

Climate Change, Energy Transition & Transformative Training

Applicant: State Power Investment Corporation (SPIC)

Co-applicant: SPIC College of Smart Energy

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Project Overview

COP28 of the UNFCCC was held in Dubai, UAE, on November 30, 2023. On the same day, the World Meteorological Organization (WMO) declared that 2023 had been the hottest year ever recorded in human history. In the face of climate change's daunting challenges, energy transition and innovative development emerge as crucial avenues towards a solution.

In April 2015, the State Council of China issued the *Opinions on Accelerating Ecological Progress*. In December 2015, COP21 established the objective of capping the global temperature rise at 1.5 degrees Celsius. In the same year, SPIC was established through the merger of China Power Investment Corporation and State Nuclear Power Technology Corporation, commencing a new phase of energy transition and innovative development. It's typical for the initial years of a new era to be characterized by significant shifts and transformations.

Between 2015 and 2023, SPIC implemented two significant changes towards a brighter future.

The first significant change involves a substantial increase in clean energy capacity. In 2018, the State Council introduced a three-year action plan aimed at achieving blue skies. Subsequently, the National Energy Administration (NEA) issued a notice on the construction of wind power and photovoltaic generation in 2019. In response to these directives, SPIC swiftly devised a strategy to accelerate its shift from traditional power sources to low-carbon alternatives. By the close of 2023, SPIC realized a 239 GW capacity with over 70% proportion as clean energy, boasting the world's largest PV capacity and the second-largest wind power capacity.

The second significant change involves a creative initiative to construct SEP projects in over 1,000 cities and towns across China's 31 provinces, municipalities and autonomous regions. Situated in cities, towns, rural areas, industrial parks, and various other settings, these projects integrate distributed renewable energy sources, user-side storage, office buildings, factories, and other adjustable loads to create a flexible resource pool. The mastermind behind them all is the "Dubhe One Integrated Smart Energy Management and Service Platform", a patented intelligent system developed by SPIC that makes accurate load forecast, optimizes resource allocation, and dynamically adjusts supply and demand to ensure efficient and stable grid operation while reducing CO₂ emissions.



Figure 1 SPIC's zero carbon smart science base



Figure 2 World's first floating PV project (Huainan, Anhui Province)

Innovative companies undergoing transition excel in operations, but that's not the primary reason for their success. The most crucial factor contributing to their success is the great importance they attach to talents, especially the continuous nurturing of talents based on their natural attributes.

SPIC possesses traditional strengths in nurturing exceptional professionals in thermal power. Notably, SPIC was granted a national award in 2010 in recognition of its outstanding contribution to the cultivation of skilled talents. Additionally, SPIC's

Desktop Simulation Teaching System for Comprehensive Operation and Management of Thermal Power Companies: Systematical Study and Practical Innovation won the first prize for innovative corporate management in the Chinese power industry in 2013.

Anticipating a future surplus of thermal power personnel and recognizing the talent shortage in the new energy, SEP, and smart plant sectors, SPIC made the decision to initiate a comprehensive training program across the Group. This initiative aimed at the transition of employees from traditional roles to the new sectors. SPIC assessed the training needs of 15 new energy subsidiaries, reviewed available training resources, and developed a training tutorial for new energy personnel along with criteria for skill competitions. This extensive training campaign, titled “Human Resources for New Start”, consists of multiple sessions.

The first initiative in this campaign was tailored for those who either excelled in their previous roles or expressed a desire for change, for transition from traditional thermal power to the offshore wind power sector. The trainees underwent training on various aspects including the development and construction of offshore wind power projects, the structure and performance of offshore wind turbines, as well as safe operation, inspection, and maintenance practices. After they acquired the necessary knowledge and skills, the trainees were deployed to offshore wind power projects in batches. Between 2019 and 2023, SPIC conducted four training sessions utilizing its independently developed and China’s first 3D offshore wind power simulation system, nurturing 160 employees well-qualified for positions in offshore wind power. The report *Talent Cultivation for the Offshore Wind Power Industry Chain: Ecosystem*

Development and Innovative Practices based on the training practice was selected as a representative case of talent cultivation by the China Electricity Council (CEC). Nearly 400 trainees took part in five simulated skill competitions focusing on the operation and maintenance of offshore wind power units, with many of them demonstrating outstanding performance.



Figure 3 SPIC's 3D offshore wind power simulation system



Figure 4 offshore wind power base in Shandong Peninsula

Since 2021, SPIC has conducted approximately 25 field training sessions on SEP across various regions in China, including the northeast, north, east, west, and southwest. These training sessions covered 12 typical scenarios, such as the SEP system, vehicle-to-grid (V2G) technology, optical storage and charging technology, and comprehensive biomass utilization. Additionally, 18 demonstration projects were included, such as the Huzhou SEP, the Da'an wind/PV-to-hydrogen/ammonia project in Jilin, the Yancheng hydro/wind/PV integrated project in Jiangsu, and the thermal/wind/PV integrated base in Jiangxi. These training sessions have resulted in over 3,500 backbone SEP talents. The reports and solutions on new energy development generated during training process have significantly advanced SPIC's SEP development efforts.



Figure 5 Plan of SPIC's Dubhe One



Figure 6 SPIC's SEP in Chongming County, Shanghai

SPIC boasts nearly 70 GW and 50 GW PV and wind power units respectively, most of which are located in desert, gobi and plateau areas. In these vast locations, smart approaches play an increasingly critical role in managing large-scale stations with diverse new energy sources.

In 2023, SPIC rolled out its “smart plant” blueprint. We have integrated new energy power stations sharing similar geographical, economic and cultural features into provincial-level station clusters, and adopted smart solutions to efficient management of equipment operation and maintenance. 100 in-service new energy power stations as demonstration smart plants not only enable safe operation and enhanced efficiency, but also facilitate power trading, thus scoring preliminary success. Besides, smart plants requiring less or no field force liberate employees from isolation as they work in remote areas, and allow them to engage in more important and productive tasks while their physical and mental health are considered seriously.

Smart plants are considered a far-sighted move to see the transition of new energy power stations towards energy conservation and efficiency improvement. This aligns with the vision of the International Energy Agency that energy efficiency is the “first fuel” in clean energy transitions.

In 2024, SPIC arranges training sessions to share good practices and experience

of smart plants with new energy members within the Group. Among these training sessions, the top-rated courses involve drone-based smart PV hot spot detection, smart hydropower facility inspection robots, smart remote operation and maintenance, multi-system information interaction control platform, smart operation of wind farms, and response to spot market transactions.



