Huawei Investment & Holding Co., Ltd.

2019 Sustainability Report

Bring digital to every person, home and organization for a fully connected, intelligent world

HUAWEI

Supporting Network Stability to Drive Sustainable Development

COVID-19 has changed our lives. And as this pandemic continues to sweep across the globe, its impact on social, economic, and global health systems is bound to be huge.

Digital technology is helping us to fight back. 5G, big data, and AI have greatly boosted the medical community's ability to speed up testing, provide remote consultation, research vaccines, and track the spread of the disease.

These technologies are also helping us social distance more effectively. Greater connectivity allows for things like cloud-based teleworking, online education, and contactless shopping, which have helped people stay home and stay safe.

At the same time, networks are being pushed to their limits. Growing online activity has caused a surge in network traffic, overwhelming network infrastructure in countries worldwide. To ease the strain on networks, some streaming media companies have had to lower the quality of their video. Some countries are recommending that people vary their online activities throughout the day to avoid peaks. And in some underserved rural areas, students have taken to seeking out higher ground for a stronger signal to take classes online.

Huawei is doing what it can to help. First and foremost, our priority is to ensure the safety and well-being of our employees and to resume production in a responsible way. We are working closely with carriers around the world to support stable network operations and meet growing demand for reliable network connectivity, especially in regions that are suffering the most.

In China, we worked with our customers to build an emergency 5G network for the Huoshenshan field hospital in Wuhan. We got the entire network up and running in only three days, providing the hospital with the high-speed connections they need for remote consultations. Our remote videoconferencing systems are also helping medical institutions in countries like Thailand and Italy to communicate more efficiently.

We have deployed an AI-based diagnostic solution in over 60 medical institutions across Asia, Europe, and Latin America to boost diagnostic efficiency. It normally takes 12 minutes to review a CT scan. With AI, hospitals can do so in just two minutes.

These are only a few examples of how digital technology is changing the way we live and work. In the information age, access to stable and continuous network services has become a basic need – a

fundamental right – of every human being.

For more than 30 years, we have committed ourselves to pushing the boundaries of information and communications technology and driving its global adoption. We have worked closely with carriers worldwide to build over 1,500 networks and help millions of companies go digital. Together, we have connected more than three billion people in more than 170 countries and regions.

Supporting network stability has always been, and will remain, Huawei's top priority. We go where our customers need us and do everything within our power to provide ubiquitous network connectivity in every country and region in which we operate. This includes some of the world's harshest environments, like deserts, plateaus, and rainforests, and areas hit by disasters such as earthquakes, tsunamis, and disease.

To build a fully connected, intelligent world, our industry still has a long way to go. According to GSMA, more than one billion people have no mobile broadband coverage, and about half of the world's population still has no Internet access. We need to keep collaborating and innovating across the global value chain and driving the broader adoption of new technologies. We also need to take sustainability more seriously, contribute more to socioeconomic development, and help build a greener society.

Huawei is committed to open collaboration. We will continue working with our global partners to build out the industry ecosystems that thrive on shared success. Together, we can promote inclusive and sustainable development. As part of these efforts, we believe that equipping people with the skills they need is the key to sustainability and to driving the digital economy forward, so we are working with our partners to develop a more robust digital talent ecosystem and bridge the digital divide.

We want to bring the benefits of technology to everyone, and protect our planet in the process. We will redouble our efforts to conserve energy; reduce environmental impact; and build a low-carbon, green, and fully connected world for future generations.

Cyber security and privacy protection remain our top priorities. We are committed to communicating and collaborating with all stakeholders in a trustworthy, open, transparent, and responsible manner. In addition, we are working to address shared cyber security challenges through technological innovation, improvements in management, and contribution to standards.

Over the past year, we faced challenges the likes of which we have never seen. And we stood strong. We have worked day and night to patch the holes in this beleaguered business of ours, ensuring business continuity and the timely delivery of products and services to our customers.

