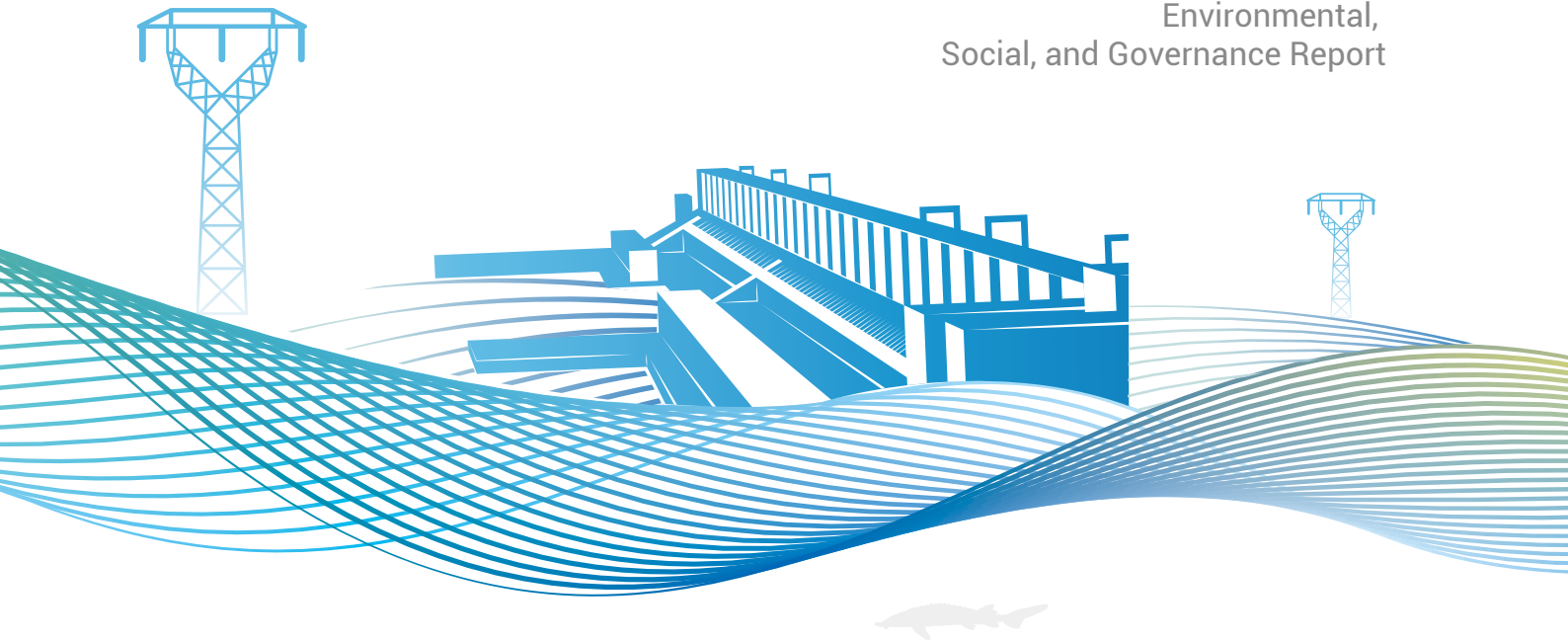




# 2020

## ESG Report

Environmental,  
Social, and Governance Report



# TO BE A LEADER IN THE WORLD'S HYDROPOWER INDUSTRY

Innovation  
Harmony **Green**  
Openness Sharing

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# About CYPC

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## Company profile

China Yangtze Power Co., Ltd. ("CYPC") is a limited liability company established by China Three Gorges Corporation ("CTG") with the approval of the State Council. Founded on September 29th, 2002, CYPC was listed on the Shanghai Stock Exchange in November 2003 after its IPO (stock code: 600900). It currently owns 22.7 billion shares of stock.

On September 30, 2020, the Global Depository Receipts (GDRs) issued by the company under the Shanghai-London Stock Connect mechanism got listed on London Stock Exchange.

CYPC is mainly engaged in hydropower generation, power distribution business, intelligent integrated energy and financing businesses. The company has expanded its business to several countries, including China, Portugal, Peru, Brazil, Pakistan, etc. CYPC now fully owns the power generation assets of Three Gorges, Gezhouba, Xiluodu, and Xiangjiaba hydropower plants (HPP). At present, the company owns 82 hydropower generation units. CYPC has a total installed capacity of 45.595 GW (excluding the currently entrusted Wudongde Hydroelectric Power Station). Its domestic hydropower installed capacity is 45.495 GW, accounting for 12.32% of the total hydropower installed capacity in China, and the equity installed capacity is 10 GW. CYPC is the largest listed electric power company in China and the largest listed hydropower company in the world.





## Corporate culture

We have established a culture system of "Pursuing Perfection—Undertaking Responsibility". By establishing a team of culture trainers, holding cultural discussions and publishing the *Collection of Corporate Culture Stories* themed on "Lean-Responsibility", we have ensured that the concept of "Lean-Responsibility" is known of all employees. We continue to strengthen the development of a safety culture and have completed safety culture planning, compiled safety culture manuals, summarized and sorted safety behavior norms, and have built a safety culture behavior system. We continue to promote the development and integration of culture in production, operation, and management practices, as well as enhance the soft power of the company's culture and core competitiveness.

### Vision

To be a leader in the world's hydropower industry

### Mission

Providing flood protection in the Yangtze River basin and contributing clean energy to the society

### Tenet

Reassuring the country, Satisfying shareholders, Being admired by peers, and Benefiting the staff

### Business Concept

Honest management, Standardized governance, Information transparency and Excellent performance

### Production Concept

Accurate control, Lean operation, and Meticulous maintenance

## Development strategy

Guided by China's new principles of development, we are committed to becoming a leader in the world's hydropower industry. Being market-oriented, we are focusing on building a new model of coordinated development of multiple platforms—"large hydropower platform + smart integrated energy platform + power distribution platform + international business platform + investment business platform". We will further consolidate our leading position in the global hydropower industry, strive to create a world-class hydropower-based clean energy listed company, and continue to create value for the country, society, shareholders, employees, and partners.

**Large hydropower platform:** Be innovation-based, strengthen core capabilities such as large hydropower operation management and cascade joint dispatch, implement lean production management measures, improve the efficiency of water resources, and comprehensively promote the range of river basin cascade benefits.

**Smart integrated energy platform:** Integrate internal and external resources, expand smart integrated energy business, promote the integrated development of renewable resources in the lower reaches of the Jinsha River, explore various new business formats and models, and create new profit growth points.

**Power distribution platform:** Grab the opportunity of national power system reform, gradually integrate internal resources, coordinate and develop power distribution business in an orderly manner.

**Investment business platform:** Adhere to strategies, focus on clean energy, regional energy platforms, power distribution, integrated energy, ecological and environmental protection, and upstream and downstream of the industrial chain, steadily carry out mergers and acquisitions to promote the company's sustainable development.

**International business platform:** Grasp the strategic opportunities of the Belt and Road Initiative and the trend of global energy transformation, continue to optimize the international business structure and market layout, steadily promote the sustainable development of international business, and enhance influence and competitiveness in the international market.



# Social Responsibility Management

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## Opportunities and challenges

We comprehensively take into account the multi-dimensional impact of global climate change, power market reforms, policies and regulations on the company's strategy, market, and operations, and regularly carry out risk identification, evaluation, and management improvement to carry forward sustainable development.

External environment and industry trends	Risks & opportunities	Our actions
Environmental	<ul style="list-style-type: none"> <li>• Extreme weather events and major natural disasters may damage the company's power generation equipment and infrastructure, threaten the life and health of employees, and have a significant impact on power generation and normal business order.</li> </ul>	<ul style="list-style-type: none"> <li>• Further improved the emergency plan management and risk prevention and control mechanisms for public safety emergencies, and effectively reduced the impact of public safety emergencies.</li> </ul>
Global climate change	<ul style="list-style-type: none"> <li>• Hydropower is a good approach to reducing greenhouse gas emissions, and the company's products and services can capture important market opportunities.</li> <li>• China announced that it will strive to peak carbon dioxide emissions by 2030 and achieve carbon neutrality by 2060, bringing opportunities for the development of clean energy.</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthened the technological innovation of hydrological and meteorological forecasting and the development of professional teams, and continuously improved the safety of assets in case of disasters.</li> <li>• Adhered to the concept of lean production management, continuously improved the joint dispatch capacity of hydro-junctions and ensured clean energy supply.</li> <li>• Accelerated the construction of an integrated comprehensive development base for water, wind, and renewable energy in the lower reaches of the Jinsha River.</li> </ul>
Water shortage	<ul style="list-style-type: none"> <li>• Hydropower generation and operation are closely related to the inflow of reservoirs. The uncertainty of the inflow from the Yangtze River Basin will have a major impact on the company's power generation and business performance.</li> <li>• It creates opportunities to conduct research on water resources and facilitate more sustainable water usage.</li> </ul>	<ul style="list-style-type: none"> <li>• Strengthened cooperation with hydrological and meteorological units, continued to improve the information sharing mechanism with the reservoirs in the upper reaches of the Yangtze River, and continued to improve the ability to forecast and analyze river and rain conditions.</li> <li>• Continued to improve and develop the decision support system for water resource management from the lower reaches of the Jinsha River to the Three Gorges cascade HPPs on the lower reaches of the Jinsha River with independent intellectual property rights, to improve water energy utilization efficiency.</li> <li>• Reasonably controlled the water level of the reservoirs, optimized the load distribution of units, and improved the efficiency of water resource utilization.</li> <li>• Established Hubei Provincial Key Laboratory of "Smart Yangtze River and Hydropower Science" to carry out hydropower scientific research in China and cultivate core capabilities of water resource utilization and river basin cascade joint dispatching.</li> </ul>



External environment and industry trends	Risks & opportunities	Our actions
Impact on biodiversity	<ul style="list-style-type: none"> <li>The company's operations along the Yangtze River Basin, including the mainstream and tributaries, may disturb the habitat and breeding of local flora and fauna.</li> <li>It is beneficial to identify the environmental risks and take proactive actions to strengthen the management of the impact of enterprise operation on ecology.</li> </ul>	<ul style="list-style-type: none"> <li>For the first time, a 5-day experiment on natural reproduction and ecological regulation of fish that lay adhesive eggs was carried out to create suitable water level, water conservancy, and other habitat and reproduction conditions for fish such as carp and crucian carp in the reservoir area.</li> <li>Conducted an ecological operation experiment to promote the natural reproduction of the four major Chinese carps that live under the dam for the 10th consecutive year.</li> <li>Implemented biodiversity protection programs in local areas to monitor and regularly count the number of species, including invasive species.</li> <li>Environmental impact was assessed in the development of a new project to identify the protective measures for the surroundings and ecological system throughout the project life cycle from construction, operation to decommissioning.</li> </ul>
<b>Social</b>		
Human capital development	<ul style="list-style-type: none"> <li>Employee turnover leads to increasing labor costs and the company is lack of technical personnel in important positions.</li> <li>Provide opportunities for the company to strengthen the top-level design of talent strategy and cultivate comprehensive talents.</li> </ul>	<ul style="list-style-type: none"> <li>Established and optimized identification and introduction mechanism of external talent, introduced leading personnel specialized in market-oriented operation and overseas.</li> <li>Made full use of the training platform such as CYPC College to guarantee human resource availability for the company's high-quality development.</li> <li>Focused on providing diversified support to employees, both materially and spiritually to attract and retain talents.</li> </ul>
<b>Operational</b>		
China's national strategy — development of the Yangtze River Economic Belt	<ul style="list-style-type: none"> <li>CYPC's business, assets, and power sales areas overlap the Yangtze River Economic Belt, which could create a good environment and opportunity for the company.</li> </ul>	<ul style="list-style-type: none"> <li>Deployed smart energy business along the Yangtze River Economic Belt to facilitate the simultaneous development of clean energy and environmental protection businesses.</li> <li>Strengthened the cascade dispatch of river basins, realized information sharing and benefit sharing, and served the strategy of the Yangtze River Economic Belt, with a strong and reliable "power engine".</li> <li>Gave full play to the benefits of cascade HPPs in flood control, power generation, water replenishment, shipping and ecology, and continued to invigorate the construction of the Yangtze River Economic Belt.</li> </ul>