Figure 7 The first distributed wind farm in Xinjiang (SPIC's 2.8 MW wind power project in Turpan)

Since its inception, the “Human Resources for New Start” training campaign has facilitated the transition of over 10,000 individuals from traditional power projects to new energy, SEP and other similar projects. This campaign has not only addressed the talent shortage in the new energy, and smart energy sectors, but has also preempted potential career crises and significant labor costs that could result from an excess of thermal power personnel. The training campaign empowers middle-aged employees by providing them with access to the booming new energy and power systems that evolutionize the world. In the class, these middle-aged employees not only share their years of experience and wisdom in traditional power sectors, but also explore new insights and skills together with young counterparts. The novel training model allows the two groups to learn from each other for common progress, forge robust friendship, and embrace new network and growth opportunities.

An old Chinese saying goes, “A single flower does not make spring, while one hundred flowers in full blossom bring spring to the garden”. Adhering to the philosophy of “think global, act local”, SPIC has integrated its best practices in China with the actual conditions of host countries where its 10 GW operating units and 2.58 GW units under construction are located. It has financed, constructed, and operated power projects in numerous countries and regions, including those along the Belt and Road, to offer sustainable clean energy and provide talent training for both near and distant friends.

In line with the *Framework Agreement on Cooperation in the Field of Civil Nuclear Energy Project* signed between Chinese and South African governments, SPIC began to provide training to technological and managerial personnel for the South Africa’s newly-built nuclear power projects in 2015. A total of 168 person-time for 16 positions underwent three phases of training, including basics, subjects, and on-the-job training. This program was recognized as one of the Top 10 cases of international talents cultivation in the Chinese power industry in 2018.



Figure 8 South Africa Civil Nuclear Energy Training Program

In 2017, SPIC constructed two 620 MW supercritical units in the BOT model in Vinh Tan, Vietnam, and initiated training for local employees from the project’s outset. 42 Vietnamese college graduates underwent a 70-day comprehensive training program on power unit operation. Encompassing centralized-control operation and power plant

chemistry, the training emphasized field study and simulated operation. Through this shadow training approach, SPIC shared its extensive expertise and lessons learned in thermal power with the local employees.

SPIC well recognizes the significance of global youth leadership in the future energy industry. Since 2017, SPIC has awarded full scholarships to foreign postgraduates specializing in nuclear engineering and new energy subjects in collaboration with the NEA, the Ministry of Education, and other companies. These students have been admitted to top-tier Chinese universities such as Tsinghua University. The aim is to nurture a new generation of competent professionals with solid academic backgrounds and cross-cultural understanding, who can devise innovative solutions to foster positive changes worldwide. To date, SPIC has sponsored nearly 200 postgraduates, with over 20% being females.

International cooperation demands comprehensive competence of talents across various domains, including technology and engineering, product and service, legal, financial, and accounting expertise, as well as an understanding of local culture, history, and customs. With strong presence in 20 countries and regions, SPIC is simultaneously engaged in energy transition and internationalization. It acknowledges the importance of respecting the people and culture of host countries, guiding its actions with a code of conduct for corporate citizenship, and delivering superior energy services-all underpinned by its commitment to a green industrial evolution and clean energy innovation. Talent plays a crucial role in this endeavor. Since 2020, SPIC has identified the most skilled and promising professionals across the Group through recommendations and examinations. It has provided them with off-the-job training in case studies and foreign languages, followed by on-the-job shadow training at

overseas projects, each lasting up to a year. Over the past four years, more than 120 middle and senior level managers have undergone this training, with females comprising 16% of the total participants.

Strengthened interpersonal connections foster prospects for shared development. As SPIC's overseas operational capacity expands, it has embarked on a well-structured program to train and develop local employees. Batches of employees from Europe, Asia, America, and Australia have visited China to engage in face-to-face interactions with their online colleagues from various departments including operations, safety, quality, finance and taxation, and technology innovation. During these interactions, they exchanged perspectives, offered suggestions, and enjoyed activities organized by the Corporate Culture Department, embodying the principles of "harmony without uniformity" and "mutual progress". Recognitions for outstanding employees have instilled in them a strong sense of belonging and ownership.

New inventions and innovations are urgently required to address the climate crisis. Alongside wind and PV power, development of nuclear energy, hydrogen energy, energy storage, and digital and intelligent energy is also a priority of SPIC's efforts to reduce CO₂ emissions. Since 2020, SPIC has initiated a dedicated program to establish a talent pool consisting of leaders in scientific and technological innovation, core talents, and promising young individuals in these fields. Over the past four years, more than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured, including 15% females.

Safety improvement is an ongoing priority. SPIC has devised a specialized action plan for safety training and subsequent competitions targeting key positions such as

primary personnel responsible for safety, safety supervisors, production managers, engineers, shift chiefs, squad leaders, team leaders, as well as new hires or employees newly assigned or transferred. Over the past five years, more than 50 training sessions and competitions focusing on safety, quality, and environmental protection have been conducted, with tens of thousands of front-line employees and contractors participating in.

Innovation is fueled by the relentless pursuit of self-improvement and excellence. Since 2019, SPIC has consecutively organized five employee skill competitions, encompassing 42 categories such as the operation and maintenance of wind power and PV units, production safety in new energy projects, and emergency rescue. 14 contestants were recognized as national technical experts, while 104 were designated as SPIC technical experts. The competition is particularly popular among young employees, who glean the importance of perseverance and continuous enhancement. This platform not only fosters solidarity and friendship but also serves as an educational and inspiring avenue for personal and professional growth.

The advancement of Artificial Intelligence (AI) and data science in recent years has provided insights into how the future will be transformed. SEP and smart plant projects driven by AI and data science in particular are the key to SPIC's energy transition towards energy conservation and efficiency improvement. By the end of 2025, SPIC aims to establish SEP projects in over 1,000 cities and towns across 31 provinces, municipalities and autonomous regions nationwide, and manage the operation and maintenance of over 2,500 in-service new energy stations efficiency by adopting smart means. These ambitions urgently require expertise update of all employees. To meet the online learning needs of employees, in 2018, SPIC initiated

the establishment of an online learning platform. This platform offers courses series such as “new energy”, “SEP” and “smart plant” for employees transitioning to new positions. To date, the platform has 90,000 registered learners who have completed nearly 3.3 million hours of study, and has offered nearly 6,000 courses along with Q&A exercises. In 2023, SPIC’s online learning platform was designated as a nationwide digital competence and skill training base, and received the industry’s best practice award for digitalized learning.

