HUAWEI

2021

Huawei Digital Power SUSTAINABILITY REPORT

Contents

About Huawei Digital Power

Founded in June 2021, Huawei Digital Power Technology Co., Ltd. is a wholly-owned subsidiary of Huawei Technology Co. Ltd.and the world's leading provider of digital power products and solutions. We are committed to integrating digital and power electronics technologies, developing clean power, and enable energy digitalization to drive energy revolution for a better, greener future. At present, we have about 6,000 employees, conducting business in more than 170 countries and regions worldwide, serving one third of the global population.

Clean Power Generation

We give full play to the advantages of digital and power electronics technologies, and took the lead in integrating more than 30 years of expertise in digital information technology with the photovoltaic, energy storage, cloud computing and AI. Focusing on power generation, power transmission and distribution, and power consumption, we launch FusionSolar PV and storage solution for five scenarios, namely, smart PV & storage generator, smart string energy storage system, Green C&I Power, Green Residential Power and smart micro-grid solutions. We have accelerated the reduction of the cost of electricity in the whole life cycle of PV power stations, comprehensively improved the support performance of the grid, helped PV to become the main energy, and benefited businesses and people’s lives with green power.

Green ICT Power Infrastructure

Guided by the Target Network, Huawei Digital Power's Site Power Facility helps operators build a green and low-carbon network with full scenario and full life cycle through construction, operation and maintenance. Our Data Center Facility leads the industry to develop into the next generation of data centers with low carbon operation, simplified integration, autonomous driving, safety and reshapes the power supply, cooling, management and architecture. Based on the concept of the next-generation data center, Huawei Digital Power has produced solutions to large data centers, small and medium-sized data centers and non-DC critical power supply to lay a solid foundation for digital transformation.

Mobility Electrification

Huawei Digital Power is committed to accelerating the electrification of the automotive industry and redefining the driving experience and safety of electric vehicles. Cooperate with industry partners, we integrate innovative electic vehicle ePowertrain control, battery safety, fault prediction, and smart charging technologies to build an innovative smart eMobility (DriveONE) solution that integrates convergence and simplicity, security and reliability, excellence experience, and AI cloud intelligence, helping Original Equipment Manufacturers (OEMs) build better new energy vehicles (NEVs).

Integrated Smart Energy

We are committed to the development of low-carbon technology by building low-carbon buildings and parks, giving full play to the synergy of "Cloud-edge-End", and managing "PV-Storage-Cooling-Cloud" in a unified manner. We continue to work with partners to accelerate the green and low-carbon transformation of cities, and building of low-carbon campuses, low-carbon buildings, low-carbon hospitals, low-carbon schools, low-carbon transportation hubs and other low-carbon urban scenarios.

DigiPowerCloud

We are committed to building an energy Internet and digital energy management platform, creating an open DigiPowerCloud to enable customers realize low-carbon, digital and intelligent energy management in home, campus, ICT, county, and city scenarios. It integrates energy generation, grids, loads, and storage and promotes the digitalization of carbon management with ecosystem partners.

Relying on power electronics technology in the ICT field and leading digital technologies such as big data, cloud computing and AI, we are committed to the open ecological strategy of “Inside", and join hands with partners to build energy management cloud ecology, industrial ecology, product ecology and technical ecology, promoting the healthy and prosperous development of social energy ecology.

About This Report

Time Range

As the first independent sustainability report, the time range of this report (the "reporting period") covers the period from June 7, 2021 to December 31, 2021. In order to better show the sustainability performance of Huawei Digital Power prior to its establishment, some contents have been traced back.

Scope of Report

The report covers all entities that have control over or significant influence on our financial and operational policies and measures.

Description of Appellation

For ease of expression and reading, "the company", "we" and "Huawei Digital Power" are used in this report to refer to Huawei Digital Power Technology Co., Ltd.

Principle of Reporting

The report is prepared in accordance with the Global Reporting Initiative (GRI) Standards. The indexes of GRI Standards are listed in the appendix of the report for readers' reference.

Statement of Data Source and Reliability

All the data and cases used in this report come from the statistical reports, relevant documents and public information of Huawei Digital Power. The company assures that there are no false records or misleading statements in the report, and is responsible for the authenticity, accuracy and completeness of its content. Unless otherwise specified, the amount involved in this report are denominated in RMB.

Methods of Acquiring Report

This report will be published in both simplified Chinese and English on September 6, 2022 for readers' reference. If there is any minor discrepancy in the content, the Chinese version shall prevail. To browse online or download this report, please visit: https://digitalpower.huawei.com/en/.

If you have any suggestions or comments on this report, please contact us on Facebook @HuaweiDigitalPower.

Promoting Energy Transition and Building a Bright Future

Development is the eternal theme of human society. The United Nations Sustainable Development Goals 2030 provide a widely recognized road map for common development. Sustainable development has become a global strategy and has been integrated into economic, social, scientific and technological development. The continuous development of digital technology and power electronics technology has accelerated the sustainable development of various enterprises and industries all over the world. Among all challenges to the sustainable development of the society, coping with climate change, promoting energy transformation and achieving green and low-carbon development are the core challenges that draw the most attention.

Huawei Digital Power was founded in 2021. Our vision and mission is to "integrate digital and power electronics technologies, develop clean power, and enable energy digitization to drive energy revolution for a better, greener future." We are willing to cooperate with customers and partners all over the world and all sectors of society to speed up the use of clean energy, accelerate energy digitalization, and promote the continuous innovation and development of green ICT infrastructure, electric transportation and low-carbon buildings.

The future of sustainable development is promising. Huawei Digital Power will seize the opportunities to promote low-carbon and digital development, the interconnected, digital and intelligent development of the whole link of the energy industry, make continuous innovation to provide green, low-carbon, intelligent and efficient products and solutions, create more value for customers, promote low-carbon and sustainable development of the society, and build a better and greener future together with others!

Mr. Hu Houkun

Chairman of Huawei Digital Power

Building A Low-Carbon Society, Grasping the Digital "Pulse" of Carbon Neutrality

Mr. Hou Jinlong

President of Huawei Digital Power

The entire world has reached a consensus on "carbon neutrality", and more than 130 countries and regions around the world have announced their carbon neutrality schedules. Intelligence and low-carbonization are the two deterministic development trends in the next three to four decades. Intelligence requires digital technology, and low-carbonization is inseparable from electronic power technology. The global energy industry is moving from resource-dependent to technology-driven.This is bound to cause extensive and profound economic and social change, which not only means a revolution in energy production and energy consumption, but also an opportunity for the comprehensive upgrade of all walks of life.

The world is entering the era of digital energy, and digital technology makes energy more efficient, intelligent, safer and accessible. In order to better achieve carbon neutrality, the company takes it as its duty to cope with climate change and build a green future. By integrating digital technology with power electronics technology, and information flow with energy flow, and by managing "watts" with "bits", we aim to realize the digital perception, digital control and digital management of the energy system, and promote the low-carbon and efficient development of both energy supply and energy consumption with digital technology. We will make every effort to help all industries continuously reduce energy consumption and accelerate the transformation of energy structure through technological innovation, and make our unique contribution to achieving carbon neutrality, helping to build a new low carbon society that realizes sustainable development.

Huawei Digital Power is committed to empowering energy transformation with technology, and continues to integrate and innovate around clean power generation, green ICT infrastructure, electrified transportation and integrated smart energy. We join hands with customers and partners around the world to build low-carbon homes, low-carbon buildings, low-carbon factories, low-carbon campuses, low-carbon villages and low-carbon cities, ultimately supporting the transition from a low-carbon society to a zero-carbon society.Win-win cooperation is the value that Huawei Digital Energy has always adhered to. According to the "Inside" open cooperation strategy, we adopt a variety of cooperation models, we join hands with partners to build industrial ecology, product ecology and technical ecology, and cooperate together in the smart photovoltaic industry, data center facility, site power facility, and smart eMobility. We make use of digital technologies such as cloud and AI to enable the whole industrial chain of energy production, transmission, transaction and consumption, and jointly promote industrial upgrading.

It requires the joint efforts of all industries to seize the opportunity of "carbon neutrality and emission peak". We look forward to joining hands with the upstream and downstream of the industrial chain, governments, industrial organizations, standards organizations and partners to make concerted efforts in innovation and contribute to the world's energy innovation and sustainable development. Let's work together to promote the low-carbon, electrified and intelligent energy revolution and build a low-carbon and intelligent society.

Technology Enables and Creates Sustainable Development Value

Mr. Zhao Yue

Director of CSD Committee of Huawei Digital Power

A series of sustainable development issues represented by climate change has become a worldwide concern. Creating a green, low-carbon and sustainable society is the responsibility that all enterprises must shoulder and an opportunity they must seize in the current era. An increasing number of enterprises have actively embraced green development and conducted scientific and technological innovation with a responsible attitude, accelerating the world to move towards a new era of sustainable development.

Since its establishment in June 2021, with "Building a better and greener future together" as its development vision, Huawei Digital Power has been committed to integrating digital and power electronics technologies, developing clean power, and enabling energy digitization to drive energy revolution. Over the past year, we have continuously tapped the core values of sustainable development to formulate the "ZERO" sustainable development strategy in the four dimensions of zero-carbon enablement, empower with digital, responsible operation and one-mind growth. In this process, we have become aware that we are able to create more comprehensive value for the society by creating products and solutions with unified economic, environmental and social benefits through our cooperative, open, honest and win-win operation.

We help to build a new power system with new energy as the main body, and integrate digital technologies such as cloud and AI with power electronics technologies to enable the whole industrial chain of energy production, transmission, trading and consumption, and improve the efficiency of energy production and use, thus realizing the goal of "Tech4Energy", and creating a zero-carbon future. Our photovoltaic energy storage system integrates electrochemical technology, power electronics technology, digital technology, heat dissipation technology and AI technology to ensure the efficiency and safety of photovoltaic power generation and energy storage system. In addition to converting natural energy into electricity, we also join hands with customers to discover opportunities to protect ecological value while building photovoltaic power stations, and explore a set of "photovoltaic, ecology and benefiting the people" model so that photovoltaic power generation will be able to create higher social value.

We have built a simple, green, intelligent and secure data center and communication network to reduce energy consumption for computing and connections and allow ICT infrastructure to serve as the green and low-carbon "engine" of the digital economy. Chengdu AI computing center, the largest AI computing center in Southwest China, joined hands with Huawei Digital Power to take the lead in applying the solutions of "prefabricated modularization, steel structure and civil construction", integrating advanced energy-saving products such as high-efficiency integrated PowerPOD, intelligent lithium batteries, AI, etc., the project site adopts rapid stacking of LEGO style, which can effectively shorten the construction period by more than 50% and reduce construction waste by 80%. It is expected to save 40 million kWh of electricity in 10 years, equivalent to reducing CO_2 emission by 19,000 tons or planting 26,000 trees.

Through digitalization, we join hands with partners to accelerate the electrification of transportation and redefine the electric vehicle driving experience and safety. With our industry first power domain full-stack high-voltage platform solution, we enable new energy vehicles to drive for 200 kilometers after a 10-minute charging time, improve the mileage and charging convenience of new energy vehicles, reduce power consumption and accelerate the popularization of green travel.

As long as we work together, we will be able overcome difficulties and achieve successful outcomes. We will continue to adhere to the principle of sustainable development, improve the management of sustainable development, and join hands with all industries to create a sustainable future.

Sustainability Management

Huawei Digital Power is deeply aware that sustainable development is key to the innovation and long-term development of enterprises. By integrating digital technology and power electronics technology, we develop clean energy and digital power, promote green management based on the concept of sustainable development, strive to create value for stakeholders, seek sustainable development and maintain a competitive advantage in the complex and changeable market, and build a green and beautiful future for all walks of life.

Key Awards and Honors

In June, 2021, Huawei green power home solution won the highest award of "Top Ten Highlights-TERA-Award Diamond Award".

In July, 2021, Huawei's green power home products won the "German IF Design Award", which is known as the "Oscar" Award in the industrial design field.

In July, 2021, our DriveONE all-in-one electric drive system won the "German iF Design Award", which is known as the "Oscar" Award in the industrial design field.

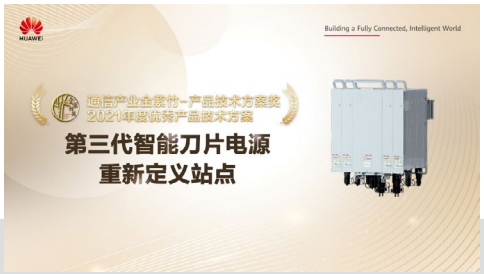
In September 2021, our FusionSolar intelligent photovoltaic solution won the "WWF Climate Solver 2020" award.

In September 2021, Huawei's AI BMS system won the "Global New Energy Vehicle Frontier and Innovation Technology Award" at WNEVC 2021.

In September 2021, at the "Open Data Center Summit" sponsored by the Open Data Center Committee (ODCC), Huawei Digital Power's new generation FusionDC Prefabricated Modular Data Center was rated as-Low-carbon Products and Solutions of Data Center "Zero Carbon Computing Co-construction Plan".

In October 2021, at the awarding dinner of the international event of "DCS Award" of the data center industry, our Smart Converged FusionPower6000 Solution won the award of "Data Centre Power Innovation of the Year"

In December 2021, at the 16th China IDC Industry Annual Ceremony, Huawei Digital Power's new generation Indirect Evaporation Cooling Solution won the "Low Carbon Technology Practice Award"



In December 2021, at the 2021 Communication Industry Conference and the 16th China Communication Technology Annual Conference, the third-generation 12kW intelligent blade power co-designed by China Mobile Design Institute and Huawei Digital Power won the 2021 Excellent Product Technical Scheme Award.

In January 2022, the project of "1 for 6 + Green iSolar Site" carried out by Huawei and Hangzhou Mobile and China Mobile Design Institute in Hangzhou won the honorary title of "Leading application of carbon neutrality and emission peak".

In July 2022, Huawei Digital Power won the "Solar Photovoltaic Leader Enterprise" and "Excellent Country-wide Solutions" in 2021 from the International Energy Network and the National Energy Research Institute.

In July 2022, the "DigiPowerCloud + PV and Storage Integration" Shenzhen International Low-Carbon City Zero-Carbon Venue Project jointly recommended by Huawei Digital Power and China Resources was successfully selected into the "2021 Zero-Carbon Venues" issued by the China Investment Association Energy Investment Professional Committee and Zero-Carbon China Executive Committee.

Sustainability Strategy

Huawei Digital Power has been pursuing the vision of "integrate digital and power electronics technologies, develop clean power, and enable energy digitization to drive energy revolution for a better, greener future". We believe that the value of technology is to make people's lives better. We will continue to pursue the UN SDGs and implement the Corporate Sustainable Development (CSD) for digital power, "ZERO", under the guidance of Huawei's CSD strategy (digital inclusiveness, security and credibility, environmentally-friendly and harmonious ecology), which consists of the four key areas of zero-carbon enablement, empower with digitalization, responsible operation and one-mind growth.

Zero-carbon Enablement

Huawei Digital Power is committed to becoming an "enabler" in global action to address climate change, promoting the utilization of clean energy across the globe with its leading products and solutions, and guiding all parties to build a zero-carbon ecosystem.

- Low carbon product
- Green supply chain
- Carbon emission reduction during operation

Empower with Digitalization

Huawei Digital Power will use its digital power products and solutions to enable all industries with efficient, intelligent, safe and accessible energy.

- Digital technology

Responsible Operation

Huawei Digital Power has deep rooted corporate business ethics in its development genes, with city, responsibility, and compliance as its cornerstones. Huawei Digital Power strengthens sustainable development governance, creates responsible supply chains, and provides customers with reliable products and high-quality services.

- Product and service
- Business ethics
- Responsible procurement
- Sustainable development governance

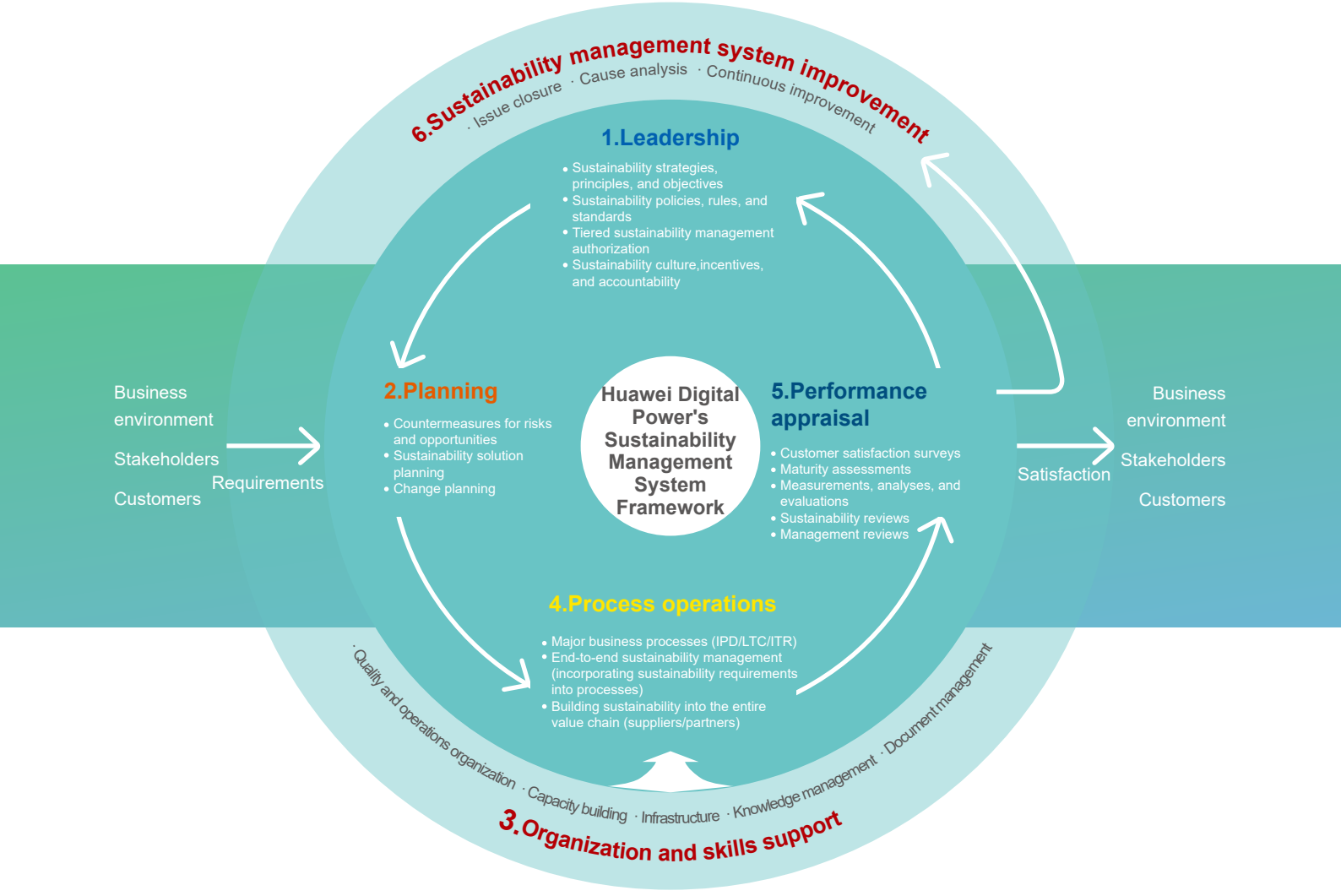
One-mind Growth

Huawei Digital Power works with its partners to achieve common development, encourages the realization of employees' self-worth, works with all parties of the industrial chain to create a business ecology of common prosperity, and makes continuous contribution to social development.