External environment and industry trends	Risks & opportunities	Our actions
Deepened reforms of the national power system	<ul style="list-style-type: none"> <li>Market-oriented power industry reforms have deepened, the power generation and consumption plans are more open, the market-based trading volume is gradually increasing, which has an impact on the company's business performance growth.</li> <li>It generates better development opportunities for the company's power distribution business.</li> </ul>	<ul style="list-style-type: none"> <li>We complied with the reform and development of the electric power system, conducted in-depth research on relevant policies and rules of the electric power market, scientifically formulated market-oriented trading strategies and made timely adjustments based on actual conditions to ensure the company benefits from power sales.</li> <li>The Yan'an New District and Yunnan Xichou incremental distribution network went into operation smoothly, and the domestic full-caliber power supply and sale reached 11.7 TWh.</li> </ul>
Informatization improvement	<ul style="list-style-type: none"> <li>5G, AI, big data, cloud computing, and other new-generation information technologies provide technical support for the improvement of enterprise production technology and management level.</li> <li>With increased informatization, enterprise management and operations face increasingly complex network security risks.</li> </ul>	<ul style="list-style-type: none"> <li>Vigorously implemented the strategy of scientific and technological innovation, drafted the company's special plan for scientific and technological development during the 14th Five-year Plan period, and continued to improve the efficiency of scientific and technological innovation management.</li> <li>Promoted the construction of smart hydropower stations, developed and established digital watersheds and digital hydropower, and continued to enhance market competitiveness.</li> <li>Strengthened cyber security risk management and control.</li> </ul>
International business	<ul style="list-style-type: none"> <li>International business provides opportunities to expand overseas hydropower operation &amp; maintenance market.</li> <li>Operations heavily depend on global macro-economy, geopolitics, and social risks in local areas, which may lead to potential operational risks.</li> <li>International business brings new challenges in cross-cultural management.</li> </ul>	<ul style="list-style-type: none"> <li>Conducted overseas power station operation, management, consulting, investment, and financing business, and expanded into the clean energy industry with the hydropower industry as the core.</li> <li>Regularly assessed and managed geopolitical and social risks related to business operations or mergers and acquisitions, to minimize the impact of related risks on company operations.</li> <li>Conducted research on cultural differences between China and Peru, formulated targeted cross-cultural management strategies, and actively promoted cross-cultural integration.</li> <li>Systematically analyzed the Peruvian public's concerns about the company, and carried out targeted responses and communications.</li> <li>Drafted and published Peru national social responsibility report, and actively promoted community communication and management.</li> </ul>



## Social responsibility management system

We adhere to the social responsibility concept of "harmony-oriented, value creation, contributing to society, and green development". We have established and optimized the organizational system, continuously enhance responsible competitiveness, mobilize and bring together the potential and synergy of stakeholders, to strive for sustainable development together with stakeholders.

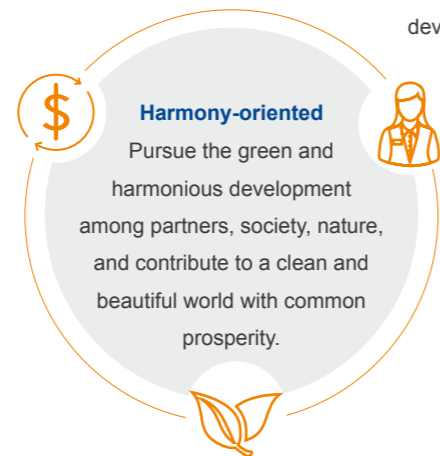
### Views on social responsibility

#### Value creation

Actively respond to the demands and expectations of stakeholders to maximize comprehensive value.

#### Contribute to society

Sustainably support social progress and public welfare by relying on our inherent advantages and share development achievements.



#### Green development

Establish resource-saving and environment-friendly production modes and provide clean energy for the development of green economy.

## Social responsibility organizational structure

### CYPC's social responsibility organizational structure

#### Board of Directors

- Review the annual social responsibility plan.

#### Corporate Social Responsibility Committee

- Oversee the company's social responsibility activities.
- Review the annual corporate social responsibility report.
- Handle other major issues concerning social responsibilities.

#### Culture and social responsibility department

- Coordinate and implement the social responsibility activities.
- Summarize and propose the company's annual social responsibility plan and budget, inspect and supervise the progress of social responsibility projects and the use of funds, and review the result of social responsibility projects.
- Draft the company's annual social responsibility report.

#### Social responsibility posts

- Specifically implement social responsibility projects, and carry out project feasibility study, project establishment, implementation, acceptance, fund management, etc.





# Key topics of social responsibility

## Identification

After recognizing the challenges in sustainable development, we have identified 23 key topics based on relevant requirements of GRI, ESG, SDGs, and suggestions from all stakeholders.

### Sources

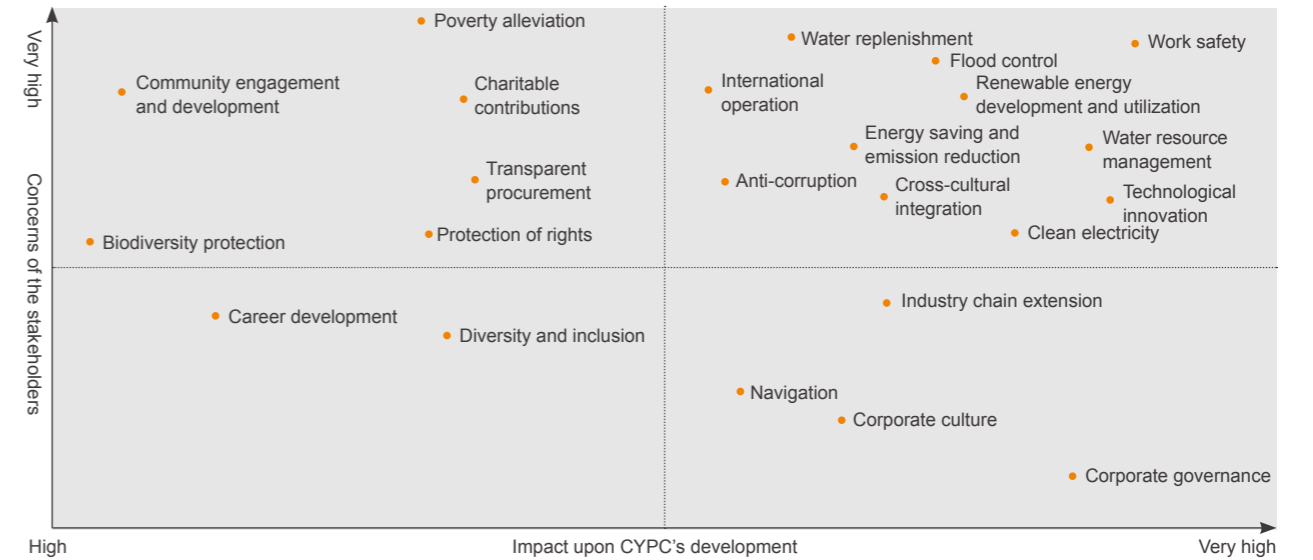
- Analysis of index and guidance
- Social responsibility research
- Policy analysis
- Environmental impact assessment
- Benchmarking against hydropower industry
- Hydropower expert opinions
- Investor roadshow
- Communication meetings with suppliers
- Government communication meetings
- Community opinion solicitation
- ESG standards and requirements

### Identification

- Corporate governance
- Water resource management
- Corporate culture
- Industry chain extension
- Flood control
- Water replenishment
- Navigation
- Work safety
- Clean electricity
- Energy savings and emission reduction
- Biodiversity protection
- Transparent procurement
- International operation
- Charitable contributions
- Poverty alleviation
- Anti-corruption
- Protection of rights
- Career development
- Technological innovation
- Diversity and inclusion
- Community engagement and development
- Renewable energy development and utilization
- Cross-cultural integration

## Prioritization

Based on two dimensions—"the impact upon CYPC's development" and "concerns of stakeholders", we have prioritized topics that have a great influence and attract widespread attention, together with internal and external comments and recommendations.



## Review

Key topics that significantly matter to CYPC's future are reviewed and screened by stakeholders, both internal and external, to guide CYPC's management and determine the content to be disclosed in reports.

### Internal

- CYPC executives
- Administrative department for social responsibilities
- Business departments and affiliated companies
- Staff consultation

### External

- Social responsibility expert review
- Third party participation
- Communication with the stakeholders



## CSR figures during the 13th Five-Year Plan period ( 2016-2020 )



### Economic responsibility

The total profit increased by 117% and the total cumulative profit reached RMB 137.9 billion.



Investment return increased by 83% and cumulative investment return reached RMB 13.5 billion.



Operating income increased by 138% and cumulative main business income were RMB 257.2 billion.



The market capitalization of CYPC surpassed RMB 470 billion, hitting a record high of RMB 473.7 billion.



The cumulative floodwater collected and stored by the Three Gorges Project exceeded 70 billion m<sup>3</sup>.



Electricity generated in the cascaded hydropower plants reached 1,069.828 TWh.

The increase in power generation through water conservation reached 49.29 TWh.

The cascaded hydro-junctions replenished more than 150 billion m<sup>3</sup> water to the middle and lower reaches of the Yangtze River.

We have achieved the safety goal of "zero casualties" and "zero equipment failure" for 5 consecutive years.

We cumulatively obtained 878 patents.

We cumulatively obtained 169 software copyrights.

We edited and co-edited 136 national and industrial standards.



### Environmental responsibility

Equivalent to cumulative replacement of 330.9 million tons of standard coal consumption.



Equivalent to reducing carbon dioxide emissions by 887 million tons.



We have carried out the ecological regulation experiment of the natural reproduction of the four major types of Chinese carps in the middle reaches of the Yangtze River for the 10th consecutive year.

We cumulatively cultivated and released 1.2 million fishes of various types.



### Social responsibility

We paid a total of RMB 80.857 billion in taxes and fees.



We cumulatively implemented 163 social responsibility projects.

The cumulative total project funds was RMB 824 million, including RMB 350 million projects in Wushan County and Fengjie County.



Over 4,000 employees provided public service.



We cumulatively invested RMB 62.853 million in employee training.



We provided more than 340,000 training opportunities for employees.



## CSR Spotlight I

# COVID-19 response + power supply facilitates

The earlier 2020 marked the outbreak of COVID-19—a major public health disaster. We have implemented scientific prevention and taken targeted measures against the epidemic. At the critical stage of epidemic prevention and control in China, we try to ensure the safe and stable operation of cascade HPPs and reliable power supply, and in particular, we strive to ensure power supply in the COVID-19 fight in Hubei and provide a strong momentum for the "green recovery" of regions receiving our power and the global economy.

## Power supply guarantee

In response to the epidemic, we always stick to handle stable power station operation, maintenance, and dispatch, thereby ensuring safe and reliable power supply during the special period.

### Scientific and careful deployment

We established an epidemic prevention and control working group.

We launched a series of measures such as carrying out strict epidemic prevention and control, guaranteeing energy supply, and promoting the resumption of work and production, to make timely and thorough deployment and arrangements for epidemic prevention and control, power supply, inspection and repairs, etc.

We established a network of liaison officers for epidemic prevention and control, and implemented the accountability system.

### Detailed prevention and control measures

We strictly implemented management and control measures for personnel and materials entering and leaving the production areas and offices, and strictly implemented the requirements of "personnel temperature measurement, pass verification and flow restriction".

We established a linkage mechanism for daily duty and COVID-19 response, production operation and logistics support, continuously optimized the production and operation duty method, and implemented all measures to ensure the safe and stable operation of cascade HPPs.

Our production departments strengthened communication with the power grid dispatch agency, rationally arranged the operation mode of the units, and provided an optimal guaranteed power supply plan for Hubei.

### Stable power supply

We made careful arrangements for epidemic control and power generation and carried out personnel management and power generation arrangements.

We strengthened equipment management and ensured the safe and stable operation of power station equipment, and we continued to provide high-quality and reliable clean energy through several special response measures such as encrypted device inspections, online monitoring, diagnostic analysis and anti-freezing measures during low temperatures.

In Q1 of 2020, four cascade HPPs, including Three Gorges, Gezhouba, Xiluodu, and Xiangjiaba

cumulatively generated **35.29** TWh



## Fight the epidemic together

Confronted with difficult situations, we must work together to overcome the difficulties. We have established an epidemic prevention and control working group, issued more than 10 guiding documents for epidemic prevention and control, and made great effort to complete the emergency procurement of preventive supplies, to ensure the health of employees and normal production and operation. We have actively supported epidemic prevention, and ensured people's livelihood and worked together with local governments and partners to overcome difficulties.