The German philosopher Karl Theodor Jaspers once said, “Education is a tree shaking a tree, a cloud to promote a cloud, a soul to awaken another soul”. Twenty years ago, SPIC initiated the Yingshanhong volunteer program in China’s impoverished mountainous regions. Initially comprising seven members, the program has expanded to more than 30,000 members today. Primarily focused on providing student aid and organizing energy science outreach activities, the program has established 36 Hope Elementary Schools and donated over US\$7 million nationwide. In 2022, SPIC established the TCF School near its Hub Power Station in Pakistan, marking the first school in that impoverished region. SPIC equipped the school with teaching facilities, books, student uniforms, and school buses, while also planting trees nearby. Currently, the school has 212 teachers and students, with 46% being females. “This gift of education will transform the lives of these children”, stated Madam Zoonash Mubashir, president of the TCF School.

Since 2013, SPIC has run the “Irrawaddy Hydropower Scholarship” program dedicated to students in Myitkyina and Chipwi of Myanmar. Up to now, we have sponsored 995 students totally. Among those benefiting from the scholarship program, 73 have been admitted to universities. SPIC holds a steadfast belief in significant

potential of our international cooperation projects, and is committed to actively contributing to the advancement of education in the countries where these projects are implemented.

The SPIC College of Smart Energy, located in Shanghai, is the primary training base which mainly undertakes training initiatives and programs in the aspect of new energy, SEP, international business, scientific and technical innovation, etc. Since the inception of the new energy training initiative, the College has taken a series of energy conservation and emission reduction measures on its campus. This project involves installing distributed PV systems, smart road lamps, solar and air-source heat pump (ASHP) hot water systems, and retrofitting boilers. These measures are expected to reduce energy consumption by approximately 3.8% compared with the previous year. Additionally, the PV project is projected to generate an annual revenue of US\$100,000 for the College.

Talent cultivation is essential for both corporate development and personal growth. We are eager to share our experience in this field with our counterparts worldwide.

1. Clean energy innovation and utilization are crucial pathways for energy transition. For traditional energy companies, talent transformation is a top priority that requires immediate action.

2. Exceptional talents should be driven by ambition. To realize everlasting prosperity and personal dreams, a company should consistently select the right people, tailor their development based on their roles, needs, and level, and empower them to excel in uncharted territories.

3. AI and data science have their presence in the full power station life cycle

covering station design and construction, as well as equipment fabrication, operation and maintenance, thus being deemed as compulsory courses for those engaged in the energy industry.

4. The talents most needed for international cooperation should embody a sense of purpose, possess professional expertise and insight, and demonstrate adaptability in cross-cultural settings. Cultural understanding is not merely advantageous; it is a crucial element of one's strategic capabilities.

5. Ensuring safety is doing good. Providing ongoing safety training for employees is a commitment to continuous improvement. It is crucial to involve contractors in safety training as a means of imparting corporate values and culture effectively.

6. Integrating the company's experience and cases into the training curriculum is the most cost-effective and practical method for enlightening trainees. This approach enables them to analyze complex situations and make informed decisions. Selecting excellent lecturers within the companies is crucial for the success of the training program.

In December 2023, the State Council of China issued guidelines to comprehensively promote the development of a "Beautiful China". These guidelines pledged that by 2035, green production methods and lifestyles will have been widely adopted, the country's ecological environment will have been significantly improved, and the goal of building a "Beautiful China" will have been largely achieved. When one of the most significant energy companies in a country that supports one-fifth of the global population is actively engaged in energy transition and efficiently fostering transformative talent, we are optimistic about the future of the world.

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
STRATEGIES			
Innovativeness			
I	Is the innovative concept come from the project itself or other existing programs?	Chapter II Page 26 Page 27	Yes. 1. The “Human Resources for New Start” training campaign is the first one of this kind in the field of energy transition in Chinese power industry. 2. The 3D offshore wind power simulation system established for the training campaign said above is also the first simulation system of this kind in China.
II	How the innovative policy design encourages financial support and public-private partnership?	Chapter II Page 36	Yes. Energy transition and transformative training have deepened the cooperation between enterprises and universities. SPIC, in collaboration with Shanghai Jiao Tong University, has set up the major of smart energy engineering, developed specialized courses and internship resources for four-year undergraduates.
III	How does the innovative concept catch the trend of future development?	Chapter II Page 29	Yes. The “Human Resources for New Start” training campaign has inspired leading coal Group (China Coal Power), and petroleum giants (PetroChina, and CNOOC) in China to advance energy transition and talent training. These enterprises have invited SPIC to support their talent transformation training programs.
Inspiration			
I	Whether the idea can inspire later/subsequent cases?	Chapter II Page 29	Yes. SPIC’s talent training experience in the campaign has been adopted in the talent transformation training programs of China Coal Power, PetroChina, and CNOOC.
II	What domain has been enlightened by this policy?	Chapter II Page 28 Page 29	1. This policy has been adopted in SPIC’s talent training in energy transition fields including wind power, PV power, SEP, hydrogen energy, energy storage, nuclear energy, green power-based transportation, and green power conversion. 2. Also, the policy is welcomed in the talent transformation training programs of China Coal Power, PetroChina, and CNOOC.
Clearness			
I	Is there any open and transparent channel of public communication?	Chapter IV Page 26 Page 39	Yes. 1. The education and training organization of SPIC runs WeChat official accounts of the “Strategy Research Institute” and the “College of Smart Energy” as a routine channel to publish education and training information. 2. SPIC has hosted or undertaken 6 exchange activities home and abroad, which allows SPIC to communicate with partners and users effectively.

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
II	Is there any difference between this policy and other similar policies?	Chapter II Page 29	Yes. The “Human Resources for New Start” training campaign combines multiple teaching models, such as case studies, simulated exercises, and teaching courses by internal lecturers, contributing to favorable training effect while minimizing training costs.
MEASURES			
Practicability			
I	Has any effective measure for moving ahead been made?	Chapter II Page 26	Yes. The “Human Resources for New Start” training campaign covers all employees of the Group. By allocating a fixed amount of educational fund annually, a dedicated in-house training organ is assigned to advance this campaign.
II	Is there any numerical goal for reference?	Chapter II Page 29 Page 35 Page 36 Page 37	Yes. 1. The training campaign has facilitated the transition of over 10,000 individuals from traditional power projects to new energy and SEP projects. 2. More than 120 middle and senior managers have undergone international talents training programs, with females comprising 16% of the total participants. 3. SPIC has sponsored nearly 200 oversea postgraduates studying in China, with over 20% being females. 4. More than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured, including 15% females. 5. There have been 114 graduates in “smart energy engineering” major in total, with females accounting for 18%. 6. Tens of thousands of frontline employees and contractors have participated in safety training. 7. SPIC has established four pools dedicated to new energy, international cooperation, scientific and technological innovation, and work safety talents respectively.
Replicability			
I	Could the ideas, methods or techniques be applied internationally?	Chapter I Page 29	Yes. In the context of global climate change, transformative training catering to energy transition requires a global endeavor. The training campaign is an applicable reference to traditional energy enterprises that desire to move towards new energy transition.
Cost-effectiveness			
I	Will it be cost-effective	Chapter II	Yes.