- Employee rights and growth
- Contribution to society
- Commercial ecology construction

Sustainability Management System

As part of our efforts to achieve our strategic sustainability goals, we have considered both internal and external environments and followed ISO 26000 social responsibility standard and the Responsible Business Alliance (RBA) while working on the six key areas of our sustainability management system: leadership, planning, organization and skills support, process operations, performance appraisal, and system improvement. Our goal is to manage our sustainability strategies and goals in a closed loop, enhance digital operations, and increase stakeholder satisfaction.



Huawei Digital Power's Sustainability Management System Framework

To promote the smooth and orderly progress of the company's sustainable development governance, we have established the sustainable development management system. At the company level, we set up the CSD Committee to guide business organizations of the company at all levels to set sustainable development goals based on the four strategies of CSD, and to promote the steady implementation of the goals.

Minister of Quality and Process IT Management Department, serves as the director of our CSD Committee, which consists of more than 10 senior executives from various departments, including human resources (HR), R&D, procurement, manufacturing, supply, legal affairs, marketing, services, and strategy. CSD Committee operates on a quarterly basis, and holds theme meetings as needed to conduct collective discussions and make decisions on issues related to sustainable development. The CSD Working Group is set up under the CSD Committee, which is responsible for supporting the operation of the CSD Committee, the implementation of strategic goals, and the preparation and publication of the CSD annual report.

Working level	Functions
Huawei Digital Power CSD Committee	• Develops corporate-level sustainability strategies, general principles, objectives, guidelines, and policies; direction guiding; and implementation monitoring. • Coordinates the establishment, implementation, and continuous improvement of the sustainability management system; decides on sustainability related matters; and ensures that Huawei's sustainability management complies with relevant laws and regulations, international standards, and customer requirements. • Facilitates sustainability-related communication with key stakeholders such as customers, regulators, and industry organizations. • Drives the resolution of sustainability issues across domains or processes and facilitates end-to-end operation collaboration of CSD business.
Huawei Digital Power CSD Working Group	• Supports CSD Committee operations and reports to the Committee on the work performance. • Provides support for the organization and formulation of CSD work plans for relevant departments, and integrating CSD strategic requirements into departmental business. • Carries out the tasks assigned by the Committee, and provides timely feedback. • Organizes and submits information and prepares the CSD annual report.

Stakeholder Communication

We attach importance to two-way communication with stakeholders. To better communicate with stakeholders, we constantly improve the communication mechanism, actively respond to stakeholders, and continuously improve our management and practice capabilities so as to join hands with all stakeholders for a sustainable future.

Our main stakeholders include: customers, employees, suppliers and partners, governments, NGOs, industry organizations, professional institutions, communities and the public.

Stakeholder	Communication channel	Main concerns
Customers	• Pre-sales communication • After-sales service • Routine communication (such as customer visits) • Satisfaction survey • Marketing exhibition	• Quality products and services • Network security and privacy protection • Climate Change/Carbon Reduction • Circular economy
Employees	• Online communication platform • Communication and work meetings for various departments • Communication meeting for employee representatives • Employee survey, such as organizational environment survey • Employee activity	• Workplace health and safety • Protected legitimate rights and interests of employees • Abundant staff trainings • Career development opportunities for employees
Suppliers and partners	• On-site audit and communication • Supplier conference • Supplier training	• Fair competition • Win-win cooperation • Training empowerment • Establishment of a sustainable cooperative relationship
Governments	• Government policy communication meeting • Public policy consultation • Regular reporting and daily communication • Government sustainable development projects	• Law-abiding and compliance management • Safe and clean production • Leading technological innovation • Driving employment and economic growth
NGOs/industry organizations/ professional institutions	• Industry conferences, forums and working groups • Seminars on standard formulation • Sustainable development cooperation project • Academic research activities	• Good cooperative relations • Open and transparent information exchange and sharing • Common industry development
Communities and public	• Participating in community projects • Carrying out community charity activities • Corporate website and social media interaction	• Environment protection • Social welfare activities • Community construction and development

Material Issues

Material issues are a key input for guiding our sustainable development and determining the key areas for resource input. By analyzing international and domestic social responsibility standards, national and local government policies, and analyzing leading enterprises in social responsibility, we identify and select the material issues that we and our stakeholders are both concerned about.

In terms of the "importance to stakeholders" and "Importance to Huawei Digital Power's business", we analyze and rank these issues to form a material issues matrix, and improve the management of these issues and disclose relevant information in different chapters of this report to respond to the concerns of stakeholders and continuously improve Sustainability development.

Zero-Carbon Enablement

It has become a global consensus to actively respond to climate change and create a zero-carbon future together. We take advantage of the trend to accelerate the zero-carbon activity in the whole value chain with green energy, explore cleaner and more energy-saving innovative products and solutions, and join hands with customers and partners to contribute to the zero-carbon transformation of society. At the other end of the value chain, we implement the carbon reduction concept in our overall supply chain management strategy and work with suppliers to accelerate the decarbonization of the supply chain. In addition, we take the initiative to take concrete actions to reduce energy consumption in manufacturing and operation and enhance renewable energy use to realize low-carbon operation.

Innovative Low-Carbon Products

We take advantage of the low-carbon development trend of clean power, simplified ICT infrastructure, and electrification of transportation, focusing on key products including photovoltaic power generation, data centers, DriveOne, integrated smart energy and DigiPowerCloud. Based on our decades' experience in offering low-carbon energy products and solutions, we join hands with customers and partners to help to achieve the goal of carbon neutrality sooner worldwide.

FusionSolar

Renewable energy generation represented by photovoltaic power supply is the concerted efforts all countries accelerate energy transformation and to tackle climate change. We offer intelligent photovoltaic products and solutions to solve energy challenges in various fields and make contribution to a zero-carbon future of clean power supply.

Photovoltaic power supply for the green railway station in Asia

Since its planning, Xiong'an New District in Hebei Province set itself the goal of becoming a green city. Xiong'an station of Beijing-Xiong'an Intercity Railway, a transportation hub connecting Xiong'an New District and central cities of Beijing-Tianjin-Hebei, is actively exploring a clean and low-carbon mode of renewable energy supply to develop into a modern low-carbon landmark.

On December 25th, 2020, the 6MW rooftop distributed photovoltaic power generation project of Xiong'an station Beijing-Xiong'an Intercity Railway was officially connected to the grid and began to generate power in a modern and intelligent mode. This project adopted our FusionSolar solution and the mode of "self-power generation for self-use, and surplus electricity connected to the grid". After being connected to the grid, this project can generate about 5.8 million kw of green power for Xiong'an High-Speed Railway station every year, which exceeds the total annual power demand of the station by 20%, and reduces CO_2 emissions by about 4,500 tons[1], making it the green railway station in Asia.

6 MW Rooftop Distributed Photovoltaic Power Generation Project at Xiongan Station of Beijing-Xiong Intercity Railway, China

5.8 million kw

this project can generate about 5.8 million kw of green power for Xiong'an High-Speed Railway station every year

20%

which exceeds the total annual power demand of the station by 20%

4,500 tons

reduces CO_2 emissions by about 4,500 tons[1], making it the green railway site in Asia

[1] Calculated by the China Grid Greenhouse Gas Efficiency

Sunseap's 5 MWp OFPV system: a blueprint for promoting renewable energy

Singapore's largest clean energy solutions provider, Sunseap Group, has deployed a 5 MWp offshore floating photovoltaic (OFPV) system in the Straits of Johor, one of the world's largest floating solar farms on sea water. With 13,312 solar panels, 40 inverters, and more than 30,000 floats, this PV system is estimated to produce more than 6 million kWh of energy per year, which is enough to supply electricity for 1,250 four-room public housing apartments on the island and offset an estimated 4,258 tons of CO_2 emissions[2].

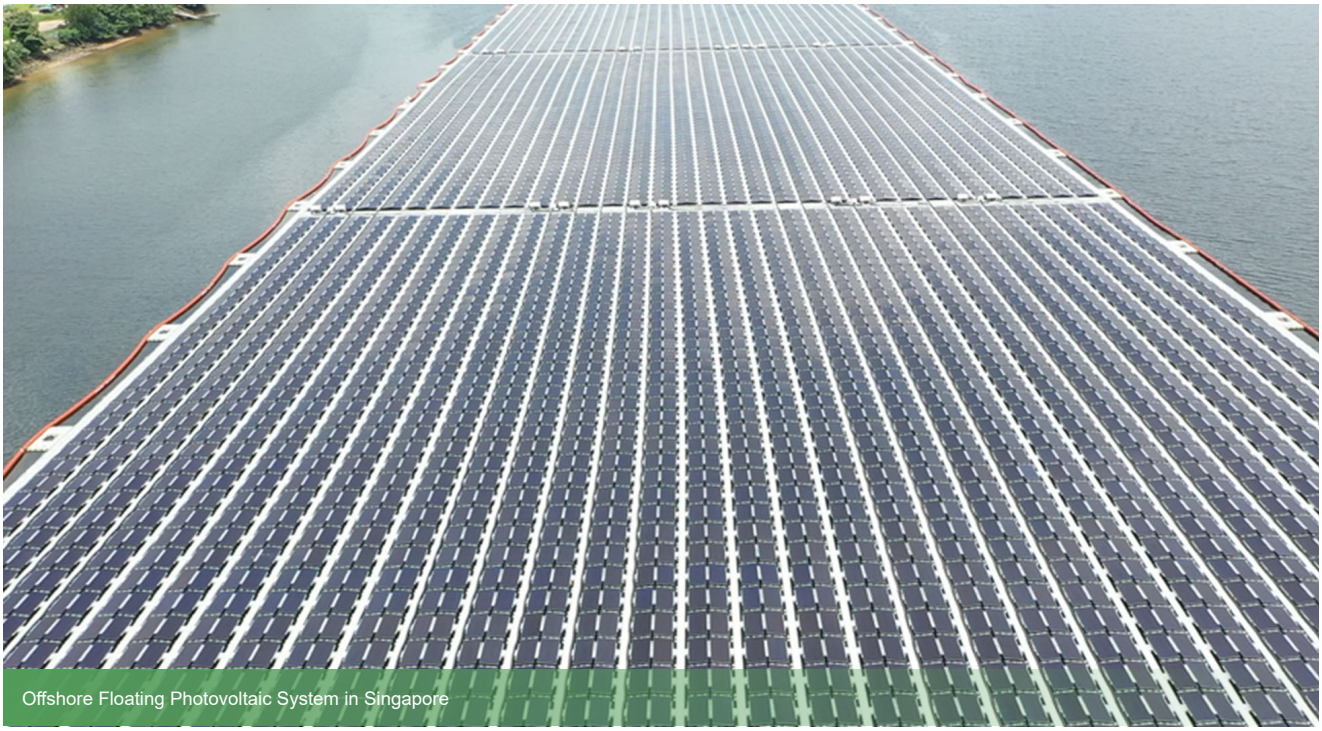
By deploying Huawei Digital Power inverters and utilizing our FusionSolar Smart PV Management System, Sunseap has been able to streamline the operation and maintenance process of the floating platform. The completion of this project and the time it took to fully connect the grid will serve as a blueprint for other countries with dense populations and limited land to roll out similar initiatives.

6 million kW

this PV system is estimated to produce more than 6 million kWh of energy per year

4,258 tons

offset an estimated 4,258 tons of CO_2 emissions[2]



Offshore Floating Photovoltaic System in Singapore

[2] Calculated by the United States Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies Calculator

Distributed roof photovoltaic system accelerating the transformation to clean energy in Dubai and UAE

For a long time, the UAE government has attached great importance to tackling climate change through energy transformation by carrying out large-scale PV projects, and the installed capacity of PV power generation continues to increase. Its first medium-voltage distributed photovoltaic project was carried out by Phanes Group, an international new energy developer in Dubai, which has built over 60 roof distributed PV systems on different kinds of architectures, including warehouses, carports and commercial buildings of DP World.

In the process of project construction, operation and maintenance, our full series intelligent string inverter system met the requirements of different scenarios of the installation of the distributed PV system, and ran stably in harsh environments such as ultra-high temperature and in the desert. With our PV management system, Phanes Group has greatly improved its operation and maintenance efficiency.This 25.8 megawatt roof distributed PV project is one of the largest projects in Shams' Dubai Plan, and the largest distributed PV project in the UAE at present. It can generate about 36,000 MWh of electricity and reduce CO_2 emissions by more than 21,000 tons[3] every year. It has been recognized by the United Nations Small-Scale Solar Energy Project Activities in UAE, and made outstanding contributions to the realization of Dubai's 2030 Integrated Energy Strategy and UAE's 2021 Vision.

36,000 MWh

generate about 36,000 MWh of electricity

21,000 tons

reduce CO_2 emissions by more than 21,000 tons[3] every year

Roof Distributed Photovoltaic Project for DP World in Dubai, UAE

[3] Calculated by the EPA Greenhouse Gas Equivalencies Calculator

Data Center Facility

In the digital age, the increase in power consumption from the exponential growth of data center business has become a topic of global concern and an obstacle to carbon neutrality. We offer low-energy consumption, high-efficiency and extremely simplified energy products and solutions for data centers to reduce their energy consumption and accelerate the low-carbon transformation of the industry.

Utilize natural cooling sources to achieve efficient operation of data center temperature control

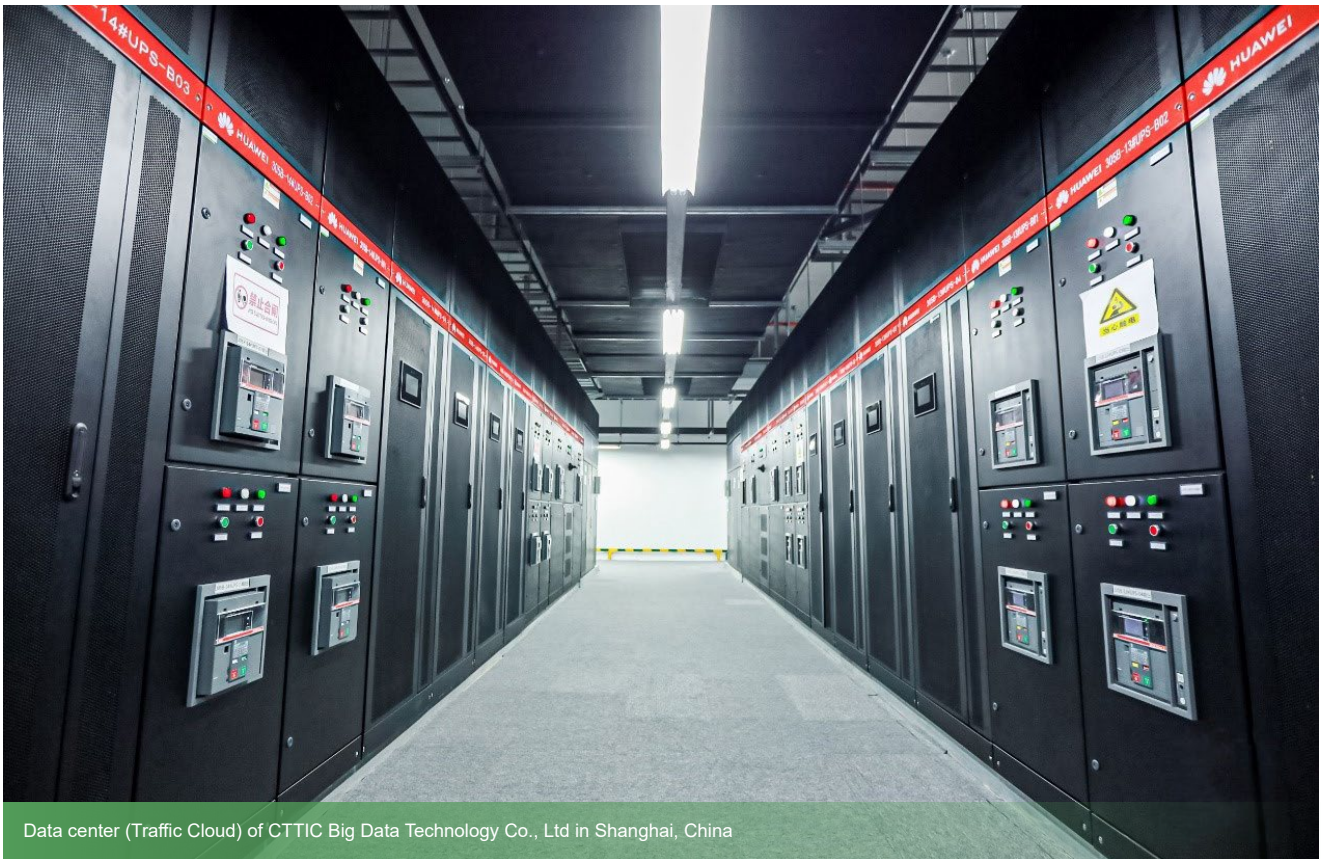
The energy consumption of the cooling system accounts for about 30% of the total energy consumption of a data center. Therefore, reducing the energy consumption of the temperature control system is one of the keys to improving the energy efficiency and reducing PUE of the data center. However, traditional temperature control system consumes a large amount of power and its operation and the maintenance is rather complex,and the manual adjustment method is difficult to achieve the optimal overall energy efficiency of the data center.

In comparison, the indirect evaporative cooling technology makes full use of natural cooling sources such as air to cool the data center. Only one heat exchange can help to shorten refrigeration link, improve refrigeration efficiency, and reduce energy consumption of the refrigeration system. A multinational IDC operator adopted this solution for its data center in Europe. Compared with the refrigeration system using chilled water, this system, whose delivery time is reduced by 50%, can realize year-round natural cooling. Its designed PUE is as low as 1.15, and saves 14 million kWh of power annually, which has truly realized green and efficient refrigeration.

Extremely simplified and efficient powerPOD reduces the loss of power supply link in the data center by 60%

With the high-density and large-scale development of data centers, the power supply system, as the "heart" of the data center, has higher technical requirements and system complexity. Traditional power supply systems use a miscellaneous assortment of devices and have long links, so their power supply efficiency is usually not higher than 94.5%, and their energy loss accounts for about 10% of the total energy consumption of the data center. In addition, they are confronted with challenges such as complicated installation and debugging, and large floor space.