### Prepare for epidemic prevention

We cooperated with Yichang First People's Hospital to quickly formulate and implement epidemic prevention and control measures, established temperature measurement points in all office areas, carried out disinfection in office areas and plant areas every day, and strictly implemented safety and health protection at staff canteens.

We implemented environmental sanitation rectification and comprehensive disinfection of production, office and accommodation areas, and reduced personnel flow and gathering of people.

We established a network of anti-epidemic liaison officers to continuously disseminate knowledge about epidemic prevention, safety measures and healthy lifestyle, etc., to guide employees to view the epidemic objectively and rationally with real-time, accurate, detailed, and authoritative information on the epidemic situation and prevention employees' self-protection awareness.



## Tide over difficulties together

During the critical period of epidemic control, we donated RMB 10 million to Yichang City for local COVID-19 response.

We collected anti-epidemic medical equipment and materials, shared domestic epidemic prevention experience in a timely manner, communicated with relevant domestic and Peruvian authorities and agencies, and coordinated with the project management team and the national medical expert team to arrange charter flights for rescue.

We provided the LDS company in Peru with ventilators, monitors, defibrillators, medical protective clothing, masks and other medical supplies, to help implement preventive measures.

### Tide over the difficulties and help Peru fight against COVID-19

The COVID-19 epidemic situation in Peru caused great concern of CYPC. While China Three Gorges Group donated medical supplies to Peru, we took the initiative to undertake the tasks of contacting relevant officials in Peru, formulated the plans, and arranged on-site coordination and material transportation to ensure that medical supplies arrived in Peru at the earliest. CYPC's LDS Project team actively supported the national medical expert team to travel to Peru to provide guidance in the fight against the epidemic, assisted in the delivery of medical supplies such as ventilators and monitors to Peru at critical junctures, and helped LDS and the Peruvian people fight the epidemic.



Assist the national medical expert team to travel to Peru to provide assistance

### Provide special support for local epidemic prevention and control and guarantee people's livelihood

Situated on the frontlines of COVID-19 fight, CYPC has actively assumed the responsibility and obligation of supporting Yichang City to implement preventive measures. On February 5th, 2020, after CTG—our major stockholder—donated RMB 130 million to Hubei Province, we donated another RMB 10 million to Yichang City, Hubei Province, to specifically support the Yichang for COVID-19 response.

### Achieved "zero infections" among CYPC's overseas Chinese employees

CYPC has overseas projects operational in Brazil, Pakistan, Peru, etc., with 22 Chinese personnel on site. We formulated effective anti-epidemic measures in a timely manner based on the characteristics of overseas projects, and carried out procurement and distribution of protective materials, regular disinfection in public places, to ensure the orderly development of our overseas business, while ensuring "zero infection" of Chinese personnel stationed in overseas projects.

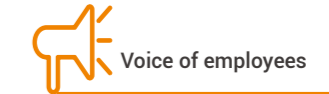
## Reopen economy together

As the epidemic in Hubei Province was gradually brought under control, we strengthened the lean operation of HPPs to ensure optimal power generation and propel the resumption of work and production and rapid economic recovery.

In the most critical first quarter during the COVID-19 fight, the power generated by the Three Gorges-Gezhouba cascade HPPs in the areas that were worst affected by the epidemic reached 20.16 TWh, a record high for the same period. The record power generation strongly supported power consumption in various regions, particularly in Wuhan, Hubei.

In the first quarter, the Three Gorges Reservoir replenished 9.5 billion m<sup>3</sup> water to the downstream, and the upstream water level dropped to 164.72 meters, which strongly supported the resumption of work and production and the water demand for spring farming and irrigation in the middle and lower reaches of the Yangtze River.

We applied information technology to accelerate the progress of resumption of work and production, to ensure that employees can easily and quickly access to all kinds of information resources remotely, thereby enhancing the company's remote working capabilities during the special period.



"In the critical period of epidemic prevention, we feel that the responsibility on our shoulders is even greater! It is ever more necessary to take good care of the power generation equipment and maintain the safety of the power grid to help overcome this epidemic. "

— Yang Liming,

on-duty officer of the Three Gorges HPP

"Although I am not a medical professional, during the critical period of COVID-19 fight, I hope to contribute by working hard at my position, and cheer for the victory over the epidemic!"

— Wang Dan,

Electrical Maintenance Department of Xiluodu HPP

## CSR Spotlight II

# Flood control safeguards the safety in the middle and lower reaches of the Yangtze River

The 2020 flood season witnessed the longest rainfall season with the highest intensity, widest range, and highest overlap of rainy areas in the Yangtze River Basin. The total cumulative precipitation in the basin exceeded that in 1998, we fulfilled our mission of “providing flood protection in the Yangtze River basin and contributing clean energy to society”. We carried out scientific dispatch and lean operation, ensured the safe and stable operation of cascade HPPs, and helped the Yangtze River basin to achieve a comprehensive victory in flood control.

## Careful deployment

Based on our primary goal of ensuring safe and stable operation of hydropower hubs and our first responsibility of implementing flood prevention and control, we have established a robust flood prevention mechanism, and made all arrangements for flood prevention to protect the safety of the Yangtze River.

### Improve flood control mechanism

We prepared a flood control plan and flood control manual.

We formulated system documents such as flood control management of hydropower stations and safety management of hydropower station dams.

### Scientific deployment for flood prevention

We convened flood prevention special meetings, flood prevention mobilization meetings, etc., in 2020, to deploy, arrange and implement flood prevention and disaster prevention activities.

We consistently enhanced the reservoir and the power dispatch consultation mechanism with external units, to negotiate on production, flood control, and dispatch as well as ensure the flood prevention and safety.



## Accurate research and judgment

To effectively respond to natural disasters such as floods, we have consistently strengthened weather forecasting and water & rain monitoring and early warning, conducted flood control emergency response plan drills, improved flood control emergency response capabilities, and made comprehensive preparations for flood control.

### Strengthen water regime monitoring

We strengthened the tripartite consultation with the hydrology department and the meteorological department, continued the daily consultation system for forecasting important periods and two consultations per day for key floods, and conducted a total of 56 consultations. The strength of the consultations and the frequency of important water regime releases have both set historical records.

### Improve forecast accuracy

We comprehensively upgraded the digital rainfall forecast system and the hydrological forecast system of the river basin, to improve the forecasting and early warning accuracy during the flood season. In 2020, the 24-hour hydrological forecast accuracy of the cascade HPPs in the river basin reached 98%.

The 24-hour heavy precipitation forecast score was 0.6, an industry-leading figure; the medium-term forecast score was 0.37, a record high.

The peak times of No. 4 and No. 5 floods in the Yangtze River Basin were forecast 3 days in advance, and the forecast peak values were consistent with the actual situation.





## Emergency plan initiation

We compiled the cascade hub flood control manual, carried out the flood control emergency plan drill, and initiated the level III response of the company's flood control emergency plan for the first time, to enhance the company's flood control emergency response capability.

The forecast period of the peaks 5 numbered floods (floods of a certain large scale) in the Yangtze River Basin was nearly **60** hours, a record high. The average forecast accuracy of the peak flow in the 1-day forecast period was **97.5**%, and the peak present time forecast had **0** error.

## Race against time to accurately forecast flood

The Water Resources Department of Three Gorges Dispatch Cascade Center (TGDC) has set up 4 posts including meteorological forecast and hydrological forecast. The related personnel remain on duty 24 hours a day, the water level and flow are measured every 2 hours, and the rolling calculation is carried out 24 hours to keep a close eye on changes in water and rain regimes. According to the situation, more than 70 consultations were carried out, more than 160 consultation records and forecast dispatch plans were established, and the maximum peak of 75,000 m<sup>3</sup> per second since the completion of Three Gorges Reservoir was accurately predicted 2 days in advance.

## Guarding the security of the hydropower hub

Since the beginning of the flood season at the river basin, the Three Gorges Project has seen 5 numbered floods, and the flood control situation in the middle and lower reaches of the Yangtze River has been extremely severe. CYPC has strictly implemented and strengthened on-duty staff and fully ensured safety.

### Enhance security check

We inspected and supervised flood control and power generation of cascade HPPs to ensure successful completion of the power generation and flood control of the HPPs.

All HPPs have carried out special inspections during the flood season to inspect equipment and facility operations in core areas and key areas.

### 24-hour on duty

We formulated a flood season on-duty work plan, implemented a 24-hour on-duty system for important and key positions.

The emergency tug between the Three Gorges and Gezhouba was on duty for 89 days.

### 24 hours online, guarding the safety of cascade HPPs

At 17:00 on June 21, the inflow of the Three Gorges Reservoir reached more than 30,000 m<sup>3</sup> per second. To ensure the safe and stable operation of the Three Gorges HPP during the flood season, the Three Gorges HPP reinforced its workforce to "remain on duty 24 hours a day", increased the frequency of equipment inspections, as well as strengthened the monitoring of unit operating conditions. It strengthened the responsibility system and examination analysis work, found and resolved problems in a timely manner, ensuring the safety of the power station during the flood season.



## Staggered peaks to block floods

In 2020, the Three Gorges Reservoir suffered 5 numbered floods in the Yangtze River Basin and 12 numbered flood peaks exceeding 35,000 m<sup>3</sup> per second and ushered in the historically largest flood peak of 75,000 m<sup>3</sup> per second. To effectively deal with floods, CYPC has given full play to the role of the cascade reservoir group, with the Three Gorges Project as the core—we have built a joint flood control and dispatch system in the Yangtze River Basin and have ensured close coordination of five major reservoirs to block, store and discharge floodwater.

We have made full use of the upstream reservoirs to carry out joint dispatch and ensured cooperation between the Jinsha River cascade reservoirs and the Three Gorges for the first time, to handle river basin floods.

Wudongde HPP increased impoundment according to the daily water level of 1.5 meters, and the Xiluodu-Xiangjiaba cascade reservoirs interlocked the floods. The five-reservoir joint flood control system showed initial success in resisting the No. 5 flood, thereby reducing the flood control pressure of the Three Gorges Project.

We have given full play to the key role of peak clipping and flood interception, and accurately controlled the outflow of the Three Gorges, Xiluodu, and Xiangjiaba reservoirs. The water level of the Three Gorges Reservoir reached the historically highest flood level of 167.65 meters, effectively mitigating flood control stress in the middle and lower reaches of the Yangtze River.

## Make every effort to ensure the safety of people's lives and property in the middle and lower reaches of the Yangtze River

Since the flood season started in 2020, CYPC has successfully responded to 12 numbered flood that exceeded 35,000 m<sup>3</sup> per second, including the third largest basin flood since 1949. The hydraulic structures, flood discharge facilities, and power generation equipment of the hydropower are all maintained in normal condition. The dam operations have remained stable, and the Three Gorges Project has withstood the most severe test since its inception, and flood control has achieved remarkable benefits.



<b>Flood control</b>	The cascade reservoirs have carried out 9 flood control operations and blocked and stored nearly 36 billion m <sup>3</sup> of floodwater. The single storage volume of Xiluodu, Xiangjiaba, and Three Gorges Reservoir have all reached new highs. During the 5 numbered floods in the Yangtze River Basin, the Three Gorges Reservoir blocked and stored a total of 25.4 billion m <sup>3</sup> floodwater, successfully dealing with the basin-wide flood.
<b>Peak clipping</b>	For the 5 numbered floods in the Yangtze River Basin, the Three Gorges Reservoir cut the flood peak by 30%–40%, and the maximum peak cut rate was 45.9%; during the No.5 flood, the cascade reservoirs on the lower reaches of the Jinsha River could escape the floods of the Jinsha River and the Sichuan reaches through joint flood blocking and storage, thereby effectively reducing the peak floodwater level of the Cuntan Station by more than 2 meters, and lowering the flood control pressure on the Sichuan-Chongqing river section and the end of the Three Gorges Reservoir.
<b>Disaster alleviation</b>	The upstream reservoir group with the Three Gorges as the core, actively played the role of flood control, alleviated the effects of the once-in-40-year flood at Yichang Station to a regular flood, avoided the opening of the Jingjiang flood diversion area, prevented the evacuation of 600,000 people in the area, and protected 493,000 mu (Chinese unit of land measurement. 1 mu = 666.7 square meters) of arable land and more than 100,000 mu of aquaculture area from being submerged.

During the flood season, the cascade HPPs cumulatively blocked and stored nearly **36** billion m<sup>3</sup> of floodwater, accounting for more than **60%** of the total floodwater intercepted in the reservoirs in the upper and middle reaches of the Yangtze River.