We have helped roll out networks worth hundreds of billions of dollars in more than 170 countries. Ensuring the stable operations of these networks and providing people with the best available technology is not only our purpose, it is the central tenet of our social responsibility.

When the going gets tough, the tough *keep going*. It's possible that even greater challenges lie ahead. Come what may, we are fully confident that the future will be bright. Huawei will work more closely than ever with our customers and partners to create greater value for the global community.

Liang Hua
Chairman of the Board

Building a Better, Sustainable Future

Rapid development in ICT is leading us into an era of unprecedented prosperity and unlimited possibilities. As digital technologies like 5G and AI push boundaries and become more widespread, the ICT industry is shifting from a vertical industry to one that underpins society. It is spurring the intelligent and digital transformation of every industry, driving a new technological revolution. ICT will power inclusive, sustainable development. We hope to play a bigger role with our technologies and expertise during this process.

Inclusive technology: Leaving no one behind in the digital world

Instead of widening the gap between the haves and have-nots, technology should be used to resolve differences. Right now, about half the world's population does not have access to the Internet or even know how to use it. If we do not act now, they will not be able to keep pace with the digital world. At Huawei, we are committed to promoting digital inclusion for all, so that no one is left behind.

In 2019, Huawei launched the RuralStar Lite solution, which greatly reduces site construction costs and connects more than 40 million people in remote areas. The solution offers connectivity across all types of terrain, across plains, hilly regions, deserts,

and island chains. Huawei has also worked with its partners to build the DigiTruck mobile digital classroom, providing digital skills training for those in remote regions in Kenya. This program has already benefited nearly 800 people. In September 2019, I signed an MoU with the UNESCO Regional Office for Eastern Africa on behalf of Huawei. We will work together to take the DigiTruck to more countries and make digital skills accessible to all Africans.

Security and trustworthiness: The cornerstone of the fully connected, intelligent world

Huawei's survival depends on innovation. We invest heavily in basic research and engineering technologies, as this empowers us to provide secure products and services that will continue to win customer trust. This level of security and trustworthiness has enabled Huawei to steadily move forward despite external pressures.

In 2019, we made a concerted effort to enhance transparency and communicate more proactively with the world. We remain committed to the facts and sharing information openly. This past year, we invited journalists, researchers, experts, government officials, and other stakeholders from around the world to see with their own eyes what Huawei is truly about. Since

it opened, the Huawei Cyber Security Transparency Centre in Brussels has received more than 160 groups from governments, customers, media outlets, industry organizations, and standards organizations, and it continues to offer a number of verification and testing services.

Huawei has built more than 1,500 networks in over 170 countries and regions that provide network services to more than 3 billion people. Supporting network stability has always been our mission and top priority. During emergencies like earthquakes, typhoons, tsunamis, and even armed conflicts, Huawei employees hold fast in disaster zones to restore communications networks and support smooth network operations. Huawei's efforts have contributed to the continuity of global ICT infrastructure.

Actions speak louder than words: Reducing carbon emissions with ICT

Huawei is working to build green products and solutions through continuous innovation. We aim to minimize our footprint while bringing convenience through technology such as our 5G Power solution. According to the results of a trial between Huawei and one of its Chinese customers, this solution can save up to 4,130 kWh of electricity per site per year. A similar trial with a European customer suggests that 5G Power can reduce energy use in each site by more than 50%.

In 2019, Huawei adopted the Intelligent Campus Energy Management Solution as part of its plan to digitize campus management. Building on the Huawei Horizon Digital Platform's intelligent analytics, we have developed a strategy for dynamically controlling campus energy consumption and supplying power where it is needed, cutting energy use by over 15%. In addition, we continue to promote the use of clean and renewable energy. In 2019, more than 1.25 billion kWh of the electricity we used came from clean energy sources, and over 13.5 million kWh of the electricity used on our campuses came from solar power.