We adopt innovative converged architecture and ultra-efficient and high-density UPS to create extremely simplified and efficient powerPOD to simplify the powerPOD link, increasing the whole-link efficiency to 97.8%. Meanwhile, we optimize the spatial layout of the power supply system and adopt the mode of prefabrication to reduce floor space usage and shorten the installation time. This powerPOD is adopted by the data center (Traffic Cloud) of CTTIC Big Data Technology Co., Ltd (Shanghai), and its power supply efficiency has increased by 3% and the space of the power supply and distribution system achieved savings of 40%. This power module was delivered within a short period of two weeks and low-carbon construction and operation and maintenance have been realized.

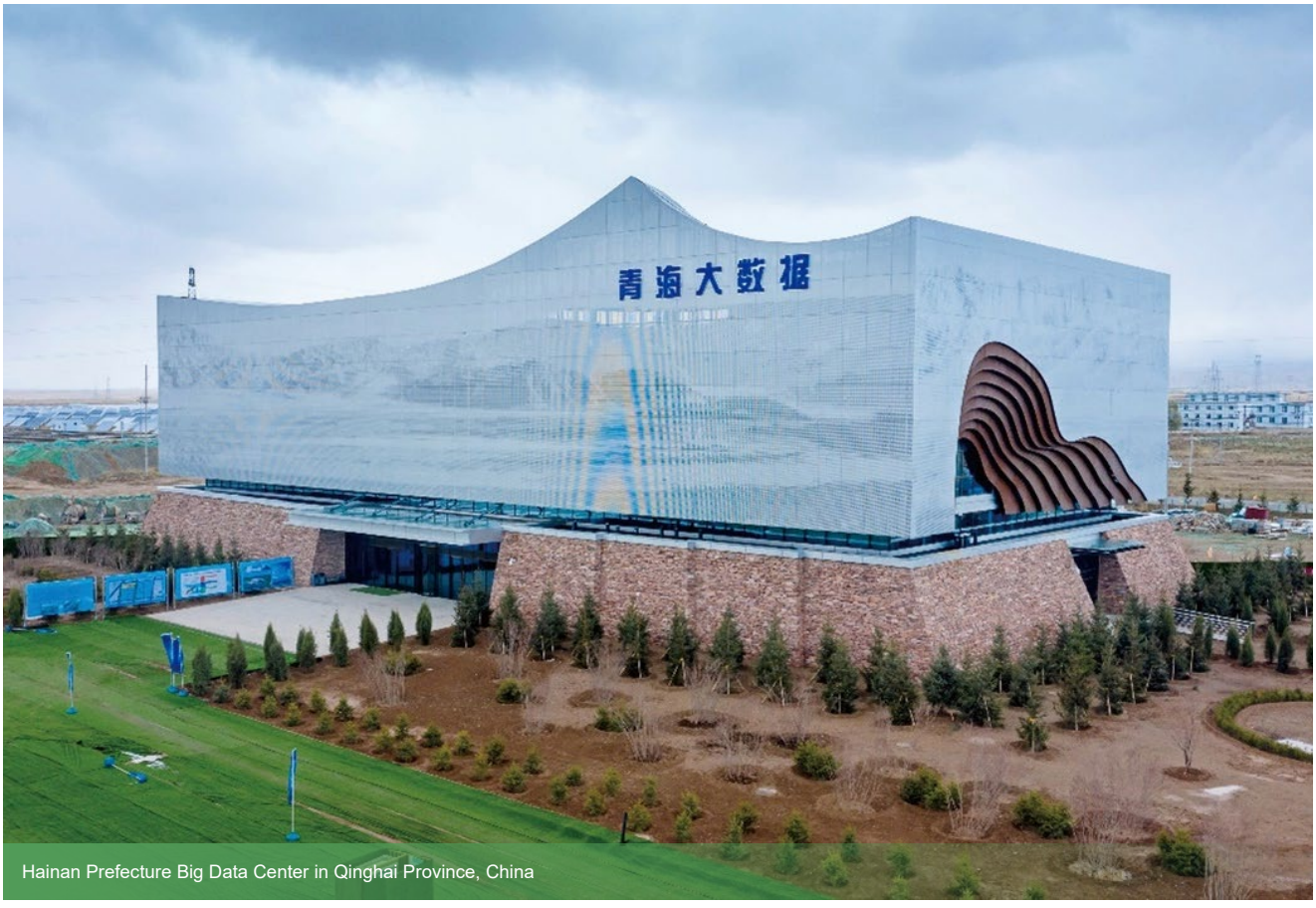


Data center (Traffic Cloud) of CTTIC Big Data Technology Co., Ltd in Shanghai, China

Integrated intelligent micro-module improves system energy efficiency by more than 30%

The era of big data has generated many small and medium data center construction needs. However, due to the lack of professional operation and maintenance management,many small and medium-sized data centers cannot adjust and optimize the operation of their infrastructure in a timely manner, resulting in high PUE and the consumption of a large amount of power. Our intelligent micro-module adopts a wholly modular design, integrates all subsystems including frames, power supply and distribution, refrigeration, wiring and management, supports the flexible deployment of cold and hot channels, and makes use of the iCooling energy efficiency optimization technology for intelligent regulation and control, to provide customers with more energy-saving and intelligent data center solutions.

The first-phase project of Hainan Prefecture Big Data Center in Qinghai Province adopts this intelligent micro-module solution, which integrates advanced energy-saving technologies such as closed cold channel, near-end refrigeration, high-efficiency modular UPS, and AI-enabled energy efficiency improvement. Compared with the traditional data centers, Hainan Prefecture Big Data Center increases its energy efficiency by more than 30%, saves electricity consumption by over 10 million kWh every year and reduces CO_2 emission by nearly 10,000 tons[4].



Hainan Prefecture Big Data Center in Qinghai Province, China

[4] Calculated by the China Grid Greenhouse Gas Efficiency

Green Sites

The rapid development of ICT network has brought convenience to people's lives, and the advanced ICT technology is accelerating carbon emission reduction of various industries. It is undeniable that ICT's own carbon emissions are still growing. To help operators reduce carbon emissions, Huawei Digital Power promotes the construction, operation and maintenance of operators with the goal of building the green site power network based on its deep understanding of the evolution of different network systems and and rich experience in successful practices so as to help operators build a full-scene and life-cycle green and low-carbon network.

"1 for 6", a new benchmark energy solution to low-carbon sites

With the development of communication networks, 5G has brought high-speed network and massive data to us, leading to greater energy demand and carbon emission challenge for communication stations. As a result, communication operators across the globe are actively exploring the low-carbon development of their base sites and a way to transform their existing sites.

Huawei Digital Power iSuperSite solution innovatively adopts the mode of "1 for 6" to collect power supply, equipment and batteries originally placed in 6 cabinets into the same cabinet, so that 80% of the floor space can be saved for the installation of our FusionSolar power generation system, so as to reduce power consumption and carbon emissions. According to calculation, this project in Hangzhou, jointly conducted by Huawei Digital Power, Hangzhou Mobile and China Mobile Design Institute, will reduce electricity consumption by about 58% and carbon emissions by 8 tons[5] every year. It has green and energy-saving benchmark that China Mobile carries out in Zhejiang Province since it proposed the new development model of "Three Energy and Six Green"[6], and has won the honorary title of "Leading Project for Carbon Neutrality and Emission Peak".

Before and after the transformation of "Smart Super Site" in Hangzhou, China

[5] Calculated by the China Grid Greenhouse Gas Efficiency

[6] The development model of "Three Energy and Six Green" has been proposed by China Mobile. "Three Energy" indicates three key areas including saving energy, using clean energy and empowerment. "Six Green" underlines six practice including green network , green energy, green supply chain, green office, green empowerment and green culture.

The 3rd generation of 12kW intelligent blade power supply redefines sites

With the advent of the 5G network era, energy conservation and carbon reduction are confronted with even greater challenges. The third generation of 12kW intelligent blade power supply we produce not only helps enterprises save energy and reduce carbon emissions, but also enables the society to save energy and reduce carbon emissions through our information-based services, which provides support and guarantee for achieving carbon neutrality.

In Beijing, China Mobile transformed the site by using the third generation 12kW intelligent blade power supply and solar energy, transforming its high-energy-consumption computer rooms into simplified and greener pole site infrastructure with a high power of 12kW and an efficiency as high as 97%. Featuring PV integrating, AI-based peak shifting, intelligent peak clipping, intelligent metering, energy slicing and intelligent boosting, the new site does not require manual maintenance, and operates at a lower cost and less energy consumption, which realized green power generation and highly efficient energy use. After the transformation, the average electricity cost of each site is reduced by RMB 12,000 per year, and the carbon emission is reduced by 6 tons[7] per year. Thus, the goal of “using 5G without increasing OPEX" has been achieved[8].

Before and after the transformation of No.9 site of Beihu, Chaoyang District, Beijing, China

On December 29th, at the 2021 Communication Industry Conference and the 16th China Communication Technology Annual Conference, the "2021 Golden Black Bamboo Award for Communication Industry", reputed as the "golden signboard" and the annual wind vane of the communication industry, was released. The third generation 12kW intelligent blade power jointly developed by China Mobile Design Institute and Huawei Digital Power won the “2021 Excellent Product Technical Scheme Award” for its simplified form, environmental friendliness and intelligence. In the future, China Mobile and Huawei Digital Power will make continuous innovations and accelerate the construction of green and low-carbon networks to provide better communication services for the society.

2021 Excellent Product Technical Scheme Award of the 2021 Golden Black Bamboo Award for the Communication Industry

[7] Calculated by the China Grid Greenhouse Gas Efficiency

[8] OPEX refers to the operating costs of telecommunication operators

Green iSolar Site to realize efficient and clean power generation of communication base sites

Driven by the goal of global carbon neutrality, major telecom operators are trying to innovate the traditional single grid power supply mode and actively install PV systems in their base sites, hoping to reduce carbon emissions by utilizing solar energy. However, due to limited available space, revenue affected by blocking of sunlight, and complicated daily operation and maintenance of base sites using traditional PV power generation, their popularization and application are severely limited.

To solve the above problems, Huawei Digital Power's has introduced a simpler, more efficient and more intelligent Green iSolar Site solution, which adopts iPV smart solar panels and CloudLi energy storage that are flexibly deployed in tower sites, cabinet tops, green spaces and roofs with limited areas for system installation, so as to realize intelligent and coordinated power generation, storage, distribution and use. In addition, through digital management, the solution can realize accurate, controllable and efficient operation and maintenance, maximize the use of solar energy to achieve efficient power generation and increase the power generation capacity of the PV system.

At present, Green iSolar Site solution has been adopted by several leading telecom operators at home and abroad. For instance, Guizhou Mobile joined hands with us to transform its base sites for the purpose of "low-carbon, innovation, intelligence and carbon neutrality and emission peak" . After the transformation, a single site can save 5,300 kWh of electricity and reduce carbon emissions by about 4.3 tons[9] every year.

5,300 kWh

a single site can save 5,300 kWh of electricity

4.3 tons

reduce carbon emissions by about 4.3 tons[9] every year

Green iSolar Site

[9] Calculated by the China Grid Greenhouse Gas Efficiency

DriveONE

New energy vehicles have entered the stage of rapid development. Huawei Digital Power integrates more than 30 years of power electronics technology accumulation and leading digital technologies to help OEMs build better NEVs, improve charging infrastructure coverage, and accelerate the evolution of the automotive industry towards green, smart, and low-carbon.

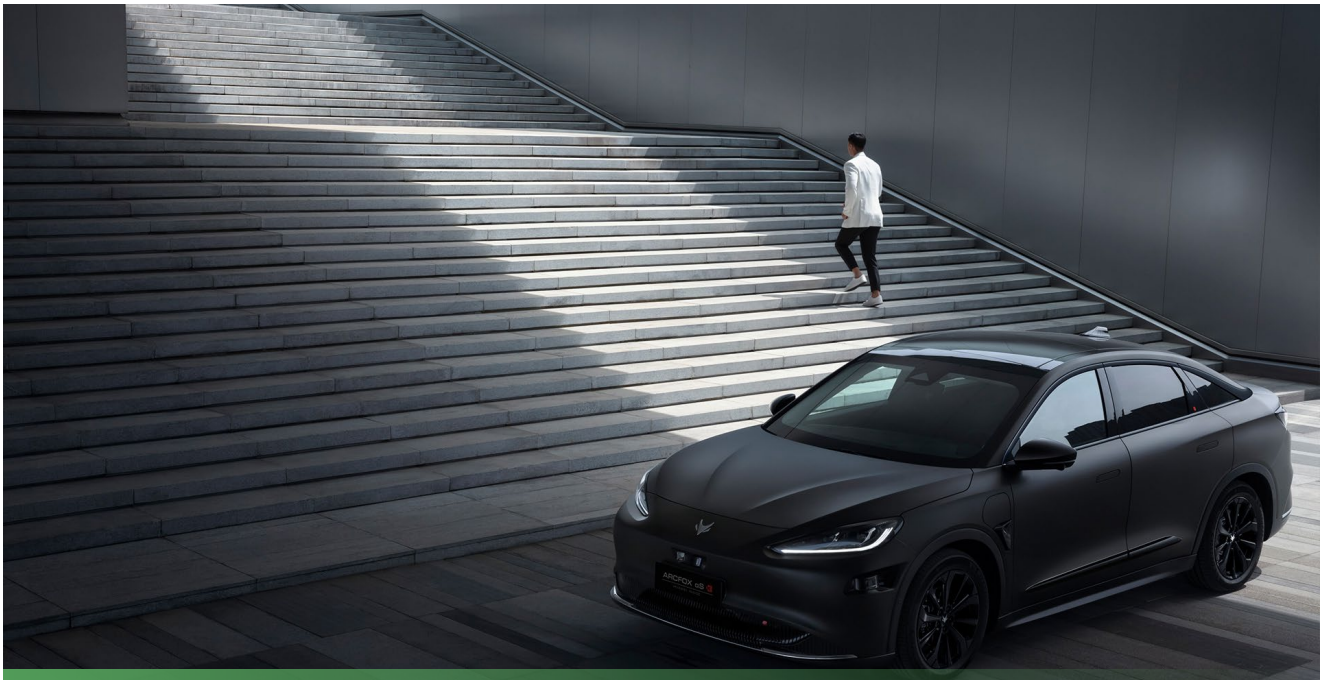
DriveONE helps OEMs solve problems of charging, cruising range, and battery safety, improving user experience

More and more consumers start to buy NEVs with the development of the NEV industry. the continuous innovation and breakthrough of major brands, and improvement of supporting facilities. However, charging duration, cruising range and battery safety are the three major concerns that affect consumers when purchasing NEVs.

In the smart eMobility domain, Huawei Digital Power launched the DriveONE eMobility solution, which is dedicated to redefining the driving experience of electric vehicles in terms of charging, cruising range and battery safety. In terms of charging, we lauched the industry's first high-voltage platform solution. It can charge for 10 minutes and provide a cruising range of 200 km, greatly improving user charging experience.

In terms of cruising range, DriveONE uses high-speed motors, intelligent oil cooling, and AI efficiency optimization technologies to improve ePowertrain efficiency, and uses multi-convergence algorithms to improve available battery capacity, improving the cruising range by 8.5%. In terms of battery safety, it can intelligently identify highly sensitive features of thermal runaway warning 24 hours in advance with the upgrading perspective of AI, ensuring vehicle safety.

Today, Huawei Smart eMobolity has cooperated with 15 OEMs on more than 20 EV/NEV models, accelerating the process of electrification of vehicles and continuously contributing to reducing carbon emissions in the transportation field.



ARCFOX Alpha S (the latest HI Version)

HiCharger DC Charging Module for Green Transport

Electric, intelligent, connected, and shared vehicles represent the future of the global automotive industry. As the electric vehicle market grows, the demand for electric vehicle charging stations is increasing in step. With Huawei Digital Power HiCharger DC charging modules, Enneagon Energy has built a charging station for electric taxis at Shanghai Hongqiao Airport Terminal 2 that is safe, reliable, efficient, and fast.

The 30 kW HiCharger DC Charging Module is the industry's first product that has passed TÜV SÜD's Thresher comprehensive certification, with an annual failure rate of less than 0.2%. Leading the industry by 1%–2% in charging efficiency, HiCharger offers a charging capacity of about 7 million kWh each year, equivalent to reducing CO_2 emissions by about 3,300 tons[10]. While helping customers build more reliable and efficient charging sites, we hope that we can work with them to promote green transport and build a low-carbon society.

700 million kWh

HiCharger offers a charging capacity of about 7 million kWh each year

3,300 tons

equivalent to reducing CO_2 emissions by about 3,300 tons[10]

Charging station for electric taxis at Shanghai Hongqiao Airport in China

[10] Calculated by International Energy Agency emission factor

Integrated Smart Energy

Low-carbon transformation of the city is accelerating. We give full play to the synergy advantage of "cloud-edge-end" to realize the integration of "source-grid-load-storage" and coordination and optimization of multiple systems to offer comprehensive intelligent energy solutions for low-carbon buildings and parks. Besides, we provide consulting services concerning "carbon neutrality and emission peak" and offer comprehensive "light-storage-refrigeration-cloud" solutions to help our customers and partners build low-carbon cities.

Integrated Smart Energy enables low-carbon transformation of AntoHill Base

Huawei Digital Power Antoshan Base adopted the advanced integration schemes such as building photovoltaic integration, AC/DC microgrid architecture, intelligent energy management, scenario-based energy-saving design, advanced energy storage system, and carbon sink in the park for its transformation. Based on its exploration and innovation, Huawei Digital Power's Integrated Smart Energy has developed its capabilities in independent power generation, independent emergency response, independent optimization, independent networking, and independent transaction. By integrating the inverter, optimizer, energy storage device, charging device and other devices of Huawei Digital Power, relying on the innovative architecture of "Dual-carbon Co-Mind + energy router", and through "cloud-edge-end" collaboration, the integrated AI-based collaborative scheduling of "source-grid-load-storage" and digital management of the park's infrastructure have been realized, and energy consumption and carbon emission of the base have become visible, manageable, maintainable and optimizable.

- **Building integrated photovoltaic (BIPV)**

It makes full use of the photovoltaic resources of the facades of urban buildings and has installed BIPV glass curtain walls that cover nearly 30,000m^2, and established 2 MWh electrochemical energy storage system. Based on the smart PV and storage integration solution, more power can be generated in an extremely safe way and intelligent operation and maintenance can be realized.

- **Dual-carbon Co-Mind**

It has realized one-screen display of energy consumption and carbon emission, integrated management of "source-grid-load-storage", and real-time statistics of revenue generated through new energy, allowing for comparison among industries and quantitative assessment of contributions to the society.

- **AI-based Intelligent Energy Saving SaaS Application**

The ITurbo (Intelligent Dispatching of "PV-Storage-Cooling-Charging" System) and iCooling (Intelligent Temperature Control System) are used to collect the data on energy consumption and carbon emission of parks and buildings. Big data and AI technology are used to realize the visual management, dynamic prediction and precise optimization of energy consumption/carbon emission/energy efficiency.