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
	to implement?	Page 25 Page 29	<p>1. The online learning platform enables 10,000 learners to study simultaneously, and offers nearly 6,000 courses. It's the most affordable teaching practice thanks to the application of information technology.</p> <p>2. The combination of case studies, and teaching courses by internal lecturers contributes to favorable training effect while minimizing training costs.</p>
II	Is there any measurable reduction of emission or energy use? Please describe the measurement method.	Chapter II Page 38	<p>Yes.</p> <p>1. The total energy consumption of the smart campus reduces by approximately 3.8% compared with the previous year.</p> <p>2. Online and paperless teaching approaches cut carbon dioxide emissions.</p>
Consistency			
I	Are adopted measures consistent with energy policy and strategy?	Chapter I Page 22 Page 23	<p>Yes.</p> <p>1. These measures adopted align with the <i>United Nations Framework Convention on Climate Change (UNFCCC)</i>.</p> <p>2. These measures comply with the <i>Opinions on Accelerating the Construction of Ecological Civilization (China)</i>.</p> <p>3. These measures meet the <i>Notice Concerning the Construction of Wind Power and PV Projects in 2019 (China)</i>.</p>
II	Is there any long-term measure or implementing organization for this project?	Chapter II Page 26	<p>Yes.</p> <p>The “Human Resources for New Start” training campaign is mainly undertaken by College of Smart Energy and Strategy Research Institute, the training organization of SPIC.</p>
PERFORMANCE			
Completeness			
I	Is the achievement scale measurable?	Chapter II Page 29 Page 35 Page 36 Page 37	<p>Yes.</p> <p>1. The training campaign has facilitated the transition of over 10,000 individuals from traditional power projects to new energy and SEP projects.</p> <p>2. More than 120 middle and senior managers have undergone international talents training programs, with females comprising 16% of the total participants.</p> <p>3. SPIC has sponsored nearly 200 oversea postgraduates studying in China, with over 20% being females.</p> <p>4. More than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured, including 15% females.</p> <p>5. There have been 114 graduates in “smart energy engineering” major in total, with females accounting</p>

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
			<p>for 18%.</p> <p>6. Tens of thousands of frontline employees and contractors have participated in safety training.</p> <p>7. SPIC has established four pools dedicated to new energy, international cooperation, scientific and technological innovation, and work safety talents respectively.</p>
II	Will it make a considerable success in project goals?	Chapter II Page 29	<p>Yes.</p> <p>This training campaign nurtures and offers talents to new energy and SEP projects in over 1,000 cities and towns across 31 provinces, municipalities and autonomous regions in China.</p>
	Verifiability		
I	Is there any data presented to support the project?	Chapter II Page 29 Page 35 Page 36 Page 37	<p>Yes.</p> <p>1. The training campaign has facilitated the transition of over 10,000 individuals from traditional power projects to new energy and SEP projects.</p> <p>2. More than 120 middle and senior managers have undergone international talents training programs, with females comprising 16% of the total participants.</p> <p>3. SPIC has sponsored nearly 200 overseas postgraduates studying in China, with over 20% being females.</p> <p>4. More than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured, including 15% females.</p> <p>5. There have been 114 graduates in “smart energy engineering” major in total, with females accounting for 18%.</p> <p>6. Tens of thousands of frontline employees and contractors have participated in safety training.</p> <p>7. SPIC has established four pools dedicated to new energy, international cooperation, scientific and technological innovation, and work safety talents respectively.</p>
II	Is there any supportive measurement or reference for the provided data?	Chapter II Page 26 Page 28 Page 30	<p>Yes.</p> <p>The program was honored as a representative case of talent cultivation by the China Electricity Council (CEC), and one of Top 10 cases of international talents cultivation in the Chinese power industry. Also, it was awarded the first prize of innovative management practices in the Chinese power industry. These honors and awards are the testimonies to the data provided.</p>
	Impact		
I	Will it make a significant change in the field of	Chapter II	<p>Yes.</p> <p>The “Human Resources for New Start” training</p>

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
	energy efficiency and energy saving?	Page 26	campaign is dedicated to reserving and offering talents to energy conservation, emission reduction and low-carbon discharge projects.
II	Will it impact multiple operational areas or just single specific area?	Chapter II Page 29 Page 32 Page 33	Yes. 1. The training campaign cultivates qualified employees for SPIC's new energy and SEP projects across 31 provinces, municipalities and autonomous regions in China. 2. SPIC also provides training to technological and managerial personnel of our international partners in Asia and Africa.
GENDER			
Women Empowerment			
I	Will the project empower women through education, training, skill development, or access to capital and markets?	Chapter II Page 32 Page 36	Yes. 1. More than 120 middle and senior managers have undergone international talents training programs, with females comprising 16% of the total participants. 2. More than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured, including 15% females. 3. There have been 114 graduates in "smart energy engineering" major in total, with females accounting for 18%. 4. Among training management personnel, females account for over 60%.
Equality			
I	Will the project make a positive impact on gender equality or benefit both women and men?	Chapter II Page 32 Page 38	Yes. Both male and female employees have equal access to posts on competition basis, and enjoy equal pay for the same job.
JUST TRANSITION			
Just			
I	Will the project deliver domestically defined equitable benefits, and pursue positive environmental, social, and economic outcomes?	Chapter II Page 26 Page 27 Page 28 Page 32 Page 33	Yes. 1. The transformative training programs have been rolled out at home, and are in progress to cover local employees in countries and regions where our foreign projects operate in a planned manner. 2. The project has promoted the positive development of the environment, society and economy. 2.1 Offshore wind power, SEP, and smart plant feature environmentally-friendly with zero-carbon or low-carbon emissions, energy conservation, and efficiency improvement. The transformative training programs support the development of above sectors and help employees acquire more expertise and skills as well.