The peak of 5 numbered floods in the Yangtze River Basin was cut by **30% – 40%** by the Three Gorges Reservoir, and the maximum peak-shaving rate was **45.9%**.

During the flood season, **3** shipping dispatches were carried out, **1,569** key ships and **6.88** million tons of important urgent materials were evacuated, ensuring the transportation needs of energy and materials for people's livelihood in the upstream and downstream areas.

Avoided the evacuation of **600,000** people, protected **493,000** mu of arable land and more than **100,000** mu of aquaculture area from being flooded.



# Economic Responsibility

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## Corporate governance

CYPC strictly abides by regulators' requirements, continuously optimizes the modern corporate governance structure, comprehensively organizes the corporate system of general meeting of shareholders, board of directors, and board of supervisors, promptly adjust the company's basic management system, and cooperate with GDR issuance, management tenure system and contractual reforms. We have drafted and promoted 8 systems including the *Articles of Associations*, which have successfully passed the deliberation of the board of directors and the general meeting of shareholders and have continuously consolidated the company's standard governance foundation.



The annual general meeting of shareholders, the board of directors, and the board of supervisors were successfully concluded, in which the general election was completed and two directors selected at a by-election.

The compensation paid to executives is linked to the corporate performance, health and safety management, and we established a mature, robust mid- and long-term incentive mechanism.

We organized 25 general meetings of shareholders, conferences for the board of directors, specialized committees, and the board of supervisors, in 2020, and 138 proposals were passed with a 100% approval rate.

We arranged a total of 19 directors and supervisors to participate in the online training for directors and supervisors of listed companies organized by the Beijing Association of Listed Companies, to consistently improve their ability to perform their duties.

Our board of directors is made up of 14 directors, 5 of which are independent directors, and the board of supervisors is made up of a total of 8 supervisors. There are 2 female directors and 2 female supervisors.

## Anti-corruption

We have continued to fight corruption, strengthened education related to corruption, and have extended anti-corruption warning education to suppliers and other partners.

### Implement the accountability system

We convened conferences on combating corruption and promoting integrity, signed the *Liability Statement of Integrity Building and Anti-corruption in 2020*, and studied and deliberated on issues related to clean corporate governance.

We guided the development of 36 clean corporate governance and anti-corruption activities.

### Strengthen education

We carried out anti-corruption publicity month and education day activities, and strictly implemented measures such as studies and discussions, "one season, one case" warning education, anti-corruption interviews.

We organized 2,603 management personnel to participate in a legal and regulatory knowledge test, more than 1,900 management personnel watched the warning education film, 1,815 employees participated in the online test of the *Government Sanctions Law*, and 396 management personnel carried out the integrity application declaration and online integrity commitment.

We signed integrity agreements with all suppliers, established an integrity penalty system, strengthened the prevention of procurement integrity risks, and extended anti-corruption warnings to suppliers and other partners.

### Protect whistleblowers

We standardized the reporting process for anti-corruption issues, effectively protected whistleblowers' anonymity, and received 15 reports and complaints throughout the year.

No individual or organization is allowed to intercept or retaliate against whistleblowers; any physical injury or loss of reputation due to retaliation, are handled in accordance with applicable national laws and regulations.

Letters of reporting on illegal activities are classified as confidential and employees who handle the letters are not permitted to retain, extract, copy, detain, or destroy them. The relevant materials and real names of whistleblowers are prohibited to be disclosed to the alleged corrupt organization or individuals, to protect whistleblowers from personnel injury or reputational loss.



## Tax payment

We insist on making honest tax payment in accordance with laws to ensure all requisite taxes and fees are duly paid through standardized accounting and strengthened internal supervision. The 2020 taxation expenses reached RMB 15.309 billion, including the cost of water resources, reservoir fund, and a special fund for resettlement at the Three Gorges Dam Area, and other expenses required based on fiscal regulations.

## Internal control

We ensure all our operations comply with laws and legal requirements, we have strengthened internal control management, and continuously enhanced the company's management efficiency, to ensure stability and long-term development.

### Law-based corporate governance

We strictly perform legal review procedures for decision-making matters related to law and give full play to the review role of legal counsel.

We have formed the first draft of the 14th Five-Year Plan for legal-related work and continue to strengthen the development of the legal work team.

We have carried out control inspections, in-depth rectification, and continuously promoted legal compliance in all corporate affairs.

### Risk control

We issued risk control checklists, risk event classification standards and management requirements, and other system documents to standardize risk management.

We conducted research on key risk indicators (KRI), promoted the construction of a key risk indicator database, and improved risk management tools.

We conducted annual risk identification and assessment. We identified and summarized business management risks and dynamically tracked and monitored risk management and control. In 2020, we identified a total of 33 annual risks.

We carried out online and offline risk management training to improve risk management capabilities.

### Audit and supervision

We revised the *Internal Audit Management System* and *Internal Control Evaluation Manual* and complied the *Financial Revenue and Expenditure Audit Manual* to standardize audit work.

We carried out the audit of the financial income and expenditure of Chuanyun Company, the audit and survey of the Three Gorges Power Equity Investment Project, and the follow-up audit and special audit of policies such as the resettlement funds of the Jinsha River downstream hydropower stations and the Baihetan Hydropower Station construction projects.

### Compliance management

We formulated the *Compliance Management System* and established and improved the compliance management system and work system.

We prepared and published the *Key Points for Compliance Management in 2020* and carried out compliance management for key personnel in key areas such as investment and financing, overseas operations, key links such as system construction, and key positions.

We consistently consolidated the established information publicity work system, clarified the approval process and scope of authority through office system, and strengthened the construction of the credit system.



## Hydropower hub operation

We consistently adhere to the mission of providing flood protection for the Yangtze River and contributing clean energy to society, continuously upgrade the joint dispatch capacity of cascade reservoirs, and give full play to the comprehensive benefits of flood control, power generation, water replenishment, shipping, and ecology of the cascade hydropower hubs in the basin. We actively serve the development of the Yangtze River Economic Belt and provide clean energy for the national economy.

### Overall benefit

#### Ensure the safety of the Yangtze River

We implemented scientific flood control and dispatch, realized the initial joint dispatch operation of Five Reservoirs, i.e., Wudongde, Xiluodu, Xiangjiaba, Three Gorges, and Gezhouba, and comprehensively improved the cascaded joint dispatch capacity of river basins.

We strictly implemented the flood control organization and responsibility system, issued the 2020 flood control work plan, promoted the maintenance of equipment and facilities, and carried out the hydro-meteorological forecast, effectively preventing and successfully responding to the third largest basin flood since 1949.

The Three Gorges Project successfully responded to 5 numbered floods in the Yangtze River, with a maximum inflow of 75,000 m<sup>3</sup> per second, and the cascade reservoirs achieved the floodwater retention of nearly 36 billion m<sup>3</sup>.

#### Provide clean energy

The four cascade HPPs of Three Gorges, Gezhouba, Xiluodu, and Xiangjiaba generated 226.93 TWh in 2020, among which the Three Gorges HPP alone generated 111.802 TWh. It beat the previous world record, set by Brazil's Itaipu HPP in 2016, for annual power generation by a single hydropower station.

##### Gezhouba HPP

generated **18.567** TWh

##### Xiluodu HPP

generated **63.413** TWh

##### Xiangjiaba HPP

generated **33.148** TWh

##### Wudongde HPP

generated **13.429** TWh

#### Resist drought and replenish water

During the dry season, the reservoir gates are opened to replenish water in the downstream areas, which ensures that the industrial and agricultural production and domestic water demand of the middle and lower reaches of the Yangtze River are fully met.

The cascade reservoirs have replenished a total of 31.183 billion m<sup>3</sup> of water for downstream use, ensuring downstream production and domestic water use.

The Three Gorges Reservoir has achieved the 175 m experimental water storage target for 11 consecutive years and has replenished 22.9 billion m<sup>3</sup> of water for downstream use during the dry season.

## Golden waterway

We carried out water replenishment dispatch and increased the shipping depth of the middle and downstream by 0.9 meters.

During the flood season, 3 shipping dispatches were carried out, and 1,569 ships, and 6.88 million tons of important urgent materials were evacuated, ensuring the transportation needs of energy and materials for people's livelihood in the upstream and downstream areas.

The Xiangjiaba shiplift carried out the night trial operation for the first time, and the single-day cargo capacity reached a new high of 8,265 tons.

### Response to public concerns: Flood control and discharge capacity of the Three Gorges Reservoir

The design standard of the Three Gorges Dam can ensure resistance of "once in a thousand years' flood" (flow rate reaches 98,800m<sup>3</sup>/s), and the check standard matches flood resistance for "once in 10,000 years' flood" (flow rate reaches 124,300 m<sup>3</sup>/s). Since the construction of the Three Gorges Reservoir, the maximum flood peak is 75,000 m<sup>3</sup>/s, which was achieved on August 20th, 2020; the flood discharge capacity of the Three Gorges Project at the flood limit water level of 145 meters, the normal storage level of 175 meters, and 180 meters are 70,500 m<sup>3</sup>/s, 106,700 m<sup>3</sup>/s, and 119,300 m<sup>3</sup>/s, respectively, which can effectively regulate and store floodwater caused by heavy rains in the upper reaches of the Yangtze River, and also control floods in the whole basin and the middle and lower reaches of the river, laying a solid foundation for flood control.

## Safe operation

We always prioritize work safety and controlling the five major safety risks is our primary goal. We have further promoted the special rectification actions for work safety and the development of dual prevention mechanisms, achieving the goal of "zero casualties" and "zero equipment accidents" for the 11th consecutive year, we have achieved historically optimal work safety.

### Major risk control

We carried out annual identification and evaluation of hazards and environmental factors, identified and added infectious diseases such as COVID-19 as occupational health hazards, issued the 2020 list of major risks and important environmental factors, and identified 5 major occupational health and safety management risks, 4 major risks in power generation and 4 major environmental factors.

We categorized safety risks to effectively manage five hazards—human injury, flooded plants, widespread blackout, key equipment failure, and network security risk. We conducted four rounds of risk control inspection for 40 days, which involved over 50 inspectors.



## Safety management system

We built and improved the information system on safety management and established a unified-standard resource-sharing safety information management platform, which has seven modules including education and training, risk management and control, and potential hazard investigation, to achieve standardized and scientific work safety management.

We revised 7 safety management systems including the *Fire Safety Management Measures* and *Annual Safety Performance Evaluation Rules*, and prepared and issued 2 technical safety standards—*Electric Safety Work Regulations* and *Work Ticket Implementation Specifications*, to support the development of safety systems and mechanisms.

We prepared and published the *Safety Culture Handbook*, *Safety Behavior Handbook*, and *Five-Year Plan for Safety Culture*, and established safety culture demonstration enterprises, consistently improving CYPC's Lean-Safety culture system.



Promoting safety through people

Culture

Prevention

Science and technology

Legal regulations

## Potential hazard troubleshooting

We carried out 10 comprehensive and special safety inspections, including 5 major safety risks management and control inspections, centralized rectification of production safety and safety inspections before the Spring Festival, safety inspections for COVID-19 prevention and control and resumption of production, cable corridor safety inspections, special fire safety inspections, etc., and resolved 320 potential hazards.

We strengthened advance supervision of work safety and incorporated 13 key safety and environmental protection hazards in the agenda for supervision and correction. For the potential hazards incorporated in the agenda for rectification and supervision, the rectification degree is reported on a monthly basis, the completion of rectification is reported quarterly, and assessment is carried out for hazards that are not rectified on time.



## Emergency management

We evaluated and improved 6 emergency plans including the *Comprehensive Emergency Plan*, *Emergency Plan for Personal Injury Accidents*, and *Emergency Plan for Natural Disasters of Hydropower Stations*, and compiled and issued the new *Emergency Plan for Environmental Incidents*.

We prepared and published the *Emergency Management Work Plan for 2020* and *Emergency Drill Plan for 2020* and carried out emergency drills under 16 categories in four power stations, to improve the emergency response and coordination capabilities.

We prepared the *Flood Control Manual for Cascade Hydropower hubs*, strengthened the flood season forecast and early warning system, strictly implemented the 24-hour duty system for key positions, executed the information reporting and emergency handling of emergencies, and launched the company's Level III response for flood prevention emergency plan, for the first time.