Dual-carbon Co-Mind of AntoHill Base in Shenzhen, China

DigiPowerCloud

At this moment when the “carbon neutrality and emission peak” strategy is being implemented in an all-round way, we are accumulating big data on energy and energy-saving algorithms in various business areas, and work with our ecological partners to build a platform that enables the management of the Internet and digitalized energy, and an open DigiPowerCloud to realize low-carbon, digital and intelligent energy management of homes, parks, ICT, counties and cities.

Build a Nearly Zero-carbon Exhibition Hall in China

Located in Shenzhen's Longgang District, the International Low Carbon City Convention and Exhibition Center has used Huawei Digital Power's distributed FusionSolar solution, energy storage solution, and DigiPowerCloud system to become China's first nearly zero-carbon facility. It is equipped with a 1.1 MW PV system, a 2 MWh energy storage system, and an integrated smart campus management system. Once it is up and running, the center is expected to achieve self-sufficiency, producing 1.27 million kWh of green electricity every year and offsetting about 603 tons[11] in annual carbon emissions. In addition, the center is safe, reliable, and easy to maintain.

IOC screen for the DigiPowerCloud system of the Convention and Exhibition Center of Shenzhen International Low Carbon City in China

1.27 million kWh

producing 1.27 million kWh of green electricity every year

603 tons

offsetting about 603 tons[11] in annual carbon emissions

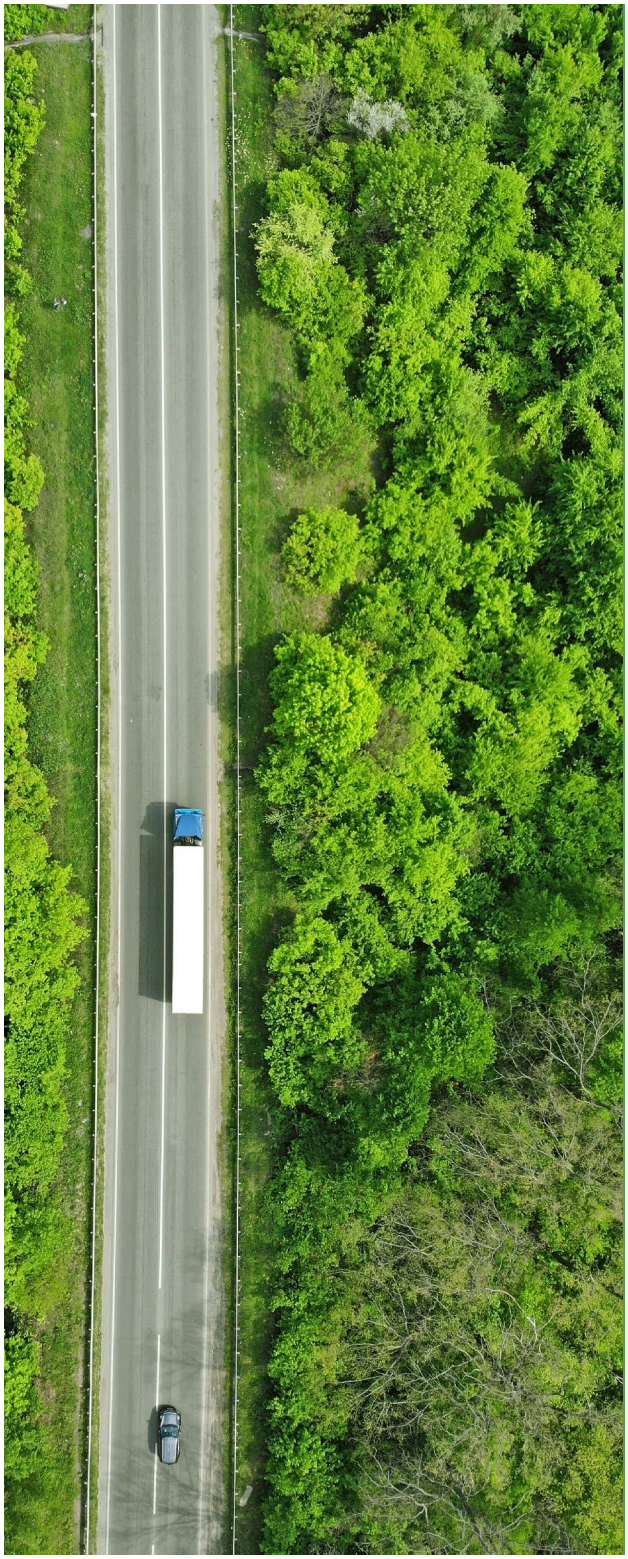
[11] Calculated by International Energy Agency emission factors

Green Supply Chain

As a global enterprise, Huawei Digital Power is fully aware that it should take the responsibility of carbon management in the supply chain, and actively cooperates with suppliers all over the world to build a better and greener future together and reduce scope 3 carbon emissions intensity throughout the whole value chain.

The requirement of low-carbon and environmental-friendly development has been fully integrated into the overall procurement strategy and business process. We attach great importance to suppliers' low-carbon and environmental-friendly performance in supplier certification, selection, audit, performance management and material selection, and actively cooperate with suppliers to assist them with examining, calculating and evaluating their carbon emission status, as well as setting and fulfilling their carbon emission reduction targets. 2021 we have helped the top 25 suppliers in terms of procurement amount count the amount of carbon emissions, set carbon emission reduction targets, formulate carbon emission reduction plans and carry out carbon emission reduction projects.

We are well aware that obtaining data on carbon emission is difficult yet key to low-carbon management of the supply chain. After analyzing the characteristics of carbon emissions of the value chain, we plan to conduct a comprehensive carbon footprint assessment for purchased materials and products and continuously help key suppliers examine, calculate and report carbon emission information to improve the accuracy of data on scope 3 carbon emissions. In the future, we will gradually incorporate the carbon footprint into the regular evaluation and assessment index system of suppliers, and encourage suppliers to continue to improve through procurement business, so as to create a competitive green supply chain.



Carbon Emission Reduction in Operation

Besides promoting industry emission reduction through our innovative products and solutions, and promoting value chain emission reduction through close cooperation with our suppliers, we actively build green low-carbon parks based on our concept of low-carbon operation, carry out energy-saving transformation through technology, continuously improve energy efficiency and manage carbon emissions in operation.

The core pilot project of carbon neutrality and emission peak of Futian District, Huawei Digital Power's AntoHill Base is located in Futian District, Shenzhen City, Guangdong Province, and covers an area of 18,000 square meters, in which there are office buildings, training centers, laboratories, exhibition halls, staff dormitories, canteens and other buildings. All the three buildings of the base adopt the advanced Building Integrated PV technology, intelligent energy management, scene-based energy-saving design, advanced energy storage system and other integration schemes to build the base into a PEDF zero carbon base and realize AI-based coordinated scheduling and digital management of the "source-grid-load-storage".

This base was entered into operation in July, 2022. Simulation analysis shows that by building photovoltaic system on the building surface, the base can generate 1.5 million kWh of green electricity every year, which is equivalent to reducing CO_2 emissions by about 871.5 tons[12]. Besides, through the efficient display of energy consumption and carbon emission on one screen, the buildings can be managed, maintained and optimized, and the annual power consumption of the base is reduced by more than 50%, while the comprehensive energy saving rate is more than 60%.

[12] Calculated by the average factor of China Grid, 0.5810kg CO_2/kWh

In 2021, we actively carried out technological transformation, and took a number of energy-saving and carbon-reducing actions, such as the introduction of recycled packaging materials, the use of new processes, the transformation of materials, technological updates, and energy-saving lighting.

A variety of recyclable packaging materials are used to reduce resource consumption

- **Plastic boarding box**

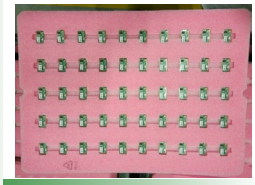
The plastic boarding boxes are used to replace the original carton, which can be used for 3 years, and can be recycled and reused after being scrapped, reducing the use of cartons by 75,000 pieces/year.


Before


After

- **Plastic tray**

The rigid plastic tray is used to replace the original foam tray, which can be used for 3 years, reducing the use of foam tray by about 25,000 pieces/ year.


Before


After

- **Plywood /PE material**

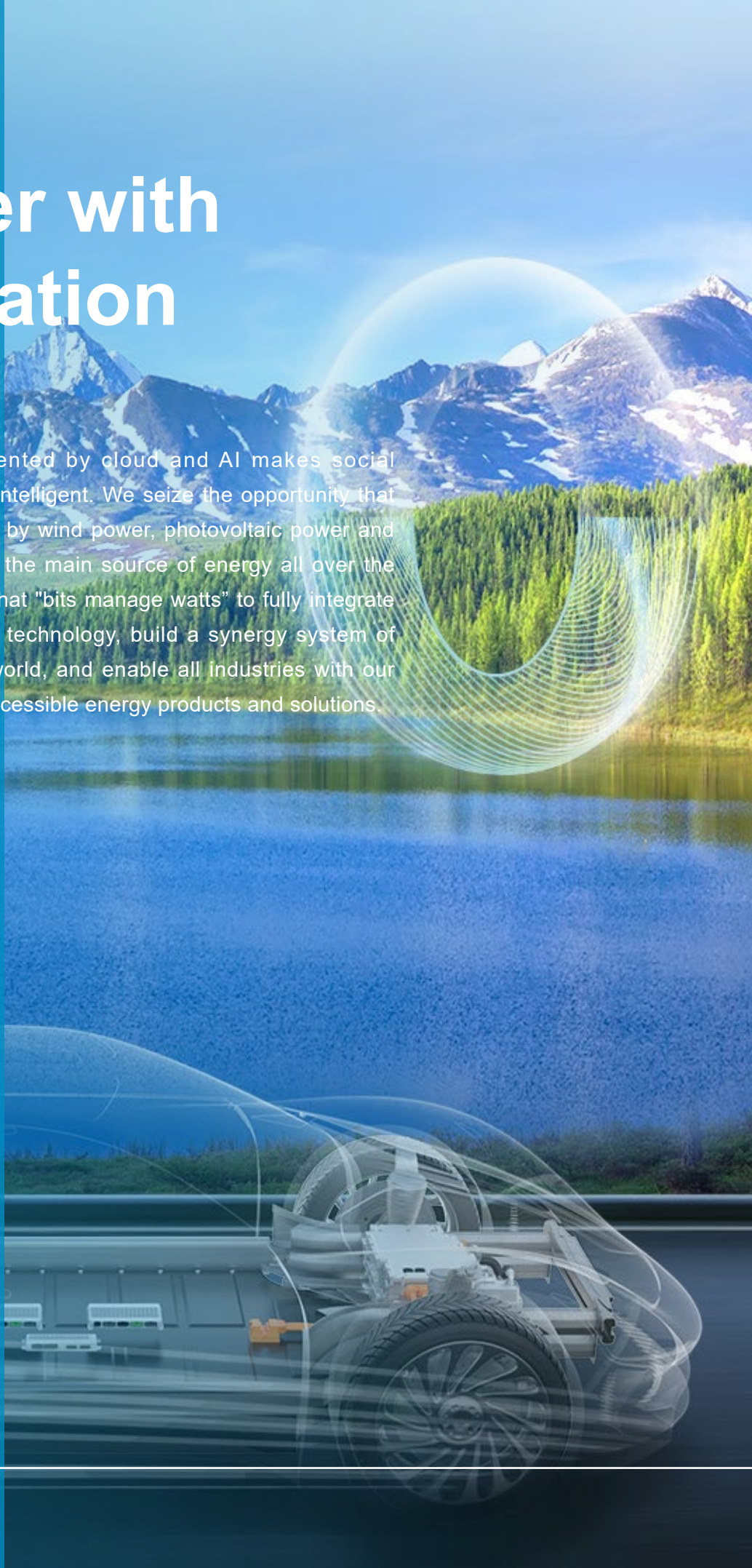
Plywood /PE material is used to replace traditional cartons, which can be used 6 times, and the PE material can be recycled and reused after being scrapped, reducing the consumption of wood by about 83%.


Before


After

Empower with Digitalization

Digital technologies represented by cloud and AI makes social development faster and more intelligent. We seize the opportunity that renewable energy represented by wind power, photovoltaic power and hydropower will soon become the main source of energy all over the world, adhere to the principle that "bits manage watts" to fully integrate digital technology and energy technology, build a synergy system of the digital world and energy world, and enable all industries with our efficient, intelligent, safe and accessible energy products and solutions.



Improving Efficiency

Digital technology plays a key role in energy generation, transmission, distribution and use. We use digital technologies such as big data, cloud and AI to enable energy production, transmission, trading and consumption, realize the digitalization of energy and resources, and improve the efficiency of energy production and use.

Optimizing Energy Production

Compared with the traditional fossil fuel power generation process, new energy power generation such as wind power and photovoltaic power rely more on favorable environment conditions. For example, unpredictable weather conditions will greatly affect the efficiency of new energy power generation. Therefore, we integrate digital technology and power electronics technology and adopt intelligent tracking algorithms to make photovoltaic modules, stands and inverters work more collaboratively to fully optimize the latent potentialities of photovoltaic power generation.

Intelligent control over algorithm greatly enhances power generation

Yuchai PV Power Station in Mengxu Town, Guiping City, Guangxi Province is a demonstration project of "Integration of Three Industries Relying on New Energy" introduced by Guiping City in 2017. The project is carried out in four phases. The first phase of the project was completed and connected to the grid in 2017, with a total installed capacity of 200MW.

Guiping City is located in a Category-III resource area with low irradiance, uneven terrain and frequent rainy days in winter. Therefore, YuchaiPV Power Station chose high-standard equipment including tracking stands, efficient components and intelligent string inverter for the construction. However, the traditional tracking system mainly adopts astronomical algorithm and fails to consider the influence of terrain conditions, morning and evening periods and weather. Problems in angle control led to the loss of power generation in some periods and under special weather conditions, so electric energy production capacity of the power station has always been unsatisfactory.

Knowing the situation of the power station, we used SDS (Smart Tracking Stand Control Algorithm) to help it realize the linkage and closed-loop control of the inverter and the tracking stand control system, and ensure that the power station system consistently runs in the state of maximum light receiving capacity and optimal power output. Without the use of additional sensing equipment and the dependence on labor force and experience, we use AI technology to automatically sense blocking and weather changes, and optimize and control the tracking angle.

From December 2020 to May 2021, comparative verification data show that electric energy production capacity of the experimental sub-array has increased by 1.69%, which is an obvious improvement.

Photovoltaic Power station in Yuchai, China

Improving Power Use Efficiency

In power allocation and use, the complex changes of end-use scenarios directly affect the efficiency of power use. After accurately identifying users' pain points, we develop an intelligent efficiency optimization system, analyze the operating environment of the data center through AI technology, and accurately configure the optimal operating parameters of the temperature control system, which significantly improves the energy efficiency level of the data center.

iCooling, driving data centers to smart cooling

In data centers, cooling systems consume a huge amount of electricity, second only to service applications, so reducing the power consumption of cooling systems is key to making data centers more energy efficient.

Traditional cooling systems were mostly manually adjusted. However, as data center loads and their environments constantly change, manual adjustment can no longer keep up with the rapidly changing heat load. To prevent energy from being wasted, cooling systems need smart brains that can intelligently adjust and deliver cooling as necessary.Huawei Digital Power iCooling solution, which integrates big data and AI, enables data centers to learn to save power and automatically optimize their power efficiency, making on-demand, intelligent cooling a reality. The solution reduces data centers' PUE by 8% to 15%.

This solution is deployed at Huawei's cloud data center in Langfang, where it delivers savings of 33.36 million kWh of electricity every year, or 15,846 tons[13] of CO_2 emissions, and savings of RMB23.55 million in electricity expenses every year (RMB 0.75/kWh).

33.36 million kWh

where it delivers savings of 33.36 million kWh of electricity every year

15.846 tons

or 15,846 tons[13] of CO_2 emissions

Huawei's cloud data center in Langfang, Hebei, China

[13] Calculated by International Energy Agency emission factors

Assisting Intelligent Innovation

The integration of ICT infrastructure and digital technology can not only relieve employees of a large number of repetitive and complex calculations, but also improve the prevention and prediction capabilities of energy infrastructure based on massive data. We use big data, AI and other technological innovations to launch our digital solutions to assist various industries with their digital construction and automatic and intelligent operation and maintenance.

Realize intelligent operation and maintenance

With the decentralized development of energy systems, a large amount of distributed energy will be used by thousands of parks, power stations, buildings, homes and electric vehicles. Distributed energy system will result in heavy operation and maintenance workload and high cost, and the intelligent connection and control of distributed energy system through digital technology will be a more efficient solution. We use big data and AI-based algorithms to pinpoint the faults and realize remote intelligent operation and maintenance of large energy systems and distributed energy systems such as data centers, PV power stations and communication base stations to improve their security and reduce operation and maintenance costs.

DCIM solution for digital inspection of data center

With the intensive and large scale development of cloud data centers, they are becoming bigger and bigger, and their operation and maintenance is becoming more difficult. It is difficult to meet the complex needs for operation and maintenance of data centers with traditional manual operation and maintenance methods, so automatic operation and maintenance will become an important feature of the next generation of data centers.

DCIM solution realizes unmanned inspection of data centers by building a digital visual base, and combing AI technology with intelligent sensing, as well as sound and image recognition. In addition, the standardization of the operation and maintenance process can quickly improve the skills of the operation and maintenance personnel by sharing the expert experience in the cloud and solidifying it into the process.

In the past, it took an engineer 2 hours to inspect a data center with 2,000 cabinets. In the future, automated inspection methods, such as index collection, camera image analysis, and infrared perception, can be used to complete the inspection of 2,000 cabinets in 5 minutes. People go to the computer room to realize remote duty.

Smart I-V Curve Diagnosis Technology to pinpoint the faults of photovoltaic power stations

The faults of PV power stations are complex and great in variety. How to pinpoint and eliminate these faults in an efficient, timely and accurate manner is one of the difficult problems to be solved for the normal operation and maintenance of these stations. Traditionally, random inspection is used for operation and maintenance; however, such method entails high operation and maintenance cost, low operation and maintenance efficiency, failure to detect all faults, long inspection duration and huge power loss.

Huawei Digital Power's Smart I-V Curve Diagnosis makes full use of the string current and voltage data collected by the string inverter to pinpoint string faults based on big data mining and AI-based identification algorithm. It allows one-touch start, and can complete the string test of the 100MW power station within 20 minutes and automatically generate the fault diagnosis report. Moreover, its test consistency and accuracy rate are both over 95%, reaching Level 4. At present, this technology has been adopted by power stations all over the world with a combined installed capacity of over 15GW.

A 30MW PV power station in Malaysia, which adopted Smart I-V Curve Diagnosis, provided the feedback that "smart I-V curve diagnosis function helps us maintain the efficiency of our photovoltaic system to the largest extent. Besides, it is able to conduct string diagnosis of the PV sub-array remotely, which has saved us more than 2,000 operation and maintenance man-hours. In addition, being able to identify and deal with underperforming PV strings as early as possible enables us to avoid potential revenue loss of more than RM[14] 7,400 in three stations every year."