No.	Judging criteria for the APEC ESCI awards	Chapter	Highlights
			<p>2.2 The specialized training initiatives dedicated to Chinese middle and senior-level talents for our international cooperation, and local employees in countries/regions where our foreign projects operate contribute to wellbeing improvement, economic growth and cultural understanding.</p> <p>3 Guided by government policies, enterprises and communities enjoy mutual benefits through the cooperation during the construction and operation of new energy projects.</p>
	Inclusive		
I	Will the project create resilient firms, institutions, and communities, and provide support for decent work and workforce development?	Chapter II Page 24 Page 29 Page 33 Page 34 Page 35	<p>Yes.</p> <p>1. Overseas new energy projects advance the education and training of local residents and employees (e.g.: South Africa Civil Nuclear Energy Training Program, prospective operator training for Vinh Tan thermal power unit, Vietnam, Pakistan TCF school, Irrawaddy Hydropower Scholarship in Myanmar).</p> <p>2. The transformative training program have stepped up the expertise and skills of employees in traditional energy sectors, freeing them from possible employment challenges in transition, and driving them to a new career height.</p> <p>3. Building on AI and digital technologies, the online learning platform introduces an effective and easy approach for employees to learn independently and interact wholly.</p>

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I. Background

1. Objective of Capping the Global Temperature Rise

In April 2015, the State Council of China issued the *Opinions on Accelerating the Construction of Ecological Civilization*. In December 2015, COP21 established the objective of capping the global temperature rise at 1.5 degrees Celsius. In the same year, SPIC was established through the merger of China Power Investment Corporation and State Nuclear Power Technology Corporation, commencing a new phase of energy transition and innovative development.

In 2020, President Xi Jinping affirmed China's aim to peak carbon dioxide emissions by 2030 and carbon neutrality by 2060 at the 75th Session of the UN General Assembly.

As stated in the 14th Five-year Plan for Renewable Energy Development issued in 2022, China aims to have non-fossil fuels make up around 25% of primary energy consumption, and increase wind and solar power capacity to 1,200 GW (760 GW in 2022) by 2030.

COP28 of the UNFCCC was held in Dubai, UAE, on November 30, 2023. On the same day, the World Meteorological Organization (WMO) declared that 2023 had been the hottest year ever recorded in human history. In the face of climate change's daunting challenges, energy transition and innovative development emerge as crucial avenues towards a solution.

2. SPIC and its Energy Transition

In May 2015, China Power Investment Corporation and State Nuclear Power Technology Corporation were merged into State Power Investment Corporation (SPIC). Between 2015 and 2023, SPIC implemented two significant changes towards

a brighter future. Since then, we have embarked on the journey to energy transition.

The first significant change involves a substantial increase in clean energy capacity. In 2015 when SPIC was founded, its installed capacity totaled 100 GW, including 40.06% for clean energy. In 2018, the State Council of China introduced a three-year action plan aimed at achieving blue skies. Subsequently, the National Energy Administration (NEA) issued a notice on the construction of wind power and photovoltaic power generation in 2019. In response to these directives, SPIC swiftly devised a strategy to accelerate its shift from traditional power sources to low-carbon alternatives. By April 2024, SPIC has realized a 239 GW capacity with over 70% proportion as clean energy, boasting the world's largest PV capacity and the second-largest wind power capacity.

The second significant change involves extensive efforts to SEP. This is demonstrated by a creative initiative to construct SEP projects in over 1,000 cities and towns across China's 31 provinces, municipalities and autonomous regions. Situated in cities, towns, rural areas, industrial parks, and various other settings, these projects integrate distributed renewable energy sources, user-side storage, office buildings and other adjustable loads to create a flexible resource pool. The mastermind behind them all is the "Dubhe One Integrated Smart Energy Management and Service Platform", a patented intelligent system developed by SPIC that makes accurate load forecast, optimizes resource allocation, and dynamically adjusts supply and demand to ensure efficient and stable grid operation while reducing CO₂ emissions. In November 2023, the *General Rules for Smart Energy Prosumers* prepared by SPIC upon study was published at the national group standard platform (<https://www.ttbz.org.cn/>), which makes it the first SEP-related standard in China.



Figure 1 SPIC's zero carbon smart science base



Figure 2 World's first floating PV project (Huainan, Anhui Province)

II. Training Programs

Innovative companies undergoing transition excel in operations, but that's not the primary reason for their success. The most crucial factor contributing to their success is the great importance they attach to talents, especially the continuous nurturing of talents based on their natural attributes. SPIC recognizes the pivotal driving role of talent cultivation in energy transition. Considering this, the Group has combined online and offline training, simulated exercises, case studies, shadowing experiences, and skill competitions, resulting in an effective training outcome like never before.

1. Online Learning Platform

The advancement of Artificial Intelligence (AI) and data science in recent years has provided insights into how the future will be transformed. AI and data science-driven SEP projects are key to SPIC's energy transition. By the end of 2025, SPIC aims to establish SEP projects in over 1,000 cities and towns across 31 provinces, municipalities and autonomous regions nationwide. Within the changing landscape, employees in traditional energy sectors urgently require the expertise update of new energy. To meet the online learning needs of employees, SPIC established the online learning platform in 2018, and scaled up its functions including

online learning, exam, Q&A, as well as training and expertise management. The platform has released several course series such as SEP, new energy, smart plant, international cooperation and cross-cultural communication.

In 2019, SPIC designed 170 online courses dedicated to new energy power generation for frontline employees. Specifically, these courses involve development and construction of new energy power generation projects, as well as operation and maintenance of PV and wind power generation facilities, and transformer substations. They are used as materials for induction and job-transfer training sessions, and as references to employees in work, receiving 120,000 visits in total.

The years from 2020 to 2022 were significantly impacted by the COVID-19 pandemic. During this period, the online learning platform played an important part in employee training. Almost 1,000 online training sessions were released for the employees at different career growth stages.

The platform now has put nearly 6,000 courses in place for 90,000 registered learners who have completed nearly 3.3 million learning hours. It is expected to receive over 6 million visits, with more than 800,000 learning hours each year. In 2023, SPIC's online learning platform was designated as a national hub for digital competence and skill training, and received the industry's best practice awards for digitalized learning.

2. “Human Resources for New Start” Training Campaign

SPIC has possessed traditional strengths in nurturing professionals in thermal power since 2003. It took the lead among the five major generation companies in certification of central control professionals for thermal power units. Over 20,000 professionals have received training and attained certificates, accounting for up to

97% of all central control employees. In 2010, SPIC was granted a national award in recognition of its outstanding contribution to the cultivation of skilled talents and the enhancement of vocational competence by the Ministry of Human Resources and Social Security. In 2013, SPIC's "Desktop Simulation Teaching System for Comprehensive Operation and Management of Thermal Power Companies: Systematical Study and Practical Innovation" won the first prize for innovative corporate management in the Chinese power industry.



Figure 3 Certificate of the first prize for innovative corporate management in the Chinese power industry

Anticipating a future surplus of thermal power personnel and recognizing the talent shortage in the new energy sector during energy transition, SPIC made the decision to initiate a comprehensive training program across the Group. This initiative aimed at the transition of employees from traditional roles to the new energy sector. SPIC assessed the training needs of 15 new energy subsidiaries, reviewed available training resources, and developed a training tutorial for new energy personnel along with criteria for skill competitions. This extensive training campaign, titled "Human Resources for New Start", was mainly undertaken by College of Smart Energy and Strategy Research Institute, the training organization of SPIC.