Innovative ICT products and solutions are playing an increasingly important role in conserving energy and reducing emissions in various industries and contributing to a green and low-carbon society. We are driving the wider adoption of our smart PV solution worldwide and helping countries transition from fossil fuels to clean energy. For example, the 300 MW PV plant in Argentina's Jujuy Province, which was commissioned in October 2019, will generate 660 million kWh of electricity annually, enough to power 160,000 households.

Working with partners to build an industry ecosystem where everyone wins

Huawei is an active, productive member of the communities where we have a presence. We adopt a positive, diverse, and open approach to talent

management and focus on developing local talent. In 2019, Huawei directly created more than 4,000 new jobs in local communities by recruiting locally. We buy from local suppliers as much as we can to promote local economic development. Over the past year, we organized more than 170 community programs for supporting environmental protection, training for ICT professionals, and direct donations.

Huawei believes in openness and collaboration for shared success. We work with industry partners, such as our suppliers, to build a thriving industry ecosystem.

As the saying goes, "If you want to go fast, go alone. If you want to go far, go together." We believe that open collaboration is the only way to create a stronger ICT industry. So we will continue to pursue sustainable development with our global partners.

Working towards a better, sustainable future

From the bitterness of winter comes the sweet fragrance of spring. 2020 may prove to be an even greater challenge. We will need to adapt to the increasingly complex external environment, while also addressing the socioeconomic impact of the ongoing COVID-19 pandemic. Survival is our top priority right now, and we need to achieve our sustainable development goals. Therefore, we are holding ourselves to higher standards.

We are fully confident that we can overcome these challenges. We will stay the course and continue creating value for our customers and the broader global community. Huawei is ready to work with all its industry partners to promote sustainable economic, environmental, and social development. We are committed to bringing digital to every person, home and organization for a fully connected, intelligent world.

With our partners by our side, we can continue to stand tall, drive sustainable development, and build a better future.

Tao Jingwen
Board Member and Chairman
of the CSD Committee

Corporate Profile

Who is Huawei?

Founded in 1987, Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We are committed to bringing digital to every person, home and organization for a fully connected, intelligent world. We have more than 194,000 employees, and we operate in more than 170 countries and regions, serving more than three billion people around the world.

Who owns Huawei?

Huawei is a private company wholly owned by its employees. Through the Union of Huawei Investment & Holding Co., Ltd., we implement an Employee Shareholding Scheme involving 104,572 employees. Only Huawei employees are eligible to participate. No government agency or outside organization holds shares in Huawei.

Who controls and manages Huawei?

Huawei has a robust corporate governance system. Shareholding employees elect 115 representatives to form our Representatives' Commission. This Commission then elects the Chairman of the Board and the remaining 16 board directors. The Board of Directors elects four deputy chairs and three executive directors. Three deputy chairs take turns serving as the company's rotating chairman.

The rotating chairman leads the Board of Directors and its Executive Committee while in office. The board exercises decision-making authority for corporate strategy and operations management, and is the highest body responsible for corporate strategy, operations management, and customer satisfaction.

The Chairman of the Board chairs the Representatives' Commission. As Huawei's highest decision-making body, the Commission makes decisions on major company matters, like profit distribution, capital increases, and the elections of members of the Board of Directors and the Supervisory Board.

Who does Huawei work with?

Externally, we rely on our customers and partners. Customers are at the center of everything we do, and we create value for them with innovative products. Internally, we rely on our hard-working and dedicated employees. At Huawei, those who contribute more get more.

We work with stakeholders including suppliers, partners, industry organizations, open source communities, standards organizations, universities, and research institutes all over the world to cultivate a broader ecosystem that thrives on shared success. In this way we can help drive advancements in technology and grow the industry as a whole.

We create local employment opportunities, pay taxes, and comply with all applicable laws and regulations in the countries where we operate. We also help local industries go digital, and openly engage with governments and the media.

