviation, and deepening the disclosure of responsibility information. It is planned to set up pilot enterprises for social responsibility work in the system to comprehensively improve the social responsibility management from point to area. The Report shows preeminent innovative performance.

##### Overall Rating (★★★★★)

According to the rating team, the 2020 Sustainability Report of China Huaneng Group Co., Ltd. was rated five-star as an excellent corporate social responsibility report.

#### IV. Suggestions for Improvement

Add more disclosure information about core industrial indicators to improve the Report's integrity.



China Huaneng's Sustainability Report Received  
Five-Star Rating for the Tenth Consecutive Year

黄群慧  
Vice Chairman of the  
Expert Committee

钟宏武  
Leader of the  
Rating Team

张晓松  
Expert of the  
Rating Team



Scan the QR Code to View  
Enterprise Rating Files

Date of Issuance: July 12, 2021

## Feedback



Dear readers:

Thank you for reading the *2020 Sustainability Report of China Huaneng Group Co., Ltd.* We would like to improve the quality of both our social responsibility work and the CSR report. Scan the QR code below and send us any comments or suggestions you may have, which will be of great help for us. Thank you!





This report is printed with  
environmentally friendly paper