1) Offshore Wind Power Training Program

Offshore wind power is considered one of the most potential clean energy

sources in China. It is characterized by short distance from electric power users, stable power generation, and no footprint on land.

In 2017, SPIC set foot in offshore wind power. With five years of development, it ranked the third place in China for its installed capacity of this field. During this period, SPIC constructed the Asia's largest offshore wind farm in the 120km² maritime area offshore Binhai County, Jiangsu Province.

To meet the talent need of the rising offshore wind power sector, SPIC commenced the training program tailored for employees who were either excelled in their previous roles or expressed a desire for transition to the offshore wind power sector. The trainees underwent training on various aspects including the development and construction of offshore wind power projects, the structure and performance of offshore wind turbines, as well as safe operation, inspection, and maintenance practices. After they acquired the necessary knowledge and skills, the trainees were deployed to offshore wind power projects in batches.

3D simulation system is a feature of SPIC's offshore wind power training program. Building on the positive simulation training practice of thermal power units, SPIC developed the simulation approach in new energy training from the outset. In August 2019, the first 3D+VR offshore wind power simulation system in China was established by SPIC. This system allows trainees to conduct equipment inspections, electric operations, and offshore escape drills by wearing virtual simulation devices. It's the most affordable and accessible training model for trainees who are still not eligible (safety permit) to learn on site. Between 2019 and 2023, SPIC conducted four training sessions utilizing its independently developed 3D offshore wind power simulation system, nurturing 160 employees well-qualified for positions in offshore

wind power. Nearly 400 trainees took part in five simulated skill competitions focusing on the operation and maintenance of offshore wind power units, with many of them demonstrating outstanding performance.

The report *Talent Cultivation for the Offshore Wind Power Industry Chain: Ecosystem Development and Innovative Practices* based on the training practice was selected as a representative case of talent cultivation by the China Electricity Council (CEC). The advanced facilities and courses adopted in this program were recognized as one of the first teaching resources in carbon emission peaking and carbon neutrality by the Ministry of Education.

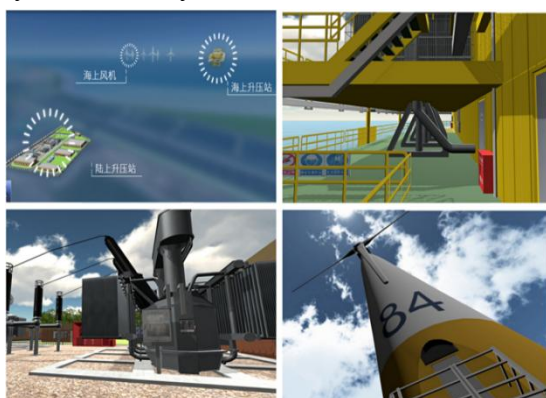


Figure 4 SPIC's 3D offshore wind power simulation system



Figure 5 SPIC's offshore wind power base in Shandong Peninsula

2) SEP Training Program

SPIC has conducted approximately 25 field training sessions on SEP across various regions in China, including the northeast, north, east, west, and southwest. These training sessions covered 12 typical scenarios, such as the SEP system, vehicle-to-grid (V2G) technology, optical storage and charging technology, and comprehensive biomass utilization. Additionally, 18 demonstration projects were included, such as the Huzhou SEP, the Da'an wind/PV-to-hydrogen/ammonia project in Jilin, the Yancheng hydro/wind/PV integrated project in Jiangsu, and the thermal/wind/PV integrated base in Jiangxi. These training sessions have resulted in

over 3,500 backbone SEP talents.

The SEP training program provides trainees with access to expertise and interaction with peers. In the class, trainees from different SEP projects discuss over project development, construction or operation issues, and pool wisdom to figure out solutions. The reports and solutions generated during training process have significantly advanced SPIC’s SEP development efforts in over 1,000 cities and towns across 31 provinces, municipalities and autonomous regions nationwide.



Figure 6 Plan of SPIC’s Dubhe One



Figure 7 SPIC’s SEP in Chongming County, Shanghai

Since its inception, the “Human Resources for New Start” training campaign has facilitated the transition of over 10,000 individuals from traditional power projects to new energy and SEP projects. This campaign has not only addressed the talent shortage in the new energy sector but has also preempted potential career crises and significant labor costs that could arise from an excess of thermal power personnel.

The “Human Resources for New Start” training campaign has inspired leading coal Group (China Coal Power), and petroleum giants (PetroChina, and CNOOC) in China to advance energy transition and talent training. These enterprises have invited SPIC to support their talent transformative training programs. By now, SPIC has undertaken new energy and offshore wind power training sessions for nearly 200 employees of China Coal Power, PetroChina and CNOOC.

3. Smart Plant Training Program

SPIC boasts nearly 70 GW and 50 GW PV and wind power units respectively, most of which are located in desert, gobi and plateau areas. In these vast locations, smart approaches play an increasingly critical role in managing large-scale stations with diverse new energy sources.

In 2023, SPIC rolled out its “smart plant” blueprint. We have integrated new energy power stations sharing similar geographical, economic and cultural features into provincial-level station clusters, and adopted smart solutions to efficient management of equipment operation and maintenance. 100 in-service new energy power stations as demonstration smart plants not only enable safe operation and enhanced efficiency, but also facilitate power trading, thus scoring preliminary success. Besides, smart plants requiring less or no field force liberate employees from isolation as they work in remote areas, and allow them to engage in more important and productive tasks while their physical and mental health and physical safety are considered seriously.

Smart plants are considered a far-sighted move to see the transition of new energy power stations towards energy conservation and efficiency improvement. This aligns with the vision of the International Energy Agency that energy efficiency is the “first fuel” in clean energy transitions.

In 2024, SPIC arranges training sessions to share good practices and experience of smart plants with new energy members within the Group. The training sessions regarding smart plant expertise and beneficial practices of unattended smart construction empower SPIC to construct standardized smart plants. In these training sessions, the top-rated courses involve drone-based smart PV hot spot detection, smart

hydropower facility inspection robots, smart remote operation and maintenance, multi-system information interaction control platform, smart operation of wind farms, and response to spot market transactions.



Figure 8 The first distributed wind farm in Xinjiang (SPIC's 2.8 MW wind power project in Turpan)

SPIC has trained the in-service professionals of thermal power units in the enterprises that are mainly engaged in traditional thermal power, which is an integral part of the training program. The training sessions familiarize the frontline technicians and project managers with CCUS and other energy conservation and carbon emission reduction technologies. This will give rise to waste and carbon emission reduction, and energy efficiency improvement for thermal power units.