(For more information, refer to the Huawei 2019 Annual Report)
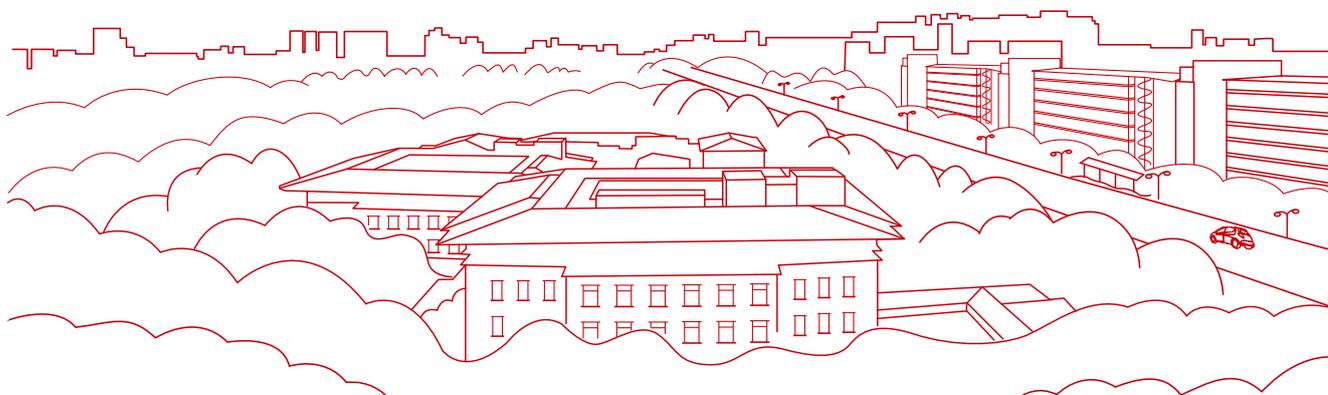
Report Profile

Every year since 2008, Huawei Investment & Holding Co., Ltd. ("Huawei", "the company", or "we") has voluntarily released sustainability reports and disclosed our sustainability performance so that the public can better understand the strategy, approach, and implementation of our sustainability efforts. Doing so helps us be more sustainable and facilitates communication, awareness, and interaction with our stakeholders and the public.

This report covers all entities that Huawei either has control of, or a significant influence over, in terms of financial and operational policies and measures. The scope of the entities covered in this report is consistent with the scope of organizations discussed in the Huawei 2019 Annual Report. Unless otherwise specified, this report describes the economic, environmental, and social performance of Huawei and its subsidiaries worldwide during the reporting period from January 1, 2019 to December 31, 2019. All data contained herein is derived from Huawei's official documents and statistical reports. For details about the economic data in the report, refer to the Huawei 2019 Annual Report.

The report is prepared in accordance with the Global Reporting Initiative (GRI) Standards (Core option). Huawei engaged Bureau Veritas, an external assurance provider, to verify the reliability, fairness, and transparency of this report and to issue an independent assurance statement (see Appendix IV).

As an independent record of sustainability, this report is published online and in print in both Chinese and English in July 2020. (The report for 2018 was published in July 2019.) The 2019 Sustainability Report can be viewed at www.huawei.com

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1 Sustainability Management

Huawei's Sustainability Honors and Awards
Sustainability Strategy
Sustainability Management System
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Huawei's Sustainability Honors and Awards

Honor/Award Name	Issued by
2019 EcoVadis CSR Gold Rating	EcoVadis
2019 Best Practice Award in recognition of Huawei's progress towards SDGs (environmental protection and climate change)	Global Compact Network China
No. 1 in the 2019 CSR Development Index of China's Top 100 Private Companies	Chinese Academy of Social Sciences
Huawei Mobile Money solution: Champion of WSIS Prize 2019 for Category 8 ICT applications: benefits in all aspects of life — e-Business	ITU
Huawei 5G Power solution: Global Industry Award for Sustainable Impact	ITU
Outstanding Company in Green Supply Chain	China Green Supply Chain Alliance
Zero Accident Award (third consecutive year)	Indonesia's Ministry of Manpower
Best Company with Innovation in Corporate Social Responsibility