A 30MW photovoltaic power station in Malaysia

[14] RM: Ringgit Malaysia, legal monetary unit in Malaysia

Full-scene smart power consumption management helps China Tower save energy, reduce emissions and costs and increase efficiency.

Huawei Digital Power joins hands with China Tower to integrate power electronics and digital technologies and innovate power management. Smart power consumption management in all scenarios offers refined and intelligent power management with intelligent measurement, backup power slicing, software-defined power, and power consumption audit functions. These functions improve management efficiency, reduce carbon emissions, and cut maintenance costs.

In early 2021, Huawei Digital Power cooperated with China Tower to carry out an innovative pilot project of smart power consumption management in Zhejiang province. This project replaced the existing traditional power system with iSitePower, which manages energy consumption of devices in a visualized manner, features precise power backup with lower investment in batteries, and supports remote management without site visits. It is a significant achievement for China Tower to save energy, reduce carbon emissions, cut costs, improve efficiency, and accelerate network construction. In August 2021, the innovative practice was listed as a global best case of the Global System for Mobile Telecommunications Association (GMSA)[15].

Pilot project of China Tower at the intersection of Hangzhou Theatre in China

[15] GSMA, the Global System for Mobile Communications Association, is an industry organization in the global mobile communications field, bringing together more than 750 carriers and nearly 400 companies worldwide. It is also the organizer of Mobile World Congress and Mobile Asia Expo.

Intelligent peak-shifting technology activates the value of silent battery assets

To improve the power utilization efficiency, power suppliers formulates peak-valley tariffs (that is, different tariffs are implemented in different time periods) based on the load changes of the power grid, so as to encourage users to rationally arrange the power consumption time and shift loads to off-peak periods. Batteries in traditional solutions are used only for emergency backup and have not become a production tool. Instead, they are idle assets not fully utilized.

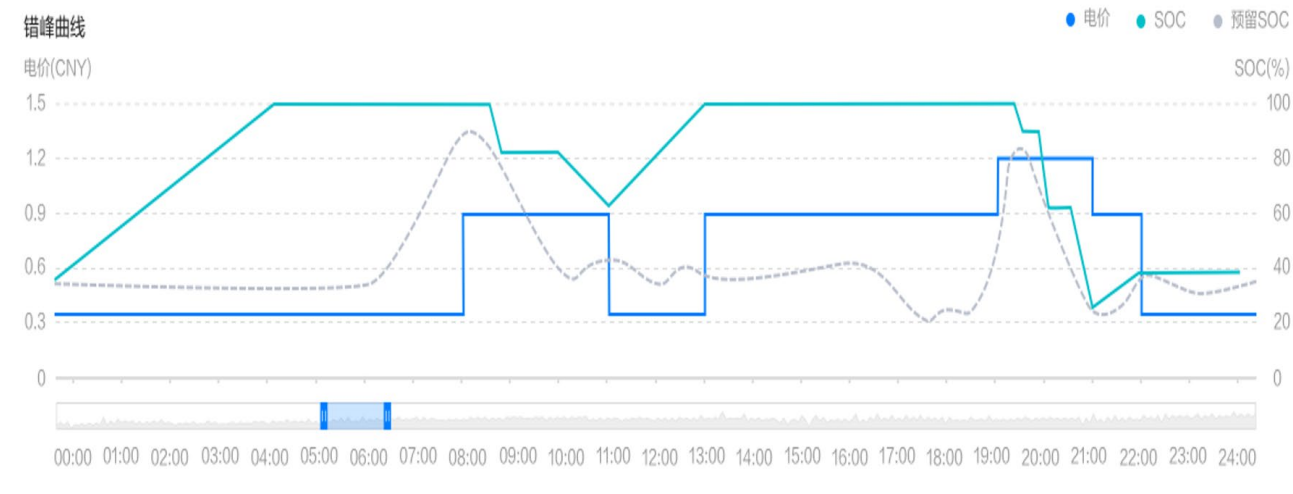
After 5G is deployed, the power consumption and number of base stations increase significantly, and so does the carrier OPEX. China Tower Zhejiang Branch and Huawei Digital Power worked together and used iSitePower AI technologies to implement intelligent peak staggering at base stations, charging batteries when electricity price is lower, and letting the batteries instead of the grid supply power when electricity price is higher.Intelligent peak staggering can reduce power consumption costs while balancing grid loads, bringing significant economic and social benefits.

Zhejiang Tower saves electricity costs by 17.1% per site per year while ensuring reliable backup power. In July, 2021, this innovative practice was selected as a global best case by Global Association for Mobile Telecommunications (GSMA) for its remarkable electricity cost savings.

By integrating digital and power electronics technologies, intelligent peak staggering enables optimal energy scheduling for base stations, optimizes power utilization, and reduces electricity fees. In the context of carbon emission peak and carbon neutrality targets, this innovative practice is a technical and commercial demonstration for cost reduction and efficiency improvement and energy transformation in the communications industry, and is of great significance.

17.1%

Zhejiang Tower saves electricity costs by 17.1% per site every year



Management system of intelligent peak shifting interface

Promoting Simplification and Integration

In the digital age where large amounts of data are generated every day, as the main carrier of big data, the data center is developing fast. Huawei Digital Power strives to create a digital solution for data center construction. Through the BIM digital twin system, the software delivers accurate video to guide production, realizes "what you design is what you get", and builds a more efficient and simplified data center.

"Prefabricated + digital" solution for high efficiency and high-quality data center construction

The construction of traditional data centers often suffers from a number of problems such as frequent changes of design schemes and construction rework, which seriously affects project delivery speed and project quality and also undermines the performance of the data center, which makes the actual PUE index difficult to achieve.

Huawei Digital Power's prefabricated modular data center solution integrates digital technology with the planning, construction, operation, maintenance, adjustment and optimization of data center to realize the visual management of planning, design and construction, simplify operation and maintenance, greatly lower the frequency of the change of design schemes and the rate of construction rework, and finally provide excellent life-cycle user experience.

Huawei Cloud Data Center in Dongguan City, Guangdong Province adopts the prefabricated modular solutions and carries out digital construction to increase its assembly rate to 97%, which meets the national requirements of building AAA-grade, the highest grade of prefabricated buildings. During the construction, construction water and construction waste are reduced by 80%, material recovery rate is over 80%, and carbon emission is reduced by 90%. Meanwhile, the average annual PUE of actual operation is lower than 1.3, which is consistent with the designed PUE value.

In the planning and design stage

We adopt the three-dimensional digital twin technology to avoid design errors, and the collision tests of pipelines automatically run to identify unreasonable designs in advance and prevent changes from the source.

In the production and construction stage

We release accurate video by software to guide production so that the production and design are completely consistent, and the designed PUE is the actual PUE. The air leakage rate of the air duct is an important factor for PUE. With the help of digital tests, we are able to limit the air leakage rate within 1%, far lower than the industry average rate of 3%.

In the factory test stage

All equipment will constitute the joint test unit, and the performance is verified by running simulated working conditions to ensure the normal running state of each subsystem.

Huawei Cloud Data Center in Dongguan, China

"Prefabricated modular" building mode greatly reduces life-cycle carbon emissions of AI Computing Center

As we enter an intelligent world, demand for computing power will rise, which in turn will increase demand for data center power density. It takes about one or two years to build a conventional data center, meaning new data centers often struggle to keep up with modern AI infrastructure and ever-growing customer demand. In addition, the resources consumed by the data center from construction to operation are increasing day by day and wasteful.

To overcome these challenges, Wuhan innovative AI computing center solution uses a steel prefabricated design, which marks a big step towards green and low-carbon data center construction and operations. This solution uses much less concrete than a conventional concrete building solutions, offsetting carbon emissions in the construction phase by more than 90%[16].

China Wuhan AI Computing Center

[16] Calculated according to the Standard for Building Carbon Emission Calculation GB/T 51366-2019

Safety and Reliability

With the development of digitalization and intelligence, the strong independent learning and analysis capabilities of digital technologies such as big data, cloud computing, and AI algorithms have gradually promoted the intelligent development of energy systems and greatly improved the safety performance of energy systems. We apply digital technology to energy products to promote the coordination and stability of energy network, improve the safety and reliability of equipment, and realize active risk intervention.

Promoting the stability of the energy network

When a large amount of new energy is connected to the transmission network, a series of new problems will occur. Digital technology can help improve our ability to observe, measure, control and adjust the new energy, reduce the vulnerability of new energy access systems and improve the consumption level of new energy-based power generation. We use intelligent algorithms to optimize inverter performance, match grid characteristics, and improve grid-connection stability of power stations, and support the fluctuation of power grid frequency and voltage to ensure the safe and stable operation of power grid.

AI grid-connected algorithm promoting the stable connection of photovoltaic power stations to the grid for UHVDC transmission

We optimize the performance of both the software and hardware of inverters for the operation of the whole grid, and adopt AI-based self-learning algorithm of impedance remodeling for the first time in the industry as well as other leading grid-connection algorithms such as dynamic damping adaptive algorithm, intelligent string self-adapting algorithm and active harmonic suppression algorithm to dynamically adjust the electrical characteristics of the power station to match the grid through AI-based self-learning algorithm. This allows the grid to remain stable under SCR1.2 and will not be disconnected from the grid, and in the background harmonic environment, it can actively restrain the harmonic current within 1%, far ahead of the industry standard of 3%, which will lead the development of photovoltaic power generation from "adapting to the power grid" to "supporting the power grid".

Hongqi No.1 Photovoltaic Power station (1,000MW) is a power supply configuration project of UHV transmission base located in Santala, Gonghe County, Hainan Prefecture, Qinghai Province. We conducted the network-related performance test of "Qinghai-Henan DC" inverter in this power station in September 2021, which only took 2 hours, and all the tests were passed at the first attempt. This power station fully meets the grid-connection technical requirements of Qinghai Province for the new energy power stations in the vicinity of the "Qinghai-Henan DC" project. Huawei Digital Power's string inverter demonstrates its excellent performance of frequency resistance and voltage resistance in weak power grid environment, achieving the world's first "air corridor" that transmits 100% clean energy stronger, more stable and more reliable.

Hongqi No.1 Photovoltaic Power Station in the vicinity of "Qinghai-Henan DC" project in China passed the grid-related performance tests of inverters at the first attempt.

Reinforcing Active Safety

Safety is essential to the operation of the energy system. We adopt AI-based algorithm, cloud computing, big data and other technologies to safeguard the fields of intelligent photovoltaic power generation and intelligent electric power through active monitoring, early warning and rapid handling to ensure the stable and reliable operation of the energy system.

AI-based intelligent active protection to enhance the safety and reliability of gas stations using green power

PetroChina Hubei Branch carries out low-carbon energy saving and emission reduction activities to respond to the call of "carbon neutrality and emission peak". The upgrading project of Panlong Avenue Gas station provides it with an opportunity to make full use of the newly-built commercial complex building roof of the gas station to install its self-designed 120kW intelligent photovoltaic facilities. This will meet its needs for self-generated power for its various business, which will greatly reduce the emissions of carbon dioxide, sulfur dioxide and dust, enabling the gas station to operate in a safe, low-carbon, energy-saving and environmentally-friendly way.

According to statistics, more than 80% of the fire accidents of PV power stations are caused by DC arcing. The "Industry Green Power System" used by Panlong Avenue Gas station integrates our leading technology with the 20-year experience of Rixin Technology in applying BIPV technology. The system uses AI-based intelligent energy controller with the function of actively preventing electric arc to cut off the electric arc within 0.5 seconds to reduce fire hazards. In case of emergency, the voltage of the roof components equipped with Huawei Digital Power's intelligent optimizer can be quickly reduced to 0V for personal safety.

PetroChina Wuhan Panlong Avenue "Intelligent Gas Station" Green Power Project in Hubei, China

Promoting Clean Energy Accessibility

In the future, clean and green renewable energy, mainly wind power and photovoltaic power, will become the main sources of energy, and will also play an important role in the popularization of electricity due to its renewable nature. Against such backdrop, Huawei Digital Power, as the world's leading provider of digital power products and solutions, is committed to improving the accessibility of clean and affordable energy in off-grid areas and building clean energy systems for the harmonious coexistence of science and technology with nature.

Promoting the Use of Clean Energy

Nowadays, many countries and regions in the world still suffer from electricity shortages due to slow economic development. Huawei Digital Power is developing its smart photovoltaic power and site power facility and other products and services to promote the use of clean energy and the construction of energy infrastructure in power-deficient areas.

Intelligent photovoltaic solution to help Jujuy , Argentina fill the gap in power generation

During the first "Belt and Road" Forum for International Cooperation, witnessed by the heads of state of China and Argentina, the two countries signed the cooperation agreement of building Cauchari PV Power Station. In October, 2019, the 300 MW Cauchari PV Power Station in Jujuy, Argentina, was completed, with an expected life service life of 25 years. The power station adopts Huawei FusionSolar intelligent PV power solutions, and the annual electric energy production capacity reaches about 660 million kWh, enough to provide clean electricity for 160,000 local households. This photovoltaic power station has ended the long history of Jujuy's having to purchase electricity from other provinces, realizing electricity self-sufficiency, and greatly alleviated local electricity shortage and lowered the electricity price.

The Cauchari PV power station covers an area equivalent to half the area of Buenos Aires, the capital of Argentina, and is the highest PV power stationin Latin America (4,200 meters above sea level). The power station adopts advanced PV power generation technology, and makes use of the excellent sunshine conditions in the local area, providing a valuable experience and reference for Jujuy Province and even Argentina's national energy development strategy.

160,000 local households

the annual electric energy production capacity reaches about 660 million kWh, enough to provide clean electricity for 160,000 local households

Gauchari Photovoltaic Power Station in Jujuy Province, Argentina

Building Green Low-carbon Parks to Bridge the Energy Gap in Nigeria

As a result of the imbalance of power supply, about 80 million people in Nigeria still live in areas without electric supply. Even in areas with electric supply, the stability of the power supply is poor, and power shortage issues have always existed. A large number of oil engines are used to generate electricity, resulting in high power generation cost, difficulty in maintenance, loud noise and heavy environmental pollution, which seriously affects the local residents' life and restricts local economic development.

In April 2021, Huawei Digital Power released its iPowerCube-S mixed electricity generation solution in Nigeria to provide affordable, green and reliable electricity for areas with no or poor electric supply in Nigeria to improve the working and living conditions of local people.

After the release of the iPowerCube-S solution, it was first installed in Nigeria's park dormitories. The efficient conversion between solar power generation system and lithium-ion intelligent energy storage system reduces the operation of oil turbines, thus reducing the cost of power generation through oil turbines and carbon emissions. This solution has solved problems such as nonenvironmentally-friendly, unreliability, uneconomical electricity generation through oil turbines, and improved the living standard and office experience of the park; For another, it will create a green and low-carbon park plan that can be replicated and promoted. In the future, more people will enjoy green and inclusive power supply through large-scale application.. The staff of the park said that the new power supply system guaranteed non-stop power supply and relieved them of their worries about sudden blackouts and the rumble of oil engines, allowing them to achieve better working and living conditions.

In the future, we will continue to innovate our products and services, and cooperate with more local schools, hospitals, banks and factories to provide them with green and inclusive power supply with our leading energy technologies to bridge the energy gap.

Photovoltaic panels on the roof of the park dormitory in Nigeria

Promoting Ecological Restoration

With the constant influence of human activities on natural environment, the aggravation of environmental problems has destroyed the stability of the ecosystem and had a negative impact on human well-being, which makes environmental protection and ecological restoration the focus of people's attention. We actively explore solutions for the coexistence of science and technology with nature, and combine the construction of smart photovoltaic power plants with ecological and environmental research to achieve a win-win results for clean energy supply and ecological restoration.

Sheep herding under the power generation panel: harmonious coexistence of modern science and technology with nature

In Qinghai province, China, we helped Huanghe Hydropower Development, a subsidiary of China's State Power Investment Corporation (SPIC), build a renewable energy hub using wind, solar, and hydropower, where farmers can herd sheep under solar panels. The hub hosts a 2.2 GW PV plant with more than 7 million PV modules covering an area of 56 km^2 . Each string of modules is precisely managed with intelligent, digital technologies. This improves the power plant's energy yields by over 2% and operation and maintenance efficiency by over 50%.

Since the plant was connected to the grid, it has generated nearly 5 billion kWh of green electricity per year, and supplied green electricity to Henan province, more than 1,500 kilometers away, via the Qingyu UHVDC (±800 kV) power transmission line, the world's first high voltage transmission line carrying 100% clean energy.

Talatan was once a landscape of windswept sand. Since the PV power station was built, the local ecosystem has improved greatly. The project has cut average wind speeds by 41.2% while improving average air humidity by 2.1% and soil moisture (at 20 cm deep) by 32%. Grass has quickly sprouted. Today, the solar farm is also a sheep farm. Shepherds who had to leave this area because of a lack of quality pasture are now able to return to their homes.

5 billion kW

it has generated nearly 5 billion kWh of green electricity per year

more than 50%

operation efficiency has upgraded by more than 50%

Qinghai Honghe Photovoltaic Industrial Park in China

Smart Agrivoltaic Power Plant in Ningxia: Turning a Desert into an Oasis

The Binhe New District on the eastern banks of the Yellow River in Ningxia used to be a harsh desert environment. Baofeng Group has been managing this desertified patch of 107 square kilometers by planting alfalfa and goji to improve the soil.

Since 2016, Huawei Digital Power and Baofeng Group have jointly built large PV power plants over the goji plantations. The solar panels have cut evaporation from the soil by 30–40% and increased vegetation coverage by 86% in just a few years, which has significantly improved the local environment. The desert has turned into an oasis, creating a rich field of ruby-red berries topped by an azure sea of solar cells. As of the end of 2020, these PV power plants had generated 4.31 billion kWh of electricity, displacing 2.047 million tons[17] of CO_2 emissions, which is equivalent to planting 89.01 million trees.

The solar panels over the goji plantations have changed local residents' lives in many ways. More than 80,000 jobs have been created, including cleaning the solar panels, and weeding, debudding, pruning, fertilizing, and picking in the goji fields. These extra jobs and the income they generate have given local residents better lives.

Protecting the environment is not a process that can happen in isolation. It is closely tied to the management of ecosystems, energy resources, economic development, and many other issues. As we promote renewable energy and reduce humanity's carbon footprint, we have come to realize that a green planet is a treasure. Economic development and environmental protection can be simultaneous, mutually-reinforcing processes.

4.31 billion kWh

PV power plants had generated more than 4.31 billion kWh of electricity

2.047 million tons

displacing 2.047 million tons[17] of CO_2 emissions

Baofeng Group PV plant in Ningxia, China

[17] Calculated by International Energy Agency emission factors

Hybrid Fishery-Solar Plant in Shandong: A Project that Benefits All Parties

The Zhanhua District of Binzhou City in northern Shandong used to be covered by salt fields, and the main industry there was traditional aquaculture, meaning the use of land and marine resources was inefficient. A solar power project has breathed new life into this land. The shiny blue PV panels pointing towards the sky are nourishing fish and shrimp in the ponds and providing round-the-clock green electricity to households as part of an integrated fishery-solar system.