### Response to public concerns: Deformation of the Three Gorges Dam

With respect to the doubt on the safety issue of Three Gorges Dam inferred from suspicious satellite images by the media, Michael Rogers, President of the International Commission on Large Dams (ICOLD) believes the safety of dams is an issue that should be taken seriously, especially in China. He said that, "I have come to China for technical exchanges 5 times since 2011 and have closely watched the design and construction of the Three Gorges Dam, a landmark project. I can say with certainty that the Three Gorges Dam is one of the highest quality dams in the world with the best design and construction. I have seen all possible efforts made by the Chinese engineers to ensure maximum safety during my visits to China and the Three Gorges Project in 2012. I have also witnessed the high attentions paid on the dam's quality and safety by China's engineering community. I am confident that the Three Gorge Dam will be well maintained and monitored as China has consistently prioritized safety."



## Value creation

We have consistently promoted the development of the power industry chain, improved the quality and efficiency of investment management, consolidated the foundation for development, and steadily moved towards the goal of becoming a world leader in the hydropower industry.

### Power business

#### Power generation

We strengthened lean production management, leveraged lean power generation assessment, coordinated internal production dispatch consultations, and improved the efficiency in the production process. 82 units have been operating safely and efficiently, and the power generation has achieved several historical records.

The four cascade HPPs of the Three Gorges HPP, the Gezhouba HPP, the Xiluodu HPP, and the Xiangjiaba HPP, have completed their annual power generation tasks 66 days, 1 day, 2 days, 19 days, and 44 days in advance, respectively.

#### Power distribution

We completed the overall listing of the Chongqing regional power distribution business, completed the LDS equity delivery, and promoted the formation of the new 'power generation + distribution' industry chain extension and international development model.

We actively carried out the transformation and upgrade of the distribution network in the Three Gorges Dam area. The incremental distribution network in Yan'an New District and Yunnan Xichou has been successfully put into operation. The domestic full-caliber power supply and sales reached 11.7 TWh, and we have formed a new trend of hydropower extension strategy preliminarily.

#### Power sales

We accurately studied and judged the market, scientifically formulated marketing strategies for different stations, regions, and provinces, and coordinated and guided marketing development throughout the year.

We improved the purchase and sale contracts of cascade HPPs that we have signed in terms both quantity and price, and four HPPs achieved 225.67 TWh of on-grid electricity throughout the year, overfilling the power consumption task.

We deepened the communication and negotiation with two major power grid companies and power exchange centers, maintained and implemented the consultation mechanism and adjustment mechanism for the monthly large hydropower plan and the power conversion mechanism between the Xiluodu HPP on the left and right banks, and promoted power consumption.

We remained in line with the pace of electricity reforms, enhanced market-oriented marketing capabilities, registered and established CYPC Sales Co., Ltd. on schedule, and further completed the marketing mechanism.

## Capital operation

### Investment scale

Focusing on hydropower, power distribution business, international business, etc., we actively carried out foreign investment, and increased our overseas investments. In 2020, we increased our outbound investment by approximately RMB 35.2 billion, and generated more than RMB 4 billion in earnings, a year-over-year increase of about 32%.

### Investment structure

All newly increased investments are primarily in hydropower, and our investments in our main business have increased to 92%.

We continued to increase our holdings in key targets such as Shanghai Electric Power and Shenergy, and strategically laid out the company's energy consumption areas.

With new investment of about RMB 3.9 billion, we continued to increase our holdings in SDIC Power and Sichuan Investment Energy and increased the equity ratio to nearly 15%; we completed the acquisition of 23% equity stake in Jinzhong Company, accelerated the Longpan Project, and conducted in-depth research on the integrated development of water, wind, and PV energy sources in the lower reaches of the Jinsha River.

### Investment returns

We promoted the issuance of GDR and created the lowest issuance price discount of GDR products by Chinese-funded enterprises.

We issued 11 phases of bonds, raising a total of RMB 25 billion in low-cost funds.

We successfully issued RMB 2.5 billion of COVID-19 response theme bonds, which were actively subscribed by financial institutions, with special funds for epidemic prevention.

We efficiently completed the approval of bond issuance quotas in the inter-bank market and exchanges and obtained the first batch of TDFI (Top Debt Financing Instruments) issuance qualifications in the inter-bank market.



## Innovative development

We have continuously increased investment in innovation, improved the technological innovation system and mechanism, vitalized innovation targets, promoted the development of more independent S&T innovations, steadily promoted intelligent development, and provided strong intellectual support for the company's development.

### Technological innovation

#### Improve the innovation system and mechanism

We revised the *Measures for the Management of Scientific Research Projects*, improved the classification and grading standards for scientific research projects, and optimized the scientific research project plan and project management process.

We formulated the *Implementation Rules for Evaluation and Reward of Scientific and Technological Innovation Achievements*, improved the innovation evaluation and incentive mechanism, increased investment in innovation incentives in technology and management. In 2020, we granted RMB 4.258 million as innovation incentive bonuses.

We researched and drafted management systems such as the *Provincial Key Laboratory Management Measures* and *Open Research Fund Management Rules of Hubei Provincial Key Laboratory of Smart Yangtze River and Hydropower Science*. This laid an institutional foundation to promote the construction and development of the company's key laboratories and enhanced the capability for training scientific research talents in the laboratories and the ability to undertake major scientific and technological tasks.

#### Cultivate scientific and technological innovation talents

We formulated the *Measures for Expert Selection and Management*, regularly selected professional and technical experts, and focused on cultivating high-quality professional and technical talents and high-level scientific and technological innovation talents.

We formulated a scientific and technological talent plan, set up positions for researchers and research experts, formed a talent training gradient, and established a hierarchical and classified reserve database of scientific and technological talents based on scientific research projects and innovation studios at all levels.

We established and improved the mechanism for the discovery and introduction of external high-end talents. In September 2020, we successfully introduced an internationally renowned expert in the field of water resource dispatch, laying the talent-based foundation for building a high-level business system that adapts to the coordinated and optimized dispatch of water resources in the Yangtze River Basin, and cultivated the core ability of water resource dispatch in the river basin.

#### Technological innovation platforms

We established the Hubei Provincial Key Laboratory of Smart Yangtze River and Hydropower Science to build a smart hydropower platform.

We developed the CYPC Industrial Internet platform, promoted the application of intelligent construction of hydropower stations, carried out data coding development, and realized data integration and sharing.

We coordinated and promoted the development of systems such as water resource management decision support for cascade HPPs, river basin maintenance support, and holographic units.

We built an enterprise-level new-generation Three Gorges Cloud Computing Big Data Center, fault simulation high-voltage laboratory, photoelectric laboratory, and other laboratories, to cater to equipment management and scientific research of HPPs in river basins.

#### Major scientific and technological research

We released the blueprint for CYPC's smart hydropower and highlighted the direction for subsequent smart hydropower construction.

We promoted the development of intelligent equipment, represented by the development of hydropower station underwater maintenance robots, complex corridor inspection robots, and flow channel inspection and maintenance robots.

We completed the holographic monitoring system of Gezhouba HPP, thereby realizing the holographic monitoring of unit status.

We promoted the application of laser technology in hydropower maintenance and researched and developed high-current aluminum busbar laser cladding silver technology and equipment.

#### Transformation of scientific and technological achievements

We researched and established internal promotion and application mechanisms for scientific and technological achievements, assessed the application value, and helped the transformation and application of scientific and technological achievements.



In 2020, three scientific and technological achievements including the Key Technology and Application of Panoramic Dispatch of Large Reservoir Group Zone Control and the Cross-grid Peak-shaving by CYPC won the Hubei Province Science and Technology Award.

In 2020

we acquired **152** patents

including **18** invention patents

**134** utility models, hitting a record high



## Intelligent development

### Conduct top-level design

We developed the medium and long-term development plan for informatization and the 14th Five-Year Plan to strengthen the top-level design for IT-based development at the macro level.

We prepared informatization management systems and standards, and completed 6 informatization management systems, 7 technical standards, 6 company-level work procedures, and 117 headquarter-level work procedures.

We established data standards and systems related to information resource management of Yangtze River Power Company, enhanced data collaboration and strengthened data integration.

### Build an information platform

We established the Three Gorges Cloud Computing Big Data Center, built the CYPC big data platform, and developed high-reliability, low-cost, agile, and fast IT infrastructure sharing services.

We established an integrated enterprise development platform based on microservice architecture.

We added 37 new sub-applications for applications throughout the year, thereby realizing in-depth coverage and application of mobilization in the overall business.

We officially signed the R&D contract to build the CYPC Industrial Internet Platform.

We deepened platform applications such as integrated portal and unified identity authentication and completed authentication integration and single sign-on for nearly 25 systems.

### Promote system upgrades

We promoted the development of new functions in ePMS and overall system optimization.

We carried out the development of Phase II of the Wise Operation Management System (WOMS).

The research and development of the basin maintenance support system passed the expert review, marking the entry of the maintenance management of the basin's terrace hydropower stations into the digital era.

We integrated IPv6, SDN, and other technologies, to upgrade our network equipment.



## International operation

We implement an international development strategy, integrate and leverage our advantages in business, management, technology, capital, and brand, and carry out overseas power station operation, management, consulting, investment, and financing businesses. We consistently improve our international operation and management capability and promote international development.

### Actively participate in international power operation

We efficiently completed the anti-monopoly approval and equity delivery of LDS, established the Andean project office on time, arranged management personnel to go to Peru to comprehensively manage LDS, continuously optimized the governance structure, reduced investment risks, and promoted leap-frog development of international business.

We successfully completed the takeover of equipment, ancillary facilities, and camps of three wind farms in Pakistan, and explored the operation and management of the first overseas entity project.



### Deep involvement in the international capital market

We efficiently completed the issuance of GDR and realized overseas listing for the first time.

We optimized our rating financial indicators, maintained the stability of international credit ratings, and promoted the company's ability to consistently utilize high-quality credit, to expand domestic and overseas investment and financing businesses.

We introduced high-quality foreign investors, promoted the introduction of international corporate governance mechanisms, improved corporate governance and expanded international visibility.

### Strengthen technical consulting for overseas power stations

We carried out consulting projects such as for the Three Gorges Brazil Company and for the construction period of the Karot Hydropower Station and provided O&M service for Karachi wind farms in Pakistan. We provided high-quality operation and maintenance and technical consulting services for Peers, and exported our operation, maintenance, and management experience of large hydropower stations overseas.

As of the end of 2020, we prepared and published a total of 9 operation and maintenance management standards and 26 technical standards, covering the entire process of operation and maintenance management of overseas wind farms.



## Promote a responsible supply chain

We adhere to the principles of fair, just, and open procurement, implement refined management of bidding and procurement, and strengthen supplier capacity building to strive for joint development with suppliers.

Access	Classification	Promotion	Deepen	Exit
<p>We implemented competitive procurement in accordance with the principles of fairness, openness, and justice.</p> <p>We built a scientific, reasonable, and fair bidding and procurement system.</p>	<p>We deepened the application of supplier evaluation results in the bidding and procurement process.</p> <p>We implemented refined management of bidding and procurement, and dynamic control over bidding and procurement.</p>	<p>We remained informed of the needs of suppliers in a timely manner, actively strengthened communication and coordination, and strived to help suppliers solve difficulties.</p> <p>We incorporated the Three Gorges Standards into the supplier management standards, to drive the suppliers to elevate their capabilities.</p>	<p>We implemented annual post-evaluation of bidding and procurement processes and strengthened the application of supplier evaluation results in the bidding and procurement process.</p>	<p>We suspended risky suppliers from our supplier list.</p> <p>We implemented an exit mechanism for problematic suppliers.</p>

## Promote industry development

We have strengthened our demonstration and leading role in technical standards and contributed the CYPC solution for industrial development. We have consistently deepened international cooperation and exchanges and joined hands with global partners in the hydropower industry, to ensure mutual development.

### Establish and export standards

#### Improve the technical standard system

We revised the *Technical Standards Management Measures*, conducted in-depth development of the technical standard management system, and further improved the company's technical standard management.

We proposed an innovative technical standard system framework for cascade HPPs in the river basin and built a technical standard system for large hydropower companies.

By the end of 2020, we had compiled and published 151 company-level technical standards, which play a vital role in guiding production activities and business.

#### Advance technical standard linkage

We explored the innovative practice of two-level technical standards linking the company and the plants, and built a technical standard system that integrates the two-level standards.

We published the company's first batch of (4+24) linkage technical standards to give full play to the efficiency of technical standards.

#### Lead the development of technical standards

We prepared national standards such as the *Basic Technical Conditions of Hydraulic Turbines*, *Technical Guidelines for Smart Hydropower Stations*, and *Technical Conditions for Economic Operation System of Smart Hydropower Stations* to enhance the influence of technical standards on the industry.