Figure 9 Two 1 GW supercritical thermal power units in SPIC's Qinyang plant, with coal consumption being 273g/kWh

4. International Talents Training Program

An old Chinese saying goes, "A single flower does not make spring, while one

hundred flowers in full blossom bring spring to the garden”. Adhering to the philosophy of “think global, act local”, SPIC has financed, constructed, and operated power projects in numerous countries and regions, including those along the Belt and Road, to offer sustainable clean energy and provide talent training for both near and distant friends.

1) Training Program for Middle and Senior Level Managers Dealing with International Cooperation

SPIC has installed capacity in 20 countries. International cooperation demands comprehensive competence of talents across various domains, including product development, engineering and technology, legal, finance, and accounting expertise, as well as an understanding of local culture, history, and customs. Since 2020, SPIC has identified the most skilled and promising professionals within the Group through recommendations and examinations. It has provided them with off-the-job training in case studies and foreign languages, followed by on-the-job shadow training at overseas projects (in Asia, Europe, Australia, etc.), each lasting up to a year.

Senior executives and experts from the famous energy enterprises in Europe, Africa and Australia, and outstanding internal lecturers at home and abroad deliver case-based courses to trainees in terms of law, finance, taxation, corporate governance, smart energy, and cross-cultural communication. Trainees actively share the best practices and experience of international cooperation management through the self-organized online salons in their spare time. Over the past four years, more than 120 middle and senior level managers have undergone the training program of Chinese employees boasting outstanding competence and extensive potential for the international cooperation in other countries and regions, with females comprising

16% of the total participants.

2) Training Program for Overseas Local Talents

Strengthened interpersonal connections foster prospects for shared development. As the overseas operational capacity expands, SPIC has embarked on a well-structured program to train and develop local employees. Batches of employees from Europe, Asia, America, and Australia were invited to China to engage in face-to-face interactions with their Chinese colleagues they used to communicate online or on the phone. It was a good opportunity for them to have a deeper understanding of SPIC and get a closer relationship with colleagues from various departments including operations, safety, quality, finance and taxation, and technology innovation. During these interactions, they exchanged perspectives, offered suggestions, and enjoyed activities organized by the Corporate Culture Department, embodying the principles of “harmony without uniformity” and “mutual progress”. Recognitions for outstanding employees have instilled in them a strong sense of belonging and ownership.

3) South Africa Civil Nuclear Energy Training Program

In line with the *Framework Agreement on Cooperation in the Field of Civil Nuclear Energy Project* signed between Chinese and South African governments, SPIC began to provide training to technological and managerial personnel for the South Africa’s newly-built nuclear power projects in 2015. A total of 168 person-time for 16 positions underwent three phases including basics, subjects, and on-the-job training sessions that were organized in Beijing, Shanghai, and Cape Town in South Africa. This international training program was recognized as one of the Top 10 cases of international talents cultivation in the Chinese power industry in 2018 as it

achieved praising performance in courses, lecturers and organization.



Figure 10 South Africa Civil Nuclear Energy Training Program

4) Vietnam Vinh Tan Thermal Power Prospective Operator Training Program

In 2017, SPIC constructed two 620 MW supercritical units in the BOT model in Vinh Tan, Vietnam, and initiated training for local employees from the project's outset. 42 Vietnamese college graduates underwent a 70-day comprehensive training program on power unit operation. Encompassing centralized-control operation and power plant chemistry, the training emphasized field study and simulated operation. Through this shadow training approach, SPIC shared its extensive expertise and lessons learned in thermal power with the local employees.

5) Non-profit Education Projects

The German philosopher Karl Theodor Jaspers once said, "Education is a tree shaking a tree, a cloud to promote a cloud, a soul awaken another soul". Twenty years ago, SPIC initiated the Yingshanhong volunteer program in China's impoverished mountainous regions. Initially comprising seven members, the program has expanded to include more than 30,000 members today. Primarily focused on providing student aid and organizing energy science outreach activities, the program has established 36 Hope Elementary Schools and donated over US\$7 million nationwide.

In 2022, SPIC established the TCF School near its Hub Power Station in Pakistan, marking the first school in that impoverished region. SPIC equipped the school with teaching facilities, books, student uniforms, and school buses, while also planting trees nearby. Currently, the school has 212 teachers and students, with 46% being females. “This gift of education will transform the lives of these children”, stated Madam Zoonash Mubashir, president of the TCF School.

Since 2013, SPIC has run the “Irrawaddy Hydropower Scholarship” program dedicated to students in Myitkyina and Chipwi of Myanmar. Up to now, we have sponsored 995 students totally. Among those benefiting from the scholarship program, 73 have been admitted to universities. SPIC holds a steadfast belief in significant potential of our international cooperation projects, and is committed to actively contributing to the advancement of education in the countries where these projects are implemented.

Since 2017, SPIC has awarded full scholarships to foreign postgraduates specializing in nuclear engineering and new energy subjects in collaboration with the NEA, the Ministry of Education, and other authorities. These students have been admitted to top-tier Chinese universities such as Tsinghua University. The aim is to nurture a new generation of competent professionals with solid academic backgrounds and extensive skill sets, who can devise innovative solutions to foster positive changes worldwide. To date, SPIC has sponsored nearly 200 postgraduates, with over 20% being females.

5. Scientific and Technological Innovation Training Program

Since 2020, SPIC has initiated a dedicated program to cultivate innovation leaders, core talents, and promising young individuals in the prioritized innovation

fields of waste and carbon emission reduction, following the cascade cultivation principle. From the dimensions of professional competence and achievements, this program has nurtured approximately 60 academically advanced innovation leaders, 1,000 young innovation talents scoring remarkable achievements and boasting enormous potential. At present, SPIC has established an innovation talent pool consisting of 525 members, and organized 4 training sessions dedicated to innovation leaders, and 1 session for distinguished young innovation individuals. More than 180 innovation leaders and 170 outstanding young scientific and technological talents have been nurtured in the program, including 15% females.

Besides, SPIC, in collaboration with Shanghai Jiao Tong University, has set up the major of “smart energy engineering”, developed specialized courses, and provided internship opportunities for four-year undergraduates. This enterprise-university talent cultivation program is well-received among students. At present, there have been 114 graduates in “smart energy engineering” major, with females accounting for 18%.

6. Work Safety Training Program

Safety improvement is an ongoing priority. SPIC has devised a specialized action plan for safety training sessions and subsequent competitions, targeting key positions such as primary personnel responsible for safety, safety supervisors, production managers, engineers, shift chiefs, squad leaders, team leaders, as well as new hires or employees newly assigned or transferred. Pre-job safety training, certification training sessions are necessary for new hires and employees newly assigned or transferred, contractors and special operation personnel. Over the past five years, more than 50 training sessions and skill competitions focusing on work safety have been conducted, with tens of thousands of work safety managerial personnel, frontline employees and

contractors participating in.