This project uses Huawei Digital Power's smart PV solution. With a total installed capacity of 300 MW, the project generates nearly 400 million kWh of on-grid electricity each year. It is by far the largest fishery-solar project in China, and it serves two purposes at once – generating electricity and supporting green aquaculture.

The project has been up and running since June 2020. It produces green seafood below the water's surface and generates green electricity above it. It represents a holistic model of development that uses the Internet and smart energy to modernize aquaculture. As a result, Zhanhua is developing into a showcase for modern eco-development, combining scientific research, public education, fishing, tourism, and restaurants. This model benefits everyone, and demonstrates how we can deliver ecological, economic, and social benefits at the same time. To date, the project has generated about 200 million kWh of electricity, which is equivalent to a reduction of 95,000 tons[18] of CO_2 emissions.

200 million kWh

the project has generated about 200 million kWh of electricity

95,000tons

equivalent to a reduction of 95,000 tons[18] of CO_2 emissions

The fishery-solar project in Zhanhua, Binzhou City, Shandong Province, China.

[18] Calculated by International Energy Agency emission factors

Responsible Operation

With the increasing integration of the physical and the digital world, cloud computing, AI and big data technologies have brought both opportunities and challenges for the transformation of enterprises. As a responsible multinational enterprise, Huawei Digital Power is committed to providing safe and reliable products and solutions, creating greater value for customers and building better platforms for partners. We abide by business ethics and constantly improve our compliance and service level, continue to benchmark ourselves against the best enterprises in the industry, integrate integrity management and sustainable development into the whole management process including supplier management, and provide guarantee for social progress and sustainable economic growth.

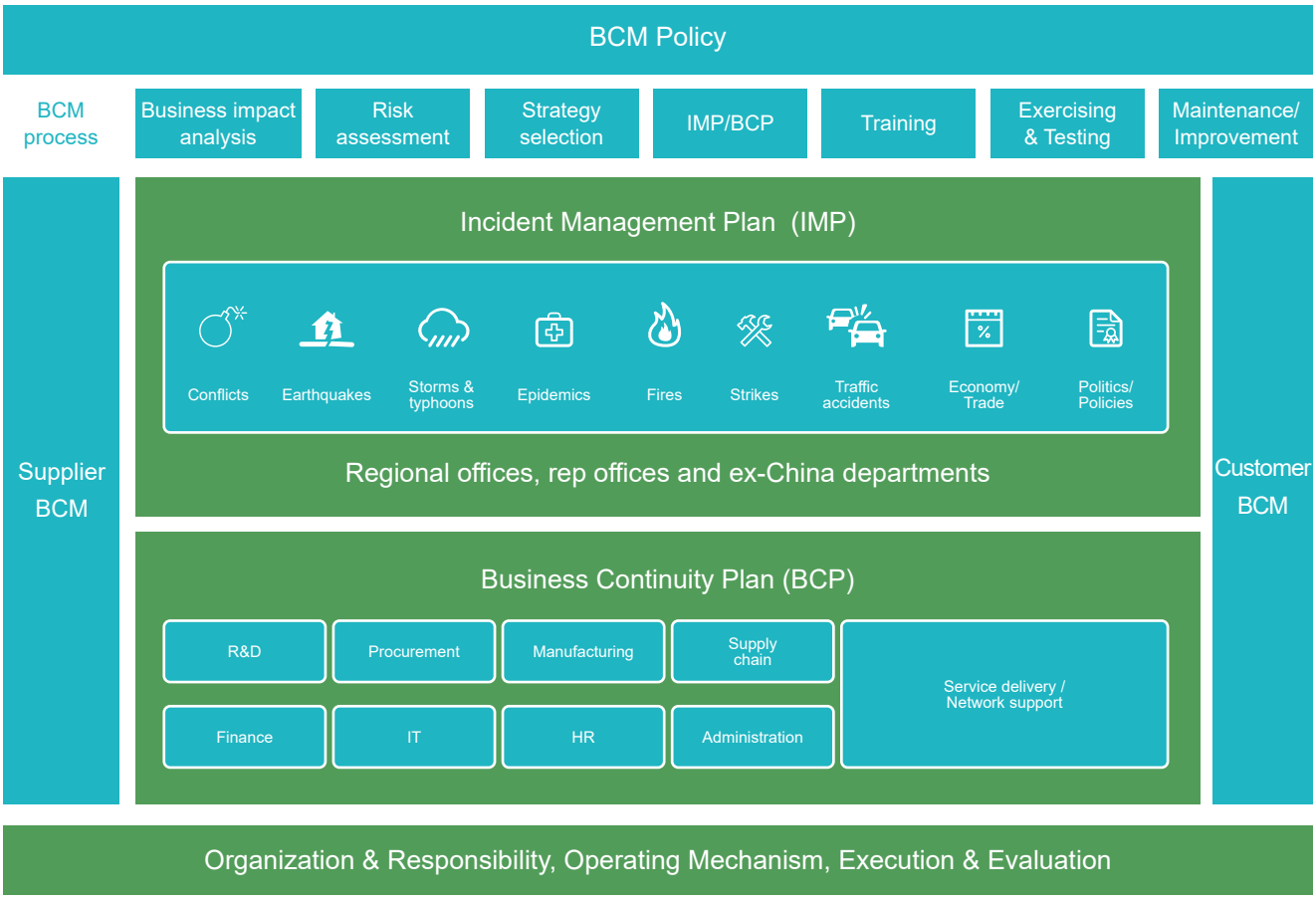
Providing Excellent Service

With the rapid development of the digital economy, stable and high-quality products, network security and privacy protection are of great concern to enterprises. We strive to ensure business continuity, continuously improve the quality of products, solutions and services, create strong defense systems to ensure network security and protect users' privacy, and provide customers with safe and reliable services and help them enhance network resilience.

Business Continuity

In the era when the division of labor has become highly internationalized, all our businesses depend on extensive cooperation with third-party manufacturers, professional institutions and partners, so business continuity management becomes vital. We have established an end-to-end Business Continuity Management (BCM) system in the fields of R&D, procurement, manufacturing, logistics and global technical services for suppliers and customers, and have established management organizations, processes and IT platforms to integrate the key elements of BCM into product design, formulated BCM plans and emergency plans, and carried out BCM training and exercises for employees to enhance BCM management ability and emergency response ability of each organization, thus ensuring the effective management of daily business risks.

Huawei Digital Power Business Continuity Management System



Key Initiatives for BCM in R&D and Procurement

- **Supply chain diversity:** We stick to the strategy of maintaining a globalized, diversified supply chain. When designing a product, we strive to source raw materials, boards, and products from more than one supplier, actively expand the pool of supply resources, and prioritize the supply diversity of raw materials. We prefer suppliers that have multiple manufacturing sites and avoid relying on any single supplier or region to safeguard supply availability.
- **Scenario-specific stockpiles:** During mass production, we prepare safety stocks of high-risk raw materials, semi-finished products, and finished products. This allows us to better address customer requirements and uncertainties from various sources, including supply availability, trade conflicts, fluctuating demand, and force majeure events like the COVID-19 pandemic.
- **Supply and demand visibility:** We work closely with suppliers to ensure that demand forecasts, purchase orders, and supplier inventory are all visible through IT systems. This ensures that we receive timely demand information and have adequate supply.

Key Initiatives for BCM in Manufacturing and Spare Parts Supply

- **Manufacturing and supply resource backups:** We consider in-house manufacturing and outsourcing capabilities to be of equal importance. We have established long-term strategic partnerships with multiple electronics manufacturing service (EMS) suppliers. Board manufacturing and supply capabilities are shared between our company and EMS suppliers and between multiple EMS suppliers to ensure we always have a backup. We have also established supply centers in Shenzhen, Europe, Latin America, and Dubai, which serve as integrated equipment backups for each other.
- **Spare part reserves to support full-life cycle operations:** We reserve spare parts according to market demand and historical usage before a product reaches its end of life (EOL). After a product reaches its EOL, we reserve a sufficient quantity of spare parts to cover the full lifecycle of all remaining products. This prevents any impact on the operational continuity of live customer networks.

Over the past decade, we have weathered many crises, from natural, political, economic, and trade-related conflicts to armed conflicts in some regions. Despite the lasting effects of COVID-19, we continued to ensure supply continuity and timely delivery to our customers. This shows that our BCM system, as part of our overall management system, is functioning as intended. As a global enterprise covering PV power generation, ICT power infrastructure, electrified transportation, and integrated smart energy solutions, Huawei Digital Energy has cooperated extensively with suppliers and partners, established long-term cooperative relationships, and forged deep friendships .

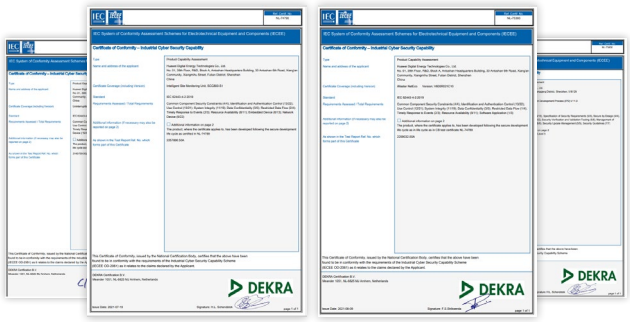
As a staunch advocate of globalization, we will continue to pursue supply chain diversity. We aim to develop sustainable and stable supply capabilities to prevent dependency on any single supplier, country, or region. Based on the principles of collaboration for shared success and mutual development, we are confident in our ability to work with partners around the world to forge a secure, reliable, competitive, and healthy value chain. We will continue to deliver quality products, solutions, and services to our customers worldwide.

Cyber Security and Privacy Protection

Adhering to the cyber security values with "integrity, trustworthiness, responsibility, capability, openness and transparency" as the core principles, we comply with the laws and regulations where we operate as well as international standards, and refer to the requirements of supervision institutions, customers and ICT industry standards to improve our effective, sustainable and reliable cyber security and privacy protection guarantee system, and build our end-to-end cyber security and privacy protection system from the aspects of policies, processes, tools, technologies and norms. We take the following measures to ensure cyber security and privacy protection:

- **Management structure:** We appoint a chief cyber security and privacy protection officer to report to Executive Management Team (EMT) on a regular basis. The officer is responsible for leading the company in formulating security strategy, unified planning, and managing and supervising the security organizational structure and business of the R&D department and supply chain department to ensure the quality of cyber security in those departments.
- **Business process:** We integrate elements of cyber security into business processes including standard development, operation and maintenance. At the design level, we adopt the IPD process of integrated product development to ensure that all products meet the baseline of cyber security, and strictly comply with the design standards in different industries and countries. Besides, we apply IPDRR to build a resilient network to accurately identify, protect, monitor, respond to and recover from any threats that may arise in the cloud, the transmission process and near end.
- **Personnel training:** We offer training and examinations on cyber security and privacy protection for all employees, and special training for managers and high-risk staff, and organize examinations so that employees will be fully aware of the importance of cyber security and privacy protection.

Huawei Digital Power's products have been certified by a number of authoritative safety systems at home and abroad



Huawei Digital Power Safety Development Process, iMaster NetEco(SmartPVMS), UPS5000H, and SCC800 have been certified by IEC 62443 Safety Standard of Industrial Automation Control System.

EC800 and SUN2000HA obtained the first international general standard certificate of cyber security-Common Criteria: the evaluation standard certificate of information technology products and system security.

The whole series of products of the data center have been certified by the Third Research Institute of the Ministry of Public Security of China for the cyber security certification standard of intelligent Internet-connected devices.

The intelligent electric products have obtained ISO 26263 functional safety management process certification, ASPICE L2 automotive electronic embedded software system process capability certification and ASIL-D automotive safety integrity level certification.

Huawei Digital Power obtained IEC 62443-4-1 ML3 cyber security certificate

The IEC 62443 series standards is the most influential series of cybersecurity standards in the field of industrial automation control issued by IECEE. Among them, IEC 62443-4-1 specifies the cybersecurity process requirements applicable in industrial control systems and automation environments, and serves as the standard for the assessment of the security development lifecycle.

On June 9, 2021, Huawei Digital Power was awarded the Maturity Level 3 (ML3) CB certification by DEKRA for its mature and secure design, development, manufacturing, delivery, and service lifecycle development process and application. It passed the strict requirements of 8 categories of practices and 47 items of IEC 62443-4-1 cyber security certification. This is the highest level of IEC 62443 cyber security certification issued so far.


IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components (IECEE)

Certificate of Conformity – Industrial Cyber Security Capability

DEKRA

Review of IEC62443-4-1 Industrial Cyber Security Product Development Life Cycle

Group photo at the awarding ceremony

Customer Service Quality

We take meeting customer demands as our core mission by providing high quality and efficient products, solutions and services and constantly improve our services. We continue to improve the standardization of service processes to respond to customer needs in a timely manner and improve customer satisfaction. At the same time, we will analyze the root cause of the complaint, formulate and implement corresponding improvement measures, so as to achieve business improvement and prevent the problem from recurring.

Service and Technical Support

We are committed to improving user experience by continuously improving the standardization of service processes, and making systematic, standardized and professional requirements for the quality of the special services and technical support provided by our technical teams and partners. Meanwhile, by improving our training system, we provide targeted training for personnel involved in product R&D from development to market, information technology and product sales and services on product service and quality, and language use, etc.

We serve more than 3 billion people in 170 countries and regions all over the world. To respond to customers' needs in a timely manner, we have established maintenance service organizations and platforms, and arranged for technical personnel to solve maintenance problems for customers in a timely and efficient manner, and meet different customer groups' needs for different products.

170 countries

3 billion

serve more than 3 billion people in 170 countries and regions

Customer Satisfaction

To know more about customers' demands for service and product quality, our company entrusts third-party organizations to conduct satisfaction surveys in the form of online questionnaire and face-to-face interviews so as to gain in-depth insight into customers' evaluation of product quality and performance, and after-sales and supporting services. We hope that the results of these surveys will provide a valuable reference for us to improve our product and service quality.

Customer Complaint Handling

We attach great importance to collecting customers' opinions, and handle customer complaints in a timely, effective, and closed-loop manner. To this end, we have compiled customer complaint process management and control documents including Process for Non-technical Issues and Complaint Handling Retrospective Process for Major Customer Complaints Handling. We established a special group to handle the whole process of customer complaints, including complaint inputting, reviewing, judging and case closure and making return call to customers. We keep diversified communication channels clear, collect customer feedback and opinions through our official website, service hotlines and e-mail, and continuously improve customer complaint handling processes according to the characteristics of different customer groups and the management modes of dealers, so as to respond to customers and handle their complaints in a timely and effective manner.

Responsible Procurement

We attach great importance to the impact of the supply chain on the environment and society, and regard sustainable development as an important part of our purchasing strategy. By learning from the best practices in the industry and in strict accordance with the group's supply chain management requirements, we integrate our corporate social responsibility into the whole management process of supplier access, certification, choosing, performance evaluation and portfolio management, and improve the supply chain management system.

Improving Procurement CSR Management System

We have established a procurement Corporate Social Responsibility (CSR) management system based on the OECD's Due Diligence Guidance for Responsible Business Conduct and the IPC-1401A Corporate Social Responsibility Management System Standard, and incorporated CSR requirements into our procurement strategy and business processes. Our Supplier CSR Agreement is prepared according to the Responsible Business Alliance (RBA) Code of Conduct and the Joint Audit Cooperation (JAC) Supply Chain Sustainability Guidelines. We require that all suppliers sign and abide by the Supplier CSR Agreement. This agreement covers five areas: labor standards, health and safety, environmental protection, business ethics, and management systems. Huawei Digital Power regards the use of child labor or forced labor as red-line issues, and we have a zero tolerance policy for violations of CSR red lines.

Our CSR red lines in procurement include:

1 Use of child labor.

2 Use of prison labor (including using prisons as suppliers or subcontractors) or forced labor (including restricting personal freedom or detaining personal identity documents.)

3 Violence, physical punishment, sexual harassment, illegal body searches, cross-gender body searches, and other similar behavior.

4 Salary payments below the local minimum wage.

5 Negligence that leads to major fires or explosions.

6 Working conditions that seriously endanger personal health and safety or lead to fatal incidents.

7 Illegal emissions of any hazardous or toxic wastes, including wastewater, gas, and residue.

8 Negligence that leads to media crises or serious mass disturbances, such as collective labor disputes, mass brawls, mass poisoning, unnatural deaths, or other incidents causing casualties.

9 Unsafe and unhealthy working environments that lack effective measures to prevent potential health and safety accidents, or diseases that may be caused due to exposure in the workplace (e.g., collective infections).

10 Corruption or dishonest acts that violate the requirements of "no bribery, no gifts, no conflicts of interest, no falsification, no cutting corners, no fraud, and keeping promises".

We also attach great importance to the benefits of localized procurement for the local economy, society and business operation, and implement the strategy of promoting localized procurement. We set up functional departments in countries and regions where our business is located, conduct localized purchasing according to local laws and policies.

Supplier Risk Rating and Auditing

Huawei Digital Power adopts a risk-based approach to supplier audits. Every year, we assess all major suppliers, which represent 90% or more of our procurement spending. We assign each supplier one of three risk ratings (high, medium, or low) after a comprehensive assessment of indicators such as procurement amount, material category, supplier location, CSR performance score, and previous audit records. We develop an annual sustainability audit plan to deal with suppliers that are assessed as posing medium or high risk.

We perform onsite assessments on all potential suppliers to examine their sustainability systems, their capacity to comply with applicable laws, regulations, and the Supplier CSR Agreement, and their actual level of compliance. Any company that fails the assessment is not eligible for consideration to become our supplier.

In 2021, we assigned CSR risk ratings to more than 140 self-managed suppliers as well as those under the unified management of the group, and conducted onsite audits on 11 suppliers, among which one supplier was audited by third-party audit organization. If we find an issue during an onsite audit, we help the supplier resolve the issue through the CRCPE methodology (check, root cause analysis, correct, prevent, and evaluate). This methodology helps suppliers identify common problems and develop targeted solutions.

140 self-managed suppliers

In 2021, we assigned CSR risk ratings to more than 140 self-managed suppliers as well as those under the unified management of the group

11 suppliers

In 2021, we conducted onsite audits on 11 suppliers

Supplier Performance Management

Every year, we appraise suppliers' sustainability performance based on their sustainability achievements, onsite audit results, and improvements made, as part of their overall performance appraisals. We have also included the sustainable development management of secondary suppliers in the performance assessment of primary suppliers' sustainable development, and promote first-tier suppliers to establish a CSR management system with reference to the IPC-1401A Corporate Social Responsibility Management System Standard. Suppliers are classified into four grades A (Excellent), B (Well), C (Qualified), or D(Failed) based on their sustainability performance.