We preferentially advanced the preparation of important power industry standards such as *Guidelines for Overhaul of Hydropower Station Equipment*, *Guidelines for Management of Condition Overhaul of Hydropower Station Equipment and Working Standards for Hydropower Plants*, and led the industry in technical standards.

### Deepen exchanges and cooperation

#### Lead the development of society activities

We organized 6 professional industry academic group exchange activities such as the Basin Energy Special Committee of the Yangtze River Technology and Economics Association, the Power System Automation Special Committee of the China Hydropower Engineering Society and the Relay Protection Special Committee of the China Hydropower Engineering Society.

#### Enhance international technical exchanges

We consistently carried out research related to IEA Hydro Annex XIV and organized the preparation of IEA Hydro Annex XIV research reports.

We participated in exchanges with international academic institutions such as the International Commission on Large Dams (ICOLD) Hydropower Station and Reservoir Joint Operation Committee, to strengthen the exchange and promotion of experience.



# Environmental Responsibility

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## Environmental management system

We have consistently improved the environmental protection management system, strengthened the environmental protection supervision and tracking mechanism, strictly controlled various environmental risks, and consolidated the foundation of environmental protection management.

### Improve the management system

We improved the company's environmental protection management system.

We remained up to date with relevant environmental laws, regulations, standards, and specifications, and translated relevant requirements into the company's environmental protection management rules and regulations, to further improve the company's environmental protection management system.

### Strengthen environmental assessment

We strengthened the regular tracking mechanism of environmental protection supervision, conducted regular tracking of the rectification of remaining problems found during the environmental inspection in 2019, and listed the key potential hazards into the agenda for supervision.

We tracked the progress of the special plan for the protection of the Yangtze River every month, promptly supervised and prompted responsible organizations.

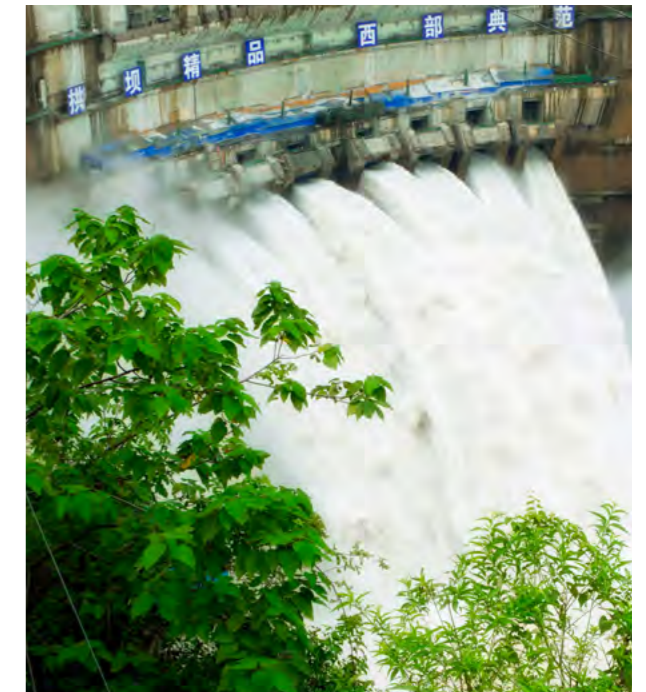
We carried out regular supervision and inspection to review the rectification of environmental hazards and the implementation of environmental management requirements.

We prepared the *Annual Environmental Performance Evaluation Rules*, *List of Environmental Protection Responsibilities*, and revised *Technical Supervision Regulations on Environmental Protection*.

### Control environmental risks

We formulated the *Emergency Contingency Plan for Environmental Emergencies* to strengthen the risk control of environmental emergencies.

We continually carried out identification, evaluation, and management of hazards and environmental factors, and identified 4 important environmental factors.



## Carbon emission management

China is committed to becoming carbon emission peak by 2030 and carbon neutrality by 2060. We actively responded to the national goal, drew up the company's action plan, gave full play to the low-carbon benefits of clean hydropower, and actively implemented carbon reduction actions, contributing our efforts in response to global climate change.

Source identification	Measures for managing carbon emission	Low-carbon energy
<p><b>Category 1</b> Greenhouse gases in reservoir waters, primarily generated by underwater anaerobic decomposition of submerged organisms and substance deposition</p> <p><b>Category 2</b> Sulfur hexafluoride in electrical equipment Electricity consumption of electric power facilities for lighting, air conditioning, etc., heat generated by hydroelectric power plants pumping water</p> <p><b>Category 3</b> Employees' carbon emissions during travel activities</p>	<p>The high-voltage electrical equipment that uses SF<sub>6</sub> as an insulating medium is sealed, and when the relevant equipment is overhauled, 100% recovery of SF<sub>6</sub> is required. No SF<sub>6</sub> gas leakage accidents or equipment failures occurred in 2020.</p> <p>From 2021 to 2023, we plan to undertake the monitoring and research work of CTG on the greenhouse gas of the Three Gorges Reservoir, continue to carry out greenhouse gas monitoring and analysis research of the Three Gorges Reservoir, and strengthen the management of carbon emissions.</p>	<p>In 2020, clean energy power generation reached 226.930 TWh</p> <p><b>equivalent to</b> reducing the consumption of 69.5314 million tons of standard coal.</p> <p>Reduced CO<sub>2</sub> emissions by 190 million tons.</p> <p>Reduced SO<sub>2</sub> emissions by 42,400 tons.</p> <p>Reduced NO<sub>x</sub> emissions by 44,300 tons.</p>

Note: According to the 2020 Annual Development Report of China Electric Power Industry released by China Electricity Council, the standard coal consumed by 6,000 KW and above thermal power plants in 2019 was 306.4 g/kWh, which emitted 838, 0.187, and 0.195 g/kWh of CO<sub>2</sub>, SO<sub>2</sub>, and nitrogen oxides, respectively. Therefore, when 0.1 TWh of clean power is generated, it is equivalent to savings of 30,640 tons of standard coal and reduction of 83,800 tons of CO<sub>2</sub>, 18.7 tons of SO<sub>2</sub> and 19.5 tons of nitrogen oxides.

## Development and utilization of renewable energy

We have attached immense importance to strengthening the development and utilization of renewable energy, given full play to the technical advantages of clean energy development, actively promoted the development and use of clean energy, and continuously improved energy efficiency, playing an active role in responding to global climate change.

### Protect the Yangtze River with smart energy

In 2020, we invested in the construction of a PV storage and charging smart energy demonstration project in the Three Gorges Dam area—our first smart energy sub-project that has been completed and put into production, marking the formal implementation of the concept of protecting the Yangtze River with smart energy. The PV storage and charging smart energy demonstration project realizes the coordinated and stable operation of PV, energy storage, and load by collecting PV systems, energy storage systems, and electricity collection systems, effectively improving energy efficiency and ensuring that the system prioritizes the use of clean energy. The project is of great significance to build a green and smart dam area.

In 2020

Installed capacity of **45.595** GWh

Equity installed capacity of **10** GW

Cumulative power generation of **226.930** TWh

**100**% of which is renewable energy

## Water resource management

We have standardized the monitoring and assessment of water resource risks of HPPs, developed water resource decision support systems, conducted forward-looking research on water resources, and promoted efficient use of water resources.

### Monitor inflow risk

We carried out in-depth application of the decision support system and water regulation automation system to make up for weak links in flood inversion, flood regulation calculations, and reservoir backwater inundation. We strengthened the joint operation research of the six reservoirs on the mainstream of the Yangtze River, controlled the risk of cascade reservoirs, and gradually built the dispatch risk automatic identification and early warning system.



## Efficiently utilize water resources

### Accurate control

**Create a dispatch plan:** We prepared a joint dispatch plan for the lower reaches of the Jinsha River-Three Gorges cascade HPP during the flood season in 2020, to scientifically and rationally exert the regulating role of the lower reaches of the Jinsha River-Three Gorges cascade reservoirs, and improved the comprehensive utilization of water resources.

**Conduct dispatch consultations:** We gave full play to the role of the coordination mechanisms jointly established with the Yangtze River Flood Control and Drought Relief Headquarters and the power grid company, strengthened the consultations on power generation plans and small and medium flood dispatch, conducted more than 60 internal and external consultations throughout the year, and coordinated and communicated with superior dispatch supervisors more than 30 times on special dispatch coordination, monthly power generation planning meetings, and technical exchange meetings.

**Improve the dispatch procedures:** We revised the *Three Gorges (Normal Operation Period)-Gezhouba Water Control Project Cascade Dispatch Procedures*, and comprehensively utilized the dispatch procedures during the main flood season to carry out joint dispatch and increase the utilization rate of flood resources.

**Optimize dispatch mode:** We explored an integrated regulation management model of dispatch forecast-safe operation-intelligent maintenance-ecological protection-decision support, thereby providing important support for the reservoir group to achieve integrated optimal dispatch goals such as flood control, power generation, and ecology. The integrated hydropower generation dispatch model in Kunming has now been fully implemented.

**Develop water resource decision support system:** We realized intelligent response to upstream reservoir group dispatch, analysis and display of river flood propagation, calculation and analysis of the Three Gorges Reservoir tail inundation index, optimized allocation of Xiluodu and Xiangjiaba flood control storage capacity, optimized control strategy of cascade reservoir water level, and provided decision support for more than 80 flood-retention and peak-shifting dispatch schemes during the flood season.

### Lean operation

**Conduct reliable operation:** We strengthened the analysis and evaluation of equipment status, discovered and handled hidden equipment hazards in time, and improved equipment reliability through annual repairs and technical improvements. We are leading the industry in key indicators of cascade HPP equipment reliability.

**Reduce water waste:** The reservoir water level at each stage is reasonably controlled according to the cascade reservoir drawdown plan, and the Gezhouba storage capacity is reused under the large peak load regulation of the Three Gorges HPP. Under the premise of ensuring flood control safety, we strived for the operating space of the reservoir water level and carried out optimized dispatch of medium and small floods in a timely manner, to reduce water wastage.

**Increase water conservation and electricity output:** We actively responded to complex situations during the flood season, and implemented measures such as reservoir storage, flood storage dispatch, and optimized operation, thereby achieving significant success in terms of water volume and hydraulic head. In 2020, the water energy utilization rate increased by 4.54%, which led to an increase in power generation by 9.856 TWh.

### Accurate forecast

The technical experts of the Three Gorges cascade regulation carried out technical cooperation with local meteorological bureaus and the upstream hydrological bureau of CWRC to study and evaluate the circulation situation, rain analysis, river basin runoff generation, and flood evolution, thereby achieving complementary technical advantages.

Based on inflow forecasts and water and rain forecasts, we made frequent consultations with CWRC and the power grids, made full use of the end floods under the premise of ensuring flood control safety, and made overall plans for flood control safety, water storage progress, power generation benefits and shipping benefits.

Based on the Hubei Provincial Key Laboratory of Smart Yangtze River and Hydropower Science, we carried out research on watershed meteorological and hydrological smart forecast prediction under a changing environment, and accurately forecast the peak time and peak value in advance.

We comprehensively upgraded the numerical rainfall forecast system and the hydrological forecast system of the river basin and maintained a relatively high level of forecast accuracy and refined dispatch management.

### Meticulous maintenance

We overcame major challenges such as shortened maintenance period caused by the epidemic, the shortage of workers for resumption of work, the difficulty of purchasing production materials, and the difficulty in transshipment. The maintenance plan was optimized in line with the principles of ensuring safe and stable operation of equipment and reducing the risk of power generation and water wastage, and 46 maintenance projects were scientifically adjusted, thereby ensuring the efficient completion of annual repair tasks.

Based on the basin maintenance management model of the Yangtze River Power Maintenance Plant and relying on innovative technologies such as big data and mobile internet, we comprehensively established and promoted the application of basin maintenance support systems (software and hardware) to modularize the maintenance process of power stations in the entire basin and make it more structured and visual. We also further enhanced the core capability of river basin maintenance.



## Research water resources

We introduced high-quality talents in the field of water resource to improve the level of water resource research.

We carried out research on key technologies for risk identification and adaptive control of cascade reservoir operation under a dynamic environment and provided important technical support for the operation of the Xiluodu-Xiangjiaba-Three Gorges cascade HPPs.

Relying on the Hubei Provincial Key Laboratory of Smart Yangtze River and Hydropower Science, we carried out 8 water resource research projects including the Multi-objective Joint Dispatch Technology for Cascade Reservoirs on the Upper Yangtze River project.