7. High-skilled Talents Training Program

Innovation is fueled by the relentless pursuit of self-improvement and excellence. Since 2016, SPIC has been devoted to the training program of high-skilled talents for eight years. This program has involved 11 training sessions by centralized training and practices in posts, and training assessments for employment. Over 500 key technicians have been nurtured in this program. High-skilled talents have accounted for 18.7% from 11.3% in 2015 within the Group. They consist of 9 national technical experts, 45 Chinese Central State-owned enterprise technical experts, 2 leading technical talents, and 109 senior and excellent technicians in power industry. This training program not only provides an additional career development option, but also systematically documents skills from oral teaching and hands-on demonstration in the traditional master-and-apprentice training approach, facilitating the sharing and inheritance of these skills within a wider scope in a longer time frame. This program won the first prize for innovative corporate management in the Chinese power industry in 2017.

8. Smart Campus

The SPIC College of Smart Energy, located in Shanghai, is the primary training base which mainly undertakes training initiatives and programs in the aspect of new energy, offshore wind power, SEP, international business, scientific and technical innovation, etc. Since the inception of the initiative, the College has taken a series of energy conservation and emission reduction measures on its campus. This project involves installing distributed PV systems, smart road lamps, solar and air-source heat pump (ASHP) hot water systems, and retrofitting boilers. These measures are

expected to reduce energy consumption by approximately 3.8% compared with the previous year. Additionally, the PV project on the campus is projected to generate an annual revenue of US\$100,000 for the College. In 2019, the office building was titled as the Excellent Smart Architecture in Shanghai in recognition of its innovative energy management system and energy conservation training platform. And the College was honored as the Golden Pioneer of Energy Efficiency in Shanghai (the highest accolade in energy efficiency rating system within the industry in Shanghai).



Figure 11 Roof PV project on the SPIC's smart campus

III. Deliverables

1. National and Industrial Simulation Training Standards

1) SPIC led the formulation of two national occupational standards in 2018, namely the *Specification on Skill Appraisal of Boiler Equipment Inspectors*, and the *Specification on Skill Appraisal of Fuel Laboratory Technicians in Thermal Power Generation Enterprises*.

2) SPIC drafted the industrial standard in 2021, namely the *Standard on Skill Assessment of Photovoltaic Generation Operation and Maintenance Personnel*.

2. Training Systems, Syllabuses and Courses

1) SPIC compiled and updated training systems for over 20 professional posts in thermal power, hydropower, new energy, and non-power sectors, and established skill

training syllabuses for 79 professional jobs on a rolling basis.

2) SPIC devised the skill training syllabuses for operation and maintenance personnel of wind and PV power facilities, along with skill standards, assessment plans, and test question databases, promoting the industrial standardization.

3) SPIC crafted the post training specification of professionals and technicians throughout the offshore wind power industry chain, and applied the specification in the first training of offshore wind power personnel.

3. Resources of Internal Lecturers, Cases and Courses

SPIC established one pool of the 3,000 internal part-time lecturers, and two libraries encompassing almost 200 case-based courses, and 6,000 online courses about new energy, SEP, smart plant and other sectors respectively.

4. Domestic and International Industrial Exchange Activities

In the past three years, SPIC organized 2 international events (the Workshop on “Jointly Shaping a Resolute Future for Global Energy Transformation” under the Side Event for China Pavilion at COP28, and the Climate Change and Green Development Sub-Forum under the Forum on Global Action for Shared Development), 2 power industry forums (the Yangtze River Delta Energy Low-carbon Development Forum), and 2 training sessions and exhibitions.

5. Awards and Qualifications

1) 1 National Award



Figure 12 National outstanding contributor to the cultivation of skilled talents

2) 15 Industrial Awards

5 industrial awards in the power sector: 4 innovation awards and 1 scientific and technological innovation award in the Chinese power industry;

10 industrial awards in the training sector: 4 awards including the best corporate college, the talent development model, one of the Top 50 corporate colleges, and one of the Top 10 online learning platforms, and 6 best training program awards



Figure 13 Senior Technician Training Mode Exploration and Innovation Practice: The First Prize in 2017 Innovation Awards of the Chinese Power Industry



Figure 14 Smart+ Integrated Application Support Platform: The Third Prize of Informatization in 2017 Innovation Awards of the Chinese Power Industry



Figure 15 Talent Empowerment Management Based on Value Excellency: The Second Prize in 2018 Innovation Awards of the Chinese Power Industry



Figure 16 Desktop Development and Application for Central Enterprise Team Management Based on the Competency Model: The Second Prize of 2019 Scientific and Technological Awards of the Chinese Power Industry



Figure 17 2018-2019 and 2019-2020 China Talent Development Awards: Top 50 Corporate College



Figure 18 2017 and 2018 Best Corporate College in China

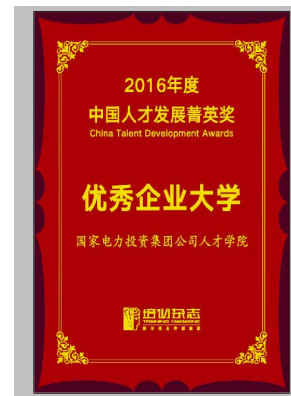


Figure 19 2016 China Talent Development Awards: Outstanding Corporate College



Figure 20 2016 China Talent Development Awards: South Africa Civil Nuclear Energy Training Program



Figure 21 Primary Team Head Training Demonstration Project: The Silver Award of 2019 National Enterprise Learning Program in the 4th National Learning Design Competition (CSTD)



Figure 22 New Hire Training Program: The Best National Enterprise Learning Program in 2017



Figure 23 High-skilled Talents Training Program: The Best National Enterprise Learning Program in 2016

3) 1 National Qualification



Figure 24 Nationwide Digital Competency and Skill Training Base

4) 6 Industrial Qualifications

Including Electrician Professional Competence Evaluation Center, High-skilled Electrician Training Base, Thermal Power Simulation Training Base, “Belt and Road”

International Joint Talent Training Base of Energy and Power Sectors, Thermal Power Equipment Maintenance Training and Guidance Center, and Relay Protection Device Maintenance Training Base of Thermal Power Plants



Figure 25 Technician Professional Competence Evaluation Center in Power Industry



Figure 26 High-skilled Technician Training Base in Power Industry



Figure 27 Thermal Power Simulation Training Base



Figure 28 “Belt and Road” International Joint Talent Training Base of Energy and Power Sectors



Figure 29 Thermal Power Equipment Maintenance Training and Guidance Center



Figure 30 Relay Protection Device Maintenance Training Base of Thermal Power Plants

IV. Contact Information

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