The amount of business we carry out with each supplier depends partly on their sustainability performance, which is also a factor considered in our tendering, supplier selection, portfolio management, and other processes. For suppliers with good performance, priority should be given to increasing the purchase share or business opportunities under the same conditions; for suppliers with poor performance, it is required to rectify within a time limit, reduce purchase share, restrict business cooperation or cancel the cooperative relationship.

Supplier CSR Training

We attach great importance to cultivating suppliers' corporate social responsibility, and require them to adopt industry best practices, incorporate sustainable development requirements into their business strategies, reduce business risks and improve corporate governance. We regularly offer training for all suppliers, including training on social and environmental issues such as human rights protection, compliance and integrity, energy conservation and emission reduction and fire prevention:

- **Popularization of new suppliers:** providing basic training including auditing standards, procedures and methods for newly warehoused suppliers, and popularize basic business and compliance information;
- **Special training:** provide routine special training including fire safety, energy conservation and emission reduction, human rights protection, and building a sustainable supply chain;
- **Correction and improvement training:** providing correction and improvement training for suppliers who fail the assessment, and support them to improve their operation ability and fulfill their corporate responsibility.

After years of exploration, we have devised an efficient “peer-benchmarking” learning model. Through CSR topic collection, industry benchmarking identification and analysis, supplier experience sharing, as well as template and checklist import, we have further improved the CSR training system for suppliers and improved supplier's risk response capability.

Supplier CSR training

We provide both online and offline CSR training for suppliers every year. We introduce the RBA and JAC industry standards, industry best practices, as well as Huawei's supplier CSR agreements, red lines, audit practices, and management regulations related to CSR in procurement. We also encourage our suppliers to incorporate CSR requirements into their internal management systems and operations. We also carry out special training for key industries, key regions and key suppliers on CSR red line topics and specific scenarios. We also solicit training topics and quality case studies from suppliers, and encourage them to learn from each other.

In addition, Huawei Digital Power encourages suppliers to benchmark the IPC-1401A Corporate Social Responsibility Management System Standard, formulate CSR strategies based on strengths, weaknesses, opportunities, and threats (SWOT) analysis, and exceed regulatory requirements to implement five levels of CSR obligations (laws and regulations, ethics, industry standards and best practices, customer requirements, and strategic needs) into the existing ISO 14001/ISO 45001 based management system, integrate CSR requirements into the operation of all functional departments, and establish a customer-oriented CSR management system to realize self management.

Stakeholder Engagement and Cooperation

Building a sustainable industrial chain requires the participation of all stakeholders. We attach great importance to our partnership with customers, suppliers, industry associations and other stakeholders. We have incorporated corporate social responsibility requirements into the management policies of partners, requiring suppliers to learn and sign the Integrity Agreement, hold supplier conferences, hold CSR seminars with customers and suppliers, nominate suppliers to participate in joint audits, carry out supplier capacity improvement projects, participate in industry exchanges and industry standards formulation, etc., so as to improve the sustainable development governance capability of partners.

Enhancing Information Exchange and Joint Audits with Customers for a More Transparent Supply Chain

We actively listen to customer requirements and expectations regarding supply chain sustainability. Through communication with customers, we seek to understand new global trends in CSR; responsible business conduct (RBC); environmental, social, and governance (ESG) trends; and the progress of supply chain due diligence legislation in European countries. We also conduct self-assessments based on the OECD's Due Diligence Guidance for Responsible Business Conduct and share the assessment results with customers.

In 2021, we communicated with customer specifically on CSR due diligence measures such as supply chain traceability, supplier whitelists, and complaint and appeal mechanisms.

We also recommended one supplier for joint audits organized by the Joint Audit Cooperation (JAC), an association of telecom carriers. The JAC assigned experts from independent third-party audit organizations to assess these suppliers onsite. Their average audit score was 84.6, and the audit results were shared with the JAC.

1 supplier

We recommended one supplier for joint audits organized by the Joint Audit Cooperation (JAC).

84.6

Their average audit score was 84.6, and the audit results were shared with the JAC.

Responsible Management of Minerals

Huawei Digital Power is committed to the responsible management of minerals and requires the same of our suppliers. We have incorporated related requirements into supplier qualification, supervision, and audit processes as part of our CSR management system in procurement. As a downstream company in the mineral supply chain, Huawei Digital Power does not directly purchase any minerals, and there are at least 7 tiers between Huawei Digital Power and mining companies. Huawei Digital Power reasonably requires that our suppliers do not purchase conflict minerals to ensure that their products never directly or indirectly fund armed conflicts or any other inhumane act. Huawei Digital Power also actively works with global industry peers through industry initiatives like the Responsible Minerals Initiative (RMI) and the Responsible Cobalt Initiative (RCI). Together with partners both up and down the supply chain, we conduct supply chain surveys, create a complete list of all related smelters, and push these smelters to apply for or maintain the Responsible Minerals Assurance Process (RMAP) certification

Huawei Digital Power has established a risk-based system for the responsible management of minerals based on the OECD's Due Diligence Guidance for Responsible Supply Chains of Minerals. Each year, through this system, we identify suppliers of five conflict minerals: tin, tantalum, tungsten, gold (3TG), and cobalt. Using the Conflict Minerals Reporting Template (CMRT) and the Cobalt Reporting Template (CRT), we urge suppliers to identify and investigate all smelters within their supply chain. We also require that all identified smelters do not purchase minerals from conflict-affected and high-risk areas (CAHRAs), and urge smelters that have not obtained the RMAP certification to get the certification within a specified timeframe.

Business Ethics

Huawei Digital Power works hard to conduct its business with integrity and conform to business ethics standards and all applicable laws and regulations. This key principle is upheld by our highest levels of management. We have worked for years to build a compliance management system that aligns with industry best practices and embed compliance management into every aspect of our business activities and processes, and these efforts continue to this day. Huawei Digital Power emphasizes a culture of integrity and invests heavily to make it a reality. As such, every Huawei Digital Power employee is required to understand, sign, and strictly adhere to the company's Business Conduct Guidelines (BCG).

- We identify and assess risk according to applicable laws and regulations and business scenarios. We have formulated control measures that have been incorporated into our business activities and processes. This guarantees effective compliance management during operations. Huawei Digital Power also continuously optimizes its management system through root cause analysis and targeted corrective action.
- We attach great importance to compliance and strive to continuously enhance the compliance awareness of our employees. Through publicity, training, exams, disciplinary action, and other activities, we push employees to fully understand the company's and their own obligations to ensure compliance and incorporate this understanding into their behaviors.
- With an open mind, we proactively work with customers, partners, regulators, and other stakeholders on compliance, and communicate our compliance principles and practices to them to constantly enhance mutual understanding and trust.

Huawei Digital Power is dedicated to ensuring better compliance across multiple domains, including but not limited to trade compliance, financial compliance, anti-bribery compliance, intellectual property (IP) and trade secret protection, cyber security and privacy protection, and fair competition. These compliance requirements are embedded into our policies, systems, and business processes.

Anti-Corruption and Anti-Bribery Compliance

Huawei Digital Power has a zero-tolerance policy towards corruption and bribery. In every country where we operate, we conduct all business under a legal framework that supports fair competition and opposes bribery and corruption. We place our obligation to fight bribery and corruption above our own commercial interests, and we are working to ensure that our business is conducted in a fair and transparent manner.

- We are strengthening our anti-bribery and anti-corruption compliance system in four ways: a culture of compliance, governance and oversight, compliance risk assessments and prevention–discovery–response techniques, and continuous operations. We regularly conduct compliance audits to identify potential compliance risks across all business scenarios, and optimize and oversee the implementation of related policies and processes.

- Huawei Digital Power works hard to create a culture of integrity and enhance its compliance capabilities. All employees are required to study, sign, and comply with the company's BCGs and anti-corruption policies. Our customized training addresses the different risk scenarios in different countries and regions where Huawei Digital Power operates, and is available for different employee groups. For example, besides general training for all employees and targeted training for those in high-risk positions, enhanced training is provided to specialists in the compliance team and to employees playing key roles in business processes. Training content is distributed in many ways, including video, forums, and dedicated online training channels. All partners of Huawei Digital Power – whether they are directly providing services and fulfilling their contractual obligations to Huawei Digital Power, or providing services and fulfilling their contractual obligations to Huawei Digital Power customers or other third parties on behalf of Huawei Digital Power – are also required to comply with all applicable laws and regulations, industry ethical standards, and Huawei Digital Power's Anti-corruption Policy for Partners, Huawei Digital Power Supplier Social Responsibility Code of Conduct, Code of Conduct for Partners of Huawei Digital Power, and Honesty and Integrity Agreement.

- We have established complaint channels through which employees and other parties can report violations. When Huawei Digital Power receives a complaint, we launch an investigation and protect the person lodging the complaint from any form of threat or retaliation by keeping their identity secret.

- We continually communicate with our stakeholders (e.g., industry peers, consultants, partners, and NGOs) about compliance, clarifying our position and views on anti-bribery and anti-corruption. This helps ensure that all stakeholders have a clear understanding of Huawei Digital Power's compliance regulations and policies.

We comply with Huawei's statements and policies on anti-corruption and anti-bribery, For details please visit the "Policies" section at:
https://www.huawei.com/en/sustainability/sustainability-report

Intellectual Property Rights and Trade Secret Protection

Huawei Digital Power is dedicated to its long-term investments into R&D and to continuously enriching its intellectual property (IP) portfolio. The company believes that respecting and protecting IP is the bedrock of innovation. As a follower, practitioner, and contributor of IP rules, as well as an innovator, Huawei Digital Power invests heavily in IP protection and respects the IP of others. Huawei Digital Power works tirelessly to improve the environment for protecting innovation and IP in the industry and across countries and regions.

Huawei Digital Power is committed to protecting its own IP and trade secrets, while respecting those of others. We explicitly prohibit our employees from improperly acquiring, disclosing, using, or disposing of the trade secrets of others. The key measures Huawei Digital Power has taken to protect the trade secrets of others include:

- Issuing our Regulations on Respecting and Protecting Third Party Trade Secrets, which set out clear rules that employees must follow to respect and protect the trade secrets of others during business activities and Intellectual Property and Trade Secret Protection ensure that employees carry out business activities legally and in accordance with our contracts.
- Embedding trade secret protection requirements into business processes such as R&D, sales, procurement, and HR, conducting regular reviews, and continuously improving management mechanisms by taking away lessons and case studies from day-to-day operation.
- Organizing publicity, training, and exams on trade secret protection for all employees, so that they are fully aware of their obligations and responsibilities regarding trade secret protection compliance.
- Conducting supervision, including checks and audits, to examine efforts aimed at protecting the trade secrets of others and thus ensure effective implementation of policies, rules, and processes.
- Establishing an accountability system based on official corporate policies, such as the Accountability Protocol for Infringements of Other Parties' Trade Secrets and the Accountability Rating Criteria for Information Security Violations, to hold violators accountable for any trade secret violations.

By the end of 2021, Huawei Digital Power has obtained more than 600 patents in China and more than 300 patents in Europe and America. In 2021, Huawei Digital Power has applied for more than 600 patents in China and more than 200 patents in Europe and America.

Trade Compliance

Huawei Digital Power complies with applicable laws and regulations of the countries and regions in which it operates. These include applicable export control and sanction laws and regulations of the UN, China, the US, and the EU. We have invested immense efforts over the years to establish a mature and sustainable internal system for trade compliance in line with standard industry practices, and have worked tirelessly to constantly improve this system.

We have also established an integrated trade compliance management organization within the company. This organization manages trade compliance across both group functions and field offices. In addition, we have established specialist teams in our global offices that monitor changes to local laws and regulations, integrate trade compliance into the company's rules and processes, and manage and oversee trade compliance in each link of our business operations, ranging from procurement, R&D, and sales to supply and services.

Huawei Digital Power continuously pushes employees to further their own trade compliance awareness. Employees must sign Huawei's BCGs each year, which include commitments to observing applicable export control laws and regulations. Huawei Digital Power provides training sessions on trade compliance to managers and employees across the company, with training taking various forms across different sessions. These efforts, combined with targeted training for specific business scenarios, ensure employees fully understand their own responsibilities and obligations, as well as those of the company, regarding export control.

We comply with Huawei's Statement of Compliance with Export Control Regulations. For details please visit the "Policies" section at: https://www.huawei.com/en/sustainability/sustainability-report

Fair Competition

We have long placed fair trade as a priority for operational compliance, and have established organizations, processes, regulations, and rules to ensure competition compliance.

- We have established dedicated compliance organizations, appointed compliance officers in each region where we operate, and put in place a range of supporting regulations and rules, including guidelines, implementation rules, manager and employee statements, partner commitment letters, as well as training materials on compliance with competition laws.

- We have embedded competition compliance rules and regulations into management systems and business processes. We customize policies for each country based on local competition laws. We update compliance objectives every year, and oversee the achievement of these objectives. We also provide dedicated training for compliance officers to ensure that related rules and guidelines are fully implemented.

- We take numerous practical measures to ensure competition compliance, including constant business process optimization and long-term mechanisms for independent sales consultant management, d diligence of third-party suppliers, optimization of sales contracts and competition law compliance baselines.

Huawei Digital Power is actively contributing to a fair market environment by raising employee awareness and fully adhering to the fair competition principle in our business operations.

One-mind Growth

Employees increase the vitality of enterprises and our partners are our closest friends on our way towards making the society more harmonious. We attach great importance to employee growth, and are committed to building an equal and inclusive workplace, providing various promotion paths and training systems for their personal development, so as to realize the common growth of enterprise and employee. As an international enterprise, we work with partners to build a low-carbon and digital society, promote local economic development, improve people's health and well-being, and create sustainable industrial chains.

Employee Growth

Employees continuously inject vitality into enterprises and are valuable assets for enterprise development. We employee more than 6,000 employees from various countries and regions all over the world, and we are dedicated to creating a diversified workplace of equality, tolerance, respect and mutual assistance. Adhering to the principle of "safety first and caring for employees", we have obtained a number of authoritative certifications and constantly improved the construction of the occupational health and safety management system. We ensure and safeguard employees' safety and health during the epidemic. In addition, we broaden the channels for employees' development and promotion, encourage them to continue forging ahead and pursue excellence, create opportunities for employees to realize their own value, and strive to our company into a business platform that attracts all kinds of outstanding talents to work together and share value.

Inclusive Workplace

As an international enterprise, we have employees from various countries and regions all over the world. Overseas, we give priority to recruiting local people and building a diversified workforce.

We are committed to building an equal and inclusive workplace. We attach great importance to the diversity of employees. Our recruitment policy stipulates that there should be no discrimination based on race, nationality, ancestry, clan, physical disability, gender, sexual orientation, marital status, age, etc. in matters concerning employment, remuneration, promotion, etc. We prohibit the use of child labor and any kind of forced or involuntary labor, and have formulated policies and taken preventive measures in recruitment, employment and resignation to prevent child labor or forced labor. We require our suppliers to comply with our regulations and conduct regular examination. There has never been the use of forced labor in our company.

Huawei Digital Power respects the diversity of cultural backgrounds and beliefs and the lifestyle of employees, and encourages employees from different regions and departments to communicate with each other to create an open, inclusive, respectful and diverse employment environment. We do not interfere with the employees of to adhere to their beliefs and customs, and provide conditions for them to practice their beliefs and customs. In company parks, we set up prayer rooms to meet the needs of employees from different countries and religions, and build functional auxiliary facilities such asgymnasiums, libraries, cafes and nursing rooms to meet the diverse needs of employees and provide humanized services.

We have established effective mechanisms to ensure that our employees' voices are heard. For example, we gather our employees' opinions and suggestions through the Manager Feedback Program (MFP), employee's job perception, the manager open day program, and more. Employees can also file complaints and seek assistance through channels such as the dedicated Committee of Ethics and Compliance (CEC) hotline and our internal service hotline.

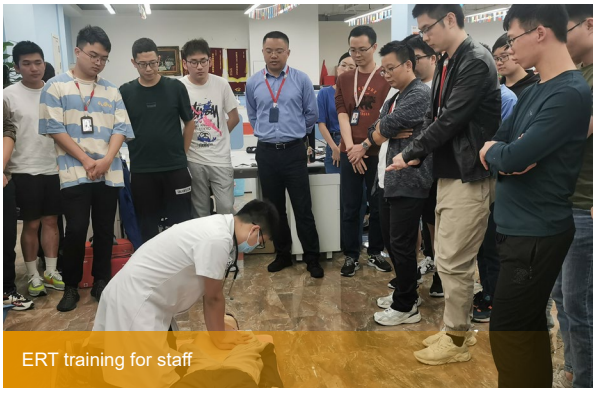
Employee Health and Safety

We attach great importance to employees' health and safety, actively care for employees. In addition, we have formulated relevant processes, systems and baselines to improve the occupational health and safety system. We have implemented management methods that meet or exceed the requirements of relevant laws and regulations. Environmental, Health and Safety (EHS) management covers all business areas of the company, and we have obtained ISO 45001 certification so as to implement the monitoring and management of employees' occupational health. Through safety culture, emergency drills, first aid training, physical and mental health training, we have done our upmost to care for employees and ensure the health and safety of our employees and partners.

Caring for employees' physical and mental health to help them work efficiently and live a happy life

- We regularly organize employees to participate in seminars on "mindful leadership" to help them improve concentration, manage emotions and communicate with others more effectively.
- We offer emergency response team (ERT) training for HR personnel and other staff to improve their ability to handle emergencies.

Seminar on “mindfulness leadership”



ERT training for staff

- We organize staff to participate in various sport activities, including outdoor sports and "3+1" (play a sport, develop a hobby, make a friend, read a book) activities to promote physical and mental health of employees.

“3+1” activity

Outdoor sport activity

Career Development

We provide employees with a broad career development channel by offering two distinct career paths for employees: the manager path and the expert path. Employees can choose either path or switch between them to find the right job. We also provide systematic training programs for employees at different stages of their careers. For new employees, there are programs for New Employee Orientation (NEO), mentorship, and position-specific training. These programs help new employees get to know the company better, learn the skills they need, adapt to their new roles, and grow quickly. As they work their way up, employees are offered places in programs that help them hone their expertise and management skills. We believe that the brightest minds can develop even brighter ones. All of our training program lecturers are managers and experts in their own fields. We believe in learning through practice and practicing what we learn. We have built skills conversion learning bases, hardware installation and debugging training bases and intelligent photovoltaic training bases in Dongguan, Guizhou and Qinghai to driveour training and practice sessions to enable individual growth.

Due to epidemic prevention and control, we provide abundant online learning resources through iLearning platform. iLearning platform aims to provide simple and accurate learning experience and has gradually transformed from a learning management platform to a learning experience system. By building an open learning platform, we are able to serve more comprehensive learning scenarios, help employees around the world study anyplace and anytime.

Huawei Digital Power Talent Training System

- **New employee enablement**

Through various teaching methods such as seminars, practice and exercises, we publicize the core values, basic knowledge and skills of posts for employees to help them integrate into the company and realize change roles faster. We provide tutors to guide employees in accordance with their aptitude.