### Response to public concerns: Impact of the inflow trend from the upper Yangtze River on power generation

Since 2003, the inflow from the upper reaches of the Yangtze River has generally been decreasing. The natural inflow of the Yangtze River features characteristics of seasonality and periodicity. The output of power plants fluctuates with the seasonal changes in the inflow of the Yangtze River. Power generation is subject to the total inflow and distribution of the inflow. To cope with the impact of potential partial low water events and seasonal cyclical fluctuations, we adopted the following three measures: First, pay close attention to the impact of meteorological and climate changes on hydrological and rainy conditions, strengthen hydrological prototype observations and medium- and long-term hydrological forecasts, and accurately grasp the trend of inflow; second, optimize and improve the reservoir dispatch system and the power generation dispatch system, and unify the joint hydropower dispatch management; third, strengthen technical exchanges and communication with related parties, strive for favorable policy support, and strive for early storage and late fluctuation, reduce unnecessary water wastage, and increase the utilization rate of water energy, to reduce the adverse impact of Yangtze River Basin inflow fluctuation on the operation.

## Green operation

We actively promoted resource conservation and recycling, strictly implemented pollutant emission reduction and compliant disposal of hazardous waste, and comprehensively improved energy conservation and emission reduction benefits.



## Goals:

# 100%

- 100% standard discharge rate of pollutants such as water, air, and noise in the dam area.
- 100% compliant disposal rate of general solid waste and hazardous waste.
- 100% coverage of waste sorting management.
- 100% environmental compliance rate of production units.
- 100% completion rate of Yangtze River Protection special plans.

## Save energy

We organized and carried out National Energy Conservation Publicity Week and National Low-Carbon Day activities, publicized and implemented the *Citizen Eco-Environmental Code of Conduct (Trial)*, and vigorously cultivated employees' awareness of low-carbon and energy saving.

We reasonably controlled the reservoir water level, optimized unit load distribution, and improved water resource utilization efficiency.

We carried out energy-saving lighting reforms, replaced traditional lamps with energy-saving lamps, and reduced plant power consumption.

## Reduce pollutants

We promoted the construction of the sewage pipe network and realized the zero direct discharge of domestic sewage from the four cascade HPPs, eliminating the potential hazards of sewage discharge.

We actively promoted the reuse of sewage and efficiency improvement of sewage treatment plants, so that treated water can reach the reuse standard and be reused for greening of the camp area. In 2020, the cumulative sewage was about 44,000 tons.

We promoted classified management of solid waste, clarified the principles of solid waste classification, disposal methods, and configuration of collection containers, and vigorously promoted classified collection and management of domestic waste.

We carried out the cleanup of floating objects in front of the Gezhouba dam. In 2020, the total amount of cleanup and salvage of floating objects exceeds 10,000 m<sup>3</sup>, all of which were shipped to Shenzhou New Energy Power Co., Ltd. for combustion power generation and harmless disposal.

## Dispose hazardous waste

We strictly implemented the system of declaration and transfer of hazardous waste, which is transferred and disposed of after declaration in accordance with the requirements of standardized management of hazardous waste.

We invited external environmental protection experts to carry out lectures on hazardous waste compliance disposal, covering 160 full-time and part-time environmental protection personnel.

Xiluodu HPP sorted out the types of solid waste in the dam area, set up hazardous waste sorting containers, and recovered 39.599 tons of hazardous waste including waste oil.



## Biodiversity protection

We attach immense importance to the protection of biodiversity, and have systematically identified and effectively controlled the impact of hydropower station operations on surrounding flora and fauna. Since 2011, we have carried out ecological regulation experiments on the natural reproduction of the four major Chinese carps in the middle reaches of the Yangtze River, commissioned professional organizations to implement famous tree relocation or in-situ conservation of old trees and contributed our strength to the environmental protection of the Yangtze River Basin.

### Protect aquatic life

We carried out fish breeding and release, as well as domestication, breeding, and seedling mass production of elongate loach, *Schizothorax prenanti*, *guichenoti*, longfin snout, perch, *Onychostoma angustistomata*, naked loach, *pareuchiloglanis anteanalis*, and other aquatic creatures.

We carried out the ecological regulation experiment of the natural reproduction of fishes producing adhesive eggs in the Three Gorges Reservoir area for the first time, and used dispatch methods to control the drop in the water level of the Three Gorges Reservoir, creating suitable water levels and water conservancy conditions for fishes producing adhesive eggs such as common carp and crucian carps in the reservoir area.

We successfully implemented the Xiluodu, Xiangjiaba, and Three Gorges Reservoir joint ecological regulation experiments, to create hydrological and hydraulic conditions suitable for survival and reproduction of fishes, and promotion of spawning and reproduction of drifting egg-producing fish such as the four major Chinese carps and *Coreius heterodon* in the Sichuan reaches and the lower reaches of Gezhouba, and for protecting fish resources of the Yangtze River, and maintaining the ecological functions of the upper and middle reaches of the Yangtze River.

### Protect terrestrial flora and fauna

We entrusted professional organizations to carry out ex-situ and in-situ protection measures for famous and ancient trees in the project-affected area.

We strengthened ecological protection publicity and education, established an ecological damage penalty system and restricted construction personnel from going outside the construction area.

We supported the investigation of wild plant resources in the Yangtze River Basin and assisted in ex-situ conservation and breeding of endemic and rare plants, and effectively protected 1,181 species of rare plants in the Yangtze River.

We supported the research on artificial propagation technology of Chinese sturgeon and other rare and endemic fishes.

### Ecological dispatch promotes the breeding of adhesive egg spawning fish

On May 5th, 2020, we conducted the first five-day ecological regulation experiment for the natural reproduction of adhesive egg spawning fish in the Three Gorges Reservoir area. The regulation method was used to control the water level drop of the Three Gorges Reservoir and to create appropriate water level and water conservancy conditions suitable for the survival and reproduction of demersal carp and crucian carp in the reservoir area. Compared with the previous ecological regulation that

## Soil and water conservation

We attach great importance to sharing of soil and water conservation and green construction concepts with the power station construction team. In 2020, we pushed the construction team to fully consider the environmental impact before the construction of the power station, carried out environmental impact assessment, and formed the *Environmental Impact Report, Environmental Protection Overall Design Plan, Soil and Water Conservation Plan Report*, etc. to analyze and evaluate the possible impacts. At the same time, we implemented soil and water conservation projects during the construction of the power station and classified the disturbed area into 8 prevention and control zones, including the hydropower hub and diversion project prevention area, the on-site traffic engineering prevention area, and the spoil yard prevention area, for layout and management. Measures such as forests, stone masonry slope protection, concrete retaining walls, and turf planting were implemented to achieve water and soil conservation and minimize the impact of engineering construction on land disturbance.

In 2020, Xiluodu and Xiangjiaba HPPs were selected as National Soil and Water Conservation Ecological Civilization Projects.

promoted the natural reproduction of the four major Chinese carps, the regulation scope of this experiment was changed from the channel under the dam of the Three Gorges Reservoir to the Three Gorges Reservoir area; and the regulation targets include demersal carp and crucian carp. It is the first ecological regulation attempt of the Three Gorges Reservoir to promote the reproduction of this kind of fish.

### Response to public concerns: Effect of the Three Gorges Reservoir on reducing the amount of sediment in the Yangtze River

Based on the characteristics of the hydrology and sedimentation of the Yangtze River, the Three Gorges Project creatively proposed a reservoir operation method of storing clean water and discharging muddy water based on domestic and foreign experience, so that the reservoir can maintain effective storage capacity for a long time. The basic principle is to allow the reservoir to operate at a lower water level during the flood season when the sediment content of the current is high, and the reservoir area maintains a higher flow velocity, so that the sediment is discharged outside the reservoir along with the flood; when the sediment content of the current decreases at the end of the flood season, the reservoir stores water.

Since the impounding of the Three Gorges Reservoir, the amount of sand entering the reservoir has further reduced. There are four main reasons for the reduction of incoming sediment: First, the water conservancy projects in the upper reaches can reduce sediment; second, the upper reaches of the Yangtze River are included in the national key area of soil and water conservation, where, after decades of comprehensive improvement, soil and water conservation has achieved remarkable results, and significant achievements have been achieved in reducing sand; third, climatic factors (reduction of rainfall and rainfall distribution); and fourth, the role of artificial sand mining in rivers. The above four reasons, except for the third one, are all sustainable results.

The monitoring results after the impounding of the Three Gorges Reservoir show that the methods and measures of the Three Gorges Project to solve the sediment problem are correct and effective, and the solution to the sediment problem of the Three Gorges Reservoir is better than expected.

# Social Responsibility

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## Rights and interests guarantee

We strictly abide by the *Labor Law of the People's Republic of China*, *The Law of the People's Republic of China on the Prevention and Control of Occupational Diseases*, and other relevant laws and regulations. We pay attention to protecting the legitimate rights and interests of employees, and strive to build a fair, just, flexible, efficient, harmonious and stable employment environment.

### Democratic management

We strengthened democratic management with the workers' congress playing a primary role, and guided employees to actively participate in the company's business management and reform and development. In 2020, we convened a workers' congress and determined 4 proposals for filing and 12 general comments and suggestions, all of which were implemented as scheduled. All measures were implemented, and the completion rate is 100%.

We carried out the quality assessment of the workers' congress for employee representatives, and distributed 132 questionnaires, 10 of which had a satisfaction rate of more than 90%.

### Diversity and tolerance

We insist on providing equal opportunities for all employees.

We respect each employee's unique personality and different perspectives, regardless of age, gender, sexual orientation, disability, race, nationality, religion, or political opinion, treat them equally, and strive to create an inclusive and mutually beneficial working environment for employees.

### Salary and welfare

We revised and promulgated the *Management Measures for Total Wages of Production Units* to further expand the autonomy of internal income distribution and fully stimulate the initiative and enthusiasm of personnel management and structural optimization.

We adjusted salaries to key positions, key employees, and front-line positions, to achieve a high match between employee contribution and value return. The income level of employees is now more compatible with the company's economic benefits.

We further motivated and guided management staff to work on the front-line positions for poverty alleviation and start their own businesses and formulated supporting incentive measures.

### Occupational health

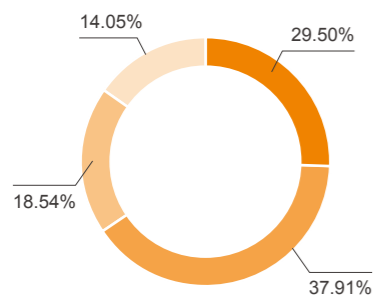
Based on the epidemic prevention and control situation, we identified and added infectious diseases such as COVID-19 as occupational health hazards.

We published the 2020 list of major risks and important environmental factors, identified 5 major risks in occupational health and safety management, formulated targeted control measures, and protected employees' health.

We prepared health service center management plans and formulated annual plans for various employee health management services.

In 2020, we conducted 11 first aid trainings, health consultation lectures, and rehabilitation free clinic activities, which were attended by more than 930 people.





Proportion of employees by age group

- 30 and below
- 31 - 40
- 41 - 50
- Above 51



Proportion of employees by education background

Bachelor's degree and above

80.68%



Proportion of female directors

9%

## Growth and development

We take staff capacity building and technology improvement as the core. We have consistently optimized the youth talent training incentive mechanism and formulated related talent training mechanisms such as *Training Management Measures*, *Expert Selection and Management Measures*, *Employee Rotation Management Implementation Rules*, etc., providing a solid systematic guarantee for talent cultivation. In 2020, more than 1,100 management staff at all levels were promoted.

### Develop the talent team

**Optimize and improve the expert management system.** We selected 43 senior professional and technical personnel as company experts, to give full play to the major role of experts in production technology management and technical skills talent training.

**Comprehensively improve professional and technical capabilities.** We consistently carried out in-depth job skills training, job skills qualification evaluation, and skills competitions, and guided employees to continuously improve their professional and technical skills. We selected and dispatched technical experts to carry out technical consultations in overseas projects such as in Brazil and Pakistan. We encouraged employees to actively participate in international exchanges and work in international academies, to learn internationally advanced technologies, concepts, and practical experience.

**Vigorously cultivate management talents.** We implemented training programs such as job rotation exercises, business management practice trainings, corporate mergers and acquisitions and reorganization trainings, and overseas project management and team building trainings, and increased the training of management talent reserves. We organized employees to participate in high-level English training, online English learning, and Spanish training, to improve employees' overall foreign language proficiency.