New employee explanation practice at the exhibition hall

- **On-the-job employee enablement**

According to the business development strategy and the requirements of employees' positions, we carry out different ability enhancement activities for employees on different posts,to help them achieve change of roles and improve their ability through camp training, practice, skill contest and experience summarization.

Training activity for on-the-job employee

- **Manager enablement**

We carry out role cognition, special ability improvement, seminars, induction talks and 90-day role change counseling to help managers change their mode of thinking, enhance the understanding of their duties and responsibilities, and make progress in their work.

Manager enablement activity

- **Local employee enablement**

Carrying out international business requires the concerted efforts of employees from different countries and regions all over the world. We help local employees understand our strategic vision and enhance their sense of belonging and recognition to their teams and train local talents by conducting cultural integration seminars, business scenario reviews and case sharing activities.

Local employee enablement seminar

Promote Win-win Cooperation

We adhere to the concept of open cooperation and win-win symbiosis, and work with customers and partners to leverage the advantages of all parties, innovate products and solutions, promote technological progress and innovation, and promote the healthy and prosperous development of the energy industry.

We join hands with Zhonglian Data and Youyu County Government to build "Zero Carbon Youyu"

In December, 2021, we signed a strategic cooperation agreement with Zhonglian Yungang Data Technology Co., Ltd. and Youyu County Government on building Youyu into a zero-carbon county. The three parties will establish a strategic cooperation relationship, give full play to and complement their respective advantages, and carry out comprehensive cooperation in the top-level planning on the path to the goal of “carbon neutrality and emission peak”, green data center, pilot photovoltaic project, grid-connected green power generation, comprehensive smart energy and energy cloud, to accelerate the fulfillment of the goal of “carbon neutrality and emission peak” and build Youyu into a zero-carbon county together.

"Zero Carbon Youyu" Strategic Cooperation Agreement Signing Ceremony

Huawei Digital Power's "Green Energy Target Network"

We are committed to helping operators speed up carbon reduction. On September 16, 2021, the Green Network Summit and the 6th JDC Energy Forum with the theme of "Building a Low-carbon Network and Winning a Green Future" was held in Hangzhou. At the forum, Huawei Digital Power worked with domestic and foreign industry standard organizations, operators, tower enterprises and industry partners to interpret policies, gain insight into industry trends, analyze industry development directions, share practices, explore the way towards the goal of "carbon neutrality and emission peak" and industrial opportunities, and find solutions to future-oriented innovative products to jointly promote the green transformation of the industry.

Against the backdrop of achieving the target of "carbon neutrality and emission peak", the ICT industry is deepening its decarburization, and pioneer enterprises are shouldering their social responsibilities to accelerate carbon neutrality. Relying on our digital technology and power electronics technology, we promote the establishment of a green energy target network, and provide low-carbon digital solutions for green network energy, green data center and ubiquitous green electricity to help operators to tackle internal and external challenges and accelerate the fulfillment of the target of "carbon neutrality and emission peak".

Huawei Digital Power's "Green Energy Target Network"

Energy Inclusiveness

We strive to benefit the society and promote the sustainable development of the regions where we operate with our technologies. As a responsible company, we pay attention to the sustainable development of the regions where we operate, promote the development of the local digital economy through technological innovation and business activities and promote the sustainable economic growth and environmental protection of local regions to benefit the local people.

Intelligent PV solution helps the Green School Bali generate electricity more efficiently

We are committed to helping more areas achieve green and sustainable development, and are willing to work with our partners to achieve sustainable development. The Green School Bali, located in West Bangkajia Village in south-central Bali, is known as the greenest school in the world. The school provides an environment where humanity and nature coexist harmoniously and is committed to cultivating future leaders of global sustainable development. The design and layout of the school subtly integrate with the surrounding environment. For example, all the buildings, tables and chairs in classrooms, and lunch boxes are made of renewable materials such as bamboo and thatch. To promote the sustainable development of society, we have offered intelligent PV solutions for the school to ensure stable solar power supply. The intelligent photovoltaic equipment we donated can reduce 3.5 tons of CO_2 emissions[19] every month, so that teachers and students can live a greener life.

3.5 tons

reduce 3.5 tons of CO_2 emissions[19] every month

The Green School Bali Source:www.greenschool.org/bali

[19] Calculated by the EPA Greenhouse Gas Equivalencies Calculator

Appendix I GRI Standards

NO.	Description	Relevance to UN SDGs	Page
Part I: General Disclosure			
Organizational profile(2016)			
102-1	Name of the organization		1
102-2	Activities, brands, products, and services		1
102-3	Location of headquarters		Back cover
102-4	Location of operations		1
102-5	Ownership and legal form		1
102-6	Markets served		1
102-7	Scale of the organization		1
102-8	Information on employees and other workers		66-67
102-9	Supply chain		56-60
102-10	Significant changes to the organization and its supply chain		1
102-11	Precautionary Principle or approach		/
102-12	External initiatives		/
102-13	Membership of associations		/
Strategy(2016)			
102-14	Statement from senior decision-maker		4-6
102-15	Key impacts, risks, and opportunities		14-15
Ethics and integrity(2016)			
102-16	Values, principles, standards, and behavior norms		61-64
102-17	Mechanisms for advice and concerns about ethics		61-64
Governance(2016)			
102-18	Governance structure		12-13
102-19	Delegating authority		12-13
102-20	Executive-level responsibility for economic, environmental, and social topics		12-13
102-21	Consulting stakeholders on economic, environmental, and social topics	SDG16	14-15
102-22	Composition of the highest governance body and its committees	SDG5, 16	12-13
102-23	Chair of the highest governance body		12-13

NO.	Description	Relevance to UN SDGs	Page
102-24	Nominating and selecting the highest governance body	SDG5, 16	12-13
102-25	Conflicts of interest		/
102-26	Role of highest governance body in setting purpose, values, and strategy		12-13
102-27	Collective knowledge of highest governance body		12-13
102-28	Evaluating the highest governance body's performance		/
102-29	Identifying and managing economic, environmental, and social impacts	SDG16	14-15
102-30	Effectiveness of risk management processes		12-15
102-31	Review of economic, environmental, and social topics		14-15
102-32	Highest governance body's role in sustainability reporting		12-13
102-33	Communicating critical concerns		14-15
102-34	Nature and total number of critical concerns		14-15
102-35	Remuneration policies		/
102-36	Process for determining remuneration	SDG16	/
102-37	Stakeholders' involvement in remuneration		/
102-38	Annual total compensation ratio		/
102-39	Percentage increase in annual total compensation ratio		/
	Stakeholder engagement(2016)		
102-40	List of stakeholder groups		14-15
102-41	Collective bargaining agreements		100%
102-42	Identifying and selecting stakeholders		14-15
102-43	Approach to stakeholder engagement		14-15
102-44	Key topics and concerns raised		14-15
	Reporting practice(2016)		
102-45	Entities included in the consolidated financial statements		1
102-46	Defining report content and topic Boundaries		3, 14-15
102-47	List of material topics		14-15
102-48	Restatements of information		3
102-49	Changes in reporting		3

NO.	Description	Relevance to UN SDGs	Page
102-50	Reporting period		3
102-51	Date of most recent report		3
102-52	Reporting cycle		3
102-53	Contact point for questions regarding the report		3
102-54	Claims of reporting in accordance with the GRI Standards		3
102-55	GRI content index		73-80
102-56	External assurance		/
	Management Approach(2016)		
103-1	Explanation of the material topic and its boundary		14-15
103-2	Management approach and its components		12-13
103-3	Evaluation of the management approach		12-13
	Economic Performance(2016)		
201-1	Direct economic value generated and distributed	SDG2, 5, 7, 8, 9	/
201-2	Financial implications and other risks and opportunities due to climate change	SDG13	4-6,16-48
201-3	Defined benefit plan obligations and other retirement plans		/
201-4	Financial assistance received from government		/
	Market Presence(2016)		
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	SDG1, 5, 8	/
202-2	Proportion of senior management hired from the local community	SDG8	/
	Indirect Economic Impacts(2016)		
203-1	Infrastructure investments and services supported	SDG11, 2, 5, 7, 9	/
203-2	Significant indirect economic impacts	SDG1, 10, 2, 3, 8	/
	Procurement Practices(2016)		
204-1	Proportion of spending on local suppliers	SDG12	/
	Anti-corruption(2016)		
205-1	Operations assessed for risks related to corruption	SDG16	61-64
205-2	Communication and training about anti-corruption policies and procedures	SDG16	61-64
205-3	Confirmed incidents of corruption and actions taken	SDG16	/

NO.	Description	Relevance to UN SDGs	Page
	Anti-competitive Behavior(2016)		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	SDG16	61-64
	Tax(2019)		
207-1	Approach to tax	SDG8	1
207-2	Tax governance, control, and risk management	SDG8	1
207-3	Stakeholder engagement and management of concerns related to tax	SDG8	1
207-4	Country-by-country reporting	SDG8	1
	Part II: Topic-specific Disclosures		
	Materials(2016)		
301-1	Materials used by weight or volume	SDG12, 8	/
301-2	Recycled input materials used	SDG12, 8	31-32
301-3	Reclaimed products and their packaging materials	SDG12, 8	31-32
	Energy(2016)		
302-1	Energy consumption within the organization	SDG12, 13, 7, 8	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
302-2	Energy consumption outside of the organization	SDG12, 13, 7, 8	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
302-3	Energy intensity	SDG12, 13, 7, 8	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
302-4	Reduction of energy consumption	SDG12, 13, 7, 8	16-48
302-5	Reductions in energy requirements of products and services	SDG12, 13, 7, 8	16-48
	Water and Effluents(2018)		
303-1	Interactions with water as a shared resource	SDG6	/
303-2	Management of water discharge-related impacts	SDG6	/
303-3	Water withdrawal	SDG6	/
303-4	Water discharge	SDG6	/

NO.	Description	Relevance to UN SDGs	Page
303-5	Water consumption	SDG6	/
	Biodiversity(2016)		
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	SDG14, 15, 6	/
304-2	Significant impacts of activities, products, and services on biodiversity	SDG14, 15	72
304-3	Habitats protected or restored	SDG14, 15, 6	72
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	SDG14, 15, 6	/
	Emissions(2016)		
305-1	Direct (Scope 1) GHG emissions	SDG12, 13, 14, 15, 7	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
305-2	Energy indirect (Scope 2) GHG emissions	SDG12, 13, 14, 15, 7	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
305-3	Other indirect (Scope 3) GHG emissions	SDG12, 13, 14, 15, 7	/
305-4	GHG emissions intensity	SDG13, 14, 15, 7	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
305-5	Reduction of GHG emissions	SDG13, 14, 15, 7	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
305-6	Emissions of ozone-depleting substances (ODS)	SDG12, 3	/
305-7	Nitrogen oxides (NO_X), sulfur oxides (SO_X), and other significant air emissions	SDG12, 14, 15, 3	/
	Waste(2016)		
306-1	Water discharge by quality and destination	SDG12, 14, 3, 6	/
306-2	Waste by type and disposal method	SDG12, 3, 6	As Huawei Digital Power was established in June, 2021, there is no data basis for disclosure in this reporting period.
306-3	Significant spills	SDG12, 14, 15, 3, 6	No incidents.

NO.	Description	Relevance to UN SDGs	Page
306-4	Transport of hazardous waste	SDG12, 3	/
306-5	Water bodies affected by water discharges and/or runoff	SDG14, 15, 6	/
	Environmental Compliance(2016)		
307-1	Non-compliance with environmental laws and regulations	SDG16	No incidents.
	Supplier Environmental Assessment(2016)		
308-1	New suppliers that were screened using environmental criteria	SDG12	30
308-2	Negative environmental impacts in the supply chain and actions taken	SDG12	30
	Employment(2016)		
401-1	New employee hires and employee turnover	SDG5, 8	/
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	SDG5, 8	66-69
401-3	Parental leave	SDG5, 8	66-69
	Labor/Management Relations(2016)		
402-1	Minimum notice periods regarding operational changes		/
	Occupational Health and Safety(2018)		
403-1	Occupational health and safety management system	SDG3, 8	66-69
403-2	Hazard identification, risk assessment, and incident investigation	SDG3, 8	66-69
403-3	Occupational health services	SDG3, 8	66-69
403-4	Worker participation, consultation, and communication on occupational health and safety	SDG3, 8	66-69
403-5	Worker training on occupational health and safety	SDG3, 8	66-69
403-6	Promotion of worker health	SDG3, 8	66-69
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	SDG3, 8	66-69
403-8	Workers covered by an occupational health and safety management system	SDG3, 8	66-69
403-9	Work-related injuries	SDG3, 8	/
403-10	Work-related ill health	SDG3, 8	/
	Training and Education(2016)		
404-1	Average hours of training per year per employee	SDG4, 5, 8	66-69
404-2	Programs for upgrading employee skills and transition assistance programs	SDG4, 5, 8	66-69
404-3	Percentage of employees receiving regular performance and career development reviews	SDG5, 8	100%

NO.	Description	Relevance to UN SDGs	Page
	Diversity and Equal Opportunity(2016)		
405-1	Diversity of governance bodies and employees	SDG5, 8	66-69
405-2	Ratio of basic salary and remuneration of women to men	SDG10, 5, 8	/
	Non-discrimination(2016)		
406-1	Incidents of discrimination and corrective actions taken	SDG16, 5, 8	66-69
	Freedom of Association and Collective Bargaining(2016)		
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	SDG8	/
	Child Labor(2016)		
408-1	Operations and suppliers at significant risk for incidents of child labor	SDG16, 8	61-64
	Forced or Compulsory Labor(2016)		
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	SDG8	61-64
	Security Practices(2016)		
410-1	Security personnel trained in human rights policies or procedures	SDG16	/
	Rights of Indigenous Peoples(2016)		
411-1	Incidents of violations involving rights of indigenous peoples	SDG10	/
	Human Rights Assessment(2016)		
412-1	Operations that have been subject to human rights reviews or impact assessments	SDG16	66-69
412-2	Employee training on human rights policies or procedures	SDG16	66-69
413-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	SDG16	61-64
	Local Communities(2016)		
413-1	Operations with local community engagement, impact assessments, and development programs	SDG12, 17	72
413-2	Operations with significant actual and potential negative impacts on local communities	SDG12, 17	/
	Supplier Social Assessment(2016)		
414-1	New suppliers that were screened using social criteria	SDG12, 17	61-64
414-2	Negative social impacts in the supply chain and actions taken	SDG12, 17	61-64
	Public Policy(2016)		
415-1	Political contributions	SDG16	/

NO.	Description	Relevance to UN SDGs	Page
	Customer Health and Safety(2016)		
416-1	Assessment of the health and safety impacts of product and service categories	SDG12, 16	/
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	SDG12, 16	/
	Marketing and Labeling(2016)		
417-1	Requirements for product and service information and labelling	SDG12, 16	64
417-2	Incidents of non-compliance concerning product and service information and labelling	SDG12, 16	/
417-3	Incidents of non-compliance concerning marketing communications	SDG12, 16	/
	Customer Privacy(2016)		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	SDG12, 16	/
	Socioeconomic Compliance(2016)		
419-1	Non-compliance with laws and regulations in the social and economic area	SDG12, 16	/

Appendix 2 Table of Abbreviations

Acronym/Abbreviation	Full Name
3TG	Tin, Tantalum, Tungsten, Gold
5G	The 5th Generation Mobile Communication Technology
AC	Alternating Current
AI	Artificial Intelligence
ASIL	Automotive Safety Integrity Level
ASPICE	Automotive Software Process Improvement and Capacity Determination
BCM	Business Continuity Management
BCG	Business Conduct Guidelines
BCP	Business Continuity Plan
BIPV	Building Integrated PV
BIM	Building Information Model
BOD	Board of Directors
CAHRA	Conflict-affected and High-risk Areas
CB	Certification Bodies' Scheme
CCO	Chief Compliance Officer
CEC	Committee of Ethics and Compliance
CMRT	Conflict Minerals Reporting Template
CRCPE	Check, Root cause analysis, Correct, Prevent and Evaluate
CRT	Cobalt Reporting Template
CSD	Corporate Sustainable Development
CSR	Corporate Social Responsibility
CTTIC	China Transport Infocom Technologies Co., Ltd.
DC	Direct Current

Acronym/Abbreviation	Full Name
DCIM	Data Center Infrastructure Management
DEKRA	Deutscher Kraftfahrzeug überwachungsverein
EHS	Environment, Health and Safety
EMS	Electronics Manufacturing Service
EMT	Executive Management Team
EOL	End of Life
EPA	United States Environmental Protection Agency
ERT	Emergency Response Team
ESG	Environmental, Social and Governance
EU	European Union
EV	Electric Vehicle
GRI	Global Reporting Initiative
GSMA	Global System for Mobile Communications Association
GW	Gigawatt
HR	Human Resources
ICT	Information and Communications Technology
IDC	Internet Data Center
IMP	Incident Management Plan
IOC	Intelligent Operations Center
IPC	Inter-Process Communication
IPD	Integrated Product Development
IPDRR	Identify, Protect, Detect, Response, Recovery
ISO	International Organization for Standardization

Acronym/Abbreviation	Full Name
IT	Information Technology
ITR	Issue To Resolution
IV	I-V Curve
IEC	International Electrotechnical Commission
IECEE	Worldwide System for Conformity Testing and Certification of Electrical Equipment
JAC	Joint Audit Cooperation
LTC	Lead To Cash
MFP	Manager Feedback Program
MW	Megawatt
NEO	New Employee Orientation
NEV	New Energy Vehicle
NGO	Non-Governmental Organization
ODCC	Open Data Center Summit
OECD	Organization for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OPEX	Operating Costs of Telecommunication Operators
OFPV	Offshore Floating Photovoltaic
PUE	Power Usage Effectiveness
PE	Polyethylene
PEDF	Photovoltaic, Energy storage, Direct current, Flexibility
PV	Photovoltaic
PVMS	Photovoltaic Management System
RBA	Responsible Business Alliance

Acronym/Abbreviation	Full Name
RBC	Responsible Business Conduct
RCI	Responsible Cobalt Initiative
RMAP	Responsible Minerals Assurance Process
RM	Ringgit Malaysia: legal monetary unit in Malaysia
RMI	Responsible Minerals Initiative
R&D	Research and Development
SaaS	Software-as-a-Service
SCR	Silicon Controlled Rectifier
SDS	Smart Tracking Stand Control Algorithm
SPIC	China's State Power Investment Corporation
TÜV SÜD	TÜV SÜD Group
SWOT	Strengths, Weaknesses, Opportunities, Threats
UAE	United Arab Emirates
UHVDC	Ultra-high Voltage Direct Current
UHV	Ultra-high Voltage
UN	United Nations
UN SDGs	United Nations Sustainable Development Goals
UPS	Uninterruptible Power Supply
US	United States
WNEVC	World New Energy Vehicle Congress
WWF	World Wide Fund for Nature

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