### Expand talent development space

**Improve the talent selection system.** We formulated rules and regulations to promote the flow of talents such as *Implementation Opinions on the Promotion and Demotion of Managerial Staff* and *Implementation Plan for Finding, Training, and Selecting Outstanding Young Managers*. We optimized the comprehensive evaluation mechanism for promotion of young employees; the proportion of excellence in the comprehensive evaluation was increased from 30% of total people participating in comprehensive evaluation to 40%, thus increasing promotion opportunities for employees.

**Optimize the management structure.** We strengthened management construction and excellent young management staff reserves, added unit (department) assistant plant director, department director assistant and other positions, trained employees at multiple levels, and selected 21 outstanding young management staff and 15 professional and technical experts to the above positions for on-the-job training.



## Care and love

We have effectively improved the working environment of grassroots employees, cared for and helped employees in need, supported and promoted their physical and mental health, and consistently enhanced their sense of belonging and happiness.

### Happy work

We upgraded the facilities and equipment of some sports venues, and organized sports activities such as long-distance running and walking for all employees on New Year's Day.

In response to the needs of young people, we organized programs including Youth Night Talk, I'M sully and etc. to enrich their lives and professional skills.

We carried out activities such as the Online Art Festival to enrich employees' amateur cultural life. In 2020, a total of 354 works under 8 categories were collected, including calligraphy and painting, photography, vocal music, and instrumental music.

We organized spring and autumn theme tours, summer resort tours, winter special tours, and other activities, to further optimize employees' recuperation plans.



### Employee care

We carried out a wide range of care activities and visits for anti-epidemic employees and invested a total of RMB 485,000 in special union funds to share the company's care and the warmth of the union with frontline workers.

We distributed holiday greeting packages to all union members so that employees can fully enjoy the fruits of the company's rapid development.

We insisted on employee care activities such as 'taking care in spring', 'cooling down in summer', 'student aid in autumn', 'warmth in winter', and 'support during serious illness'—a total of more than RMB 200,000 were distributed in 2020 for such activities.

### Special care

We solved the problem of arranging special nursing space for breastfeeding mothers in the company and strived to create a happy home for employees.

We publicized corporate policies by holding retirees' symposiums, door-to-door visits, etc., to enhance the retirees' sense of identity with socialized management.

## Poverty alleviation

We focus on targeted poverty alleviation and reservoir area assistance, continue to increase capital investment, innovate in methods, and implement precise policies, in our efforts to contribute to the comprehensive building of a moderately prosperous society.

### Targeted poverty alleviation

We consistently increased assistance to help Wushan and Fengjie counties to promote their development. In 2020, we invested a total of RMB 200 million in project funds to implement 28 poverty alleviation projects for the people's livelihood in fields such as medical care, tourism, education, industrial development and infrastructure construction.



### Poverty alleviation in medical care

We invested RMB 63 million to implement the Three Gorges Health Poverty Alleviation Medical Relief Fund project to guarantee hospitalization for poor households in Wushan and Fengjie counties, controlled the self-pay ratio of the poor population to less than 10%, and solved the problem of medical treatment difficulties.

We visited Wushan and Fengjie counties 7 times to carry out on-site investigations and on-site supervision and inspections and held 5 on-site discussions and 2 project promotion meetings with the governments of the two counties, to promote the implementation of targeted poverty alleviation.



### Poverty alleviation in tourism programs

We invested RMB 18.5 million to build the Nanling Ecological Research Base, build Wushan Natural Ecological Research Laboratory, Intangible Cultural Heritage Experience Workshop, implement the Baimei Village brand project, build cultural squares and hiking trails, etc., and promoted Wushan County's tourism economy and ecological related industries development.

We invested RMB 19 million to purchase 12 tourist buses for Fengjie County, built scenic trails and lotus pond tour paths in the parks, built a modern smart picking park, developed rural tourism, implemented the Bailong Village highway environmental improvement project, etc., to upgrade rural tourism.

### Poverty alleviation in education programs

We provided 2,807 training opportunities for grassroots management personnel in Wushan County and Fengjie County and 2,358 training opportunities for technical personnel, to empower them with practical skills.

We invested RMB 15 million to build a new Guandu No. 2 Primary School, which can accommodate 1,620 school-age children, to further optimize the education environment, improve the level of schooling, and completely solve the problem of shortage of primary education resources in Guandu area.

### Poverty alleviation through consumption programs

We actively assisted CTG to introduce free assistance funds of RMB 35.66 million and purchase RMB 10.17 million of agricultural and related byproducts that remained unsold due to COVID-19.

We helped Wushan and Fengjie counties to sell crisp plums and oranges valued at RMB 25.59 million, further increasing the village collective's economic income, and helped poor households to generate and increase income.



## Reservoir area assistance

While implementing hydropower development and creating huge comprehensive benefits, we gave full play to our own advantages to further promote targeted assistance in the reservoir areas of the Three Gorges, Gezhouba, Xiluodu, and Xiangjiaba HPPs. We implemented 20 targeted poverty alleviation projects (with funding of RMB 12.185 million) in the reservoir area, effectively solving the problems for immigrants in the reservoir area, and promoting the overall economic and social development of the reservoir area.

### Xiangjiaba

We implemented the supporting infrastructure construction project for the kiwi fruit planting base in Shuifu City, to expand the overall industry of Manao Village and Xin'an Village in Shuifu City, increasing the income of 5,658 people from 1,454 households in the two villages to the greatest extent.

We installed 76 solar streetlights in 5 schools, including Xin'an Middle School and Shulou Middle School in Pingshan County to ensure the personal safety of students, which benefitted 2,963 students.

We installed 3 sets of water purifiers in 3 schools in Xinshi Town Central School and Xin'an Town Central School in Pingshan County to provide safe and convenient drinking water, for 1,570 students.

### Gezhouba

We aided Niuzhaping Village, Ziyang Village, and Lijiahe Village in Gezhouba resettlement villages, to widen roads and improve infrastructure conditions.

We have consistently assisted the Hope Primary School of Gezhouba HPP for 28 consecutive years to improve the educational environment in Qu Yuan's hometown (Qu Yuan was a Chinese poet and politician who lived during the Warring States period).

### Xiluodu

We invested RMB 500,000 in the construction of the irrigation project in the Xinchun Daheba area of Fotan, Xiluodu Town, to improve the irrigation efficiency of the local navel orange planting base, and further improve the economic income of 314 people from 72 households along the Jinsha River and 113 people from 24 households in the Xiangjiaba reservoir area.

We invested RMB 1 million to help build a science and technology museum on the south campus of Yongshan County Demonstration Primary School, further improved the general education environment of primary schools in Yongshan County and improved students' scientific literacy.

We invested RMB 1.5 million to build 25 houses, 102 square meters of bathrooms, and other infrastructure in the towns and villages of Leibo County to create a beautiful, clean, and comfortable living environment for local villagers.

### Three Gorges

We carried out road widening and road hardening projects from Yangerwan to the village committee of Letianxi Village and constructed the demonstration road project of Sandouping Gardening Village to facilitate the daily travel of the villagers.

Adhering to the concept of policy-based poverty alleviation and further assistance after poverty alleviation, we further consolidated Zigui County's achievements in poverty alleviation through methods such as purchases instead of donations, resource intermediation, and policy announcements.

## Overseas integration

We have deep insight into the importance of cross-cultural integration with our overseas operations and management. Therefore, we have carried out top-level design of cross-cultural integration, built a cross-cultural integration work system and mechanism, enhanced the communication and influence of cross-cultural communication, and promoted mutual recognition and mutual tolerance, thereby forming a joint development force.

### Carry out top-level cross-cultural integration design

To promote cross-cultural integration scientifically and efficiently, we carried out top-level cross-cultural integration design work in Peru. We conducted a questionnaire survey on image perception with 300 Peruvian respondents and conducted interviews and surveys with representatives from 9 types of stakeholders including Peruvian government departments, industry associations, trade unions, media, and consumer associations. In addition, we cooperated with local think tanks in Peru to prepare the *Survey Report on the Image Perception of Chinese Enterprises in Peru*, *Research Report on Cultural Differences between China and Peru*, etc., and formulated targeted cross-cultural management strategies to promote cultural integration.

### Explore multiple three-dimensional communication modes

We carried out international dissemination and culture-related activities to promote Chinese culture. In the operation and management of Peruvian social media, we paid attention to sharing the company's public welfare activities, the COVID-19 prevention efforts, festival celebrations, and ecological and environmental protection efforts with Peruvian stakeholders. The number of fans on the homepage reached 154,700, the total number of homepage likes reached 154,000, and the cumulative number of impressions reached 3.15 million.

### Establish a common emotional link

We planned and recorded the first cross-cultural fusion film *Hello HOLA*, to create a gentle, warm, and powerful emotional resonance, which saw heated discussions in Peru. The film had more than 220,000 views and more than 1,000 likes, which increased the awareness and understanding of the company among Peruvian people. Based on the design concept of Chinese elements + Peruvian elements + Peruvian expression, we carried out China-Peru cross-cultural communication brand logo design and related derivative design work and interpreted the harmonious and friendly connotation of Sino-Peruvian cultural integration with innovative cultural and creative products.



## Community co-building

### Contribute to regional development

We prioritized hiring employees in Hubei, the Three Gorges, and Jinsha River reservoir areas, vigorously supported the employment of local college graduates, and helped the children of resettled people in the reservoir area to find employment.

We prioritized procurement and investment in the local regions to drive local economic development.



### Carry out resettlement of inhabitants

Prior to the construction of HPPs, we carried out a survey on the impact of the resettlement community and prepared the *Detailed Rules for the Investigation of the Physical Indicators of the Resettlement in the Feasibility Study Report Phase of the Hydropower Station*, to fully understand the production and living conditions of the resettled people. We carried out investigation and analysis of the environmental capacity of the resettled people, selected sites for the relocation of market towns and new sites for rural settlements. We planned rural settlements and prepared the *Plan for Resettlement* to ensure that the resettlement can be carried out in an orderly manner.

During the construction of HPPs, based on the actual conditions of the requisitioned area and resettlement area of the hydropower station, we helped the resettled people to move to areas with relatively better living conditions, and provided agricultural resettlement, compound resettlement, old-age security resettlement, annual monetary compensation resettlement, and other production resettlement methods to help resettled people start a new life.

After the construction of HPPs, we increased our efforts to aid the construction of projects around the dam area, drove local immigrants to find employment, helped them solve difficulties related to work and life, and promoted the stability and prosperity of the immigrants.

## Public service

We are committed to social welfare undertakings such as supporting the socially disadvantaged groups and providing educational aid. We regularly carried out public welfare activities such as Happy Smile, Charity Sunshine Class, Women's Love Cleaning Package, and Warm Winter Action. We persisted in making unremitting efforts to solve social problems.

### Medical charity

We have carried out the Happy Smile charity project for 13 consecutive years. As of the end of 2020, the project has successfully helped arrange restorative surgery for more than 600 poor children with cleft lips and palates.



### Educational support

We established special scholarships in 5 universities including Chongqing University, Three Gorges University, and Sichuan University to help more than 1,200 impoverished university students from the reservoir area pursue their education dreams.

We established the CYPC Charity "Sunshine Class", donated a total of RMB 1.25 million, and subsidized 200 extremely poor and excellent students.

We carried out "Warm Winter Action" to send warm care packages to poor students.

### Special care

We launched the "Women's Love Clean Pack" donation activity to guarantee women's health.

### Partner assistance

We actively established one-to-one assistance relationships with 55 poor households in Miaohe Village in Zigui County and Lianhe Village in Pingshan County and established a regular care mechanism to share care packages and supplies.

We assisted in the cultivation and sales of agricultural products, ensured friendly interaction with the poverty assistance target, accurately publicized the poverty alleviation policy, and encouraged the poverty assistance target to overcome difficulties.

In 2020, we conducted a total of 140 household visits and donated about RMB 50,000 as materials and funds to help poor villagers in the reservoir area shake off poverty in high quality.





Contact Address: Focus Place B, 19 Financial  
Street, Xicheng District, Beijing, P. R. China

Post code: 100033

Tel : 010 - 5868 8900

Fax: 010 - 5868 8898

Contact Address: No.1 Jianshe Road ,Yichang, Hubei, P. R. China

Post code: 443002

Email: [cypc@cypc.com.cn](mailto:cypc@cypc.com.cn)

Website: [www.cypc.com.cn](http://www.cypc.com.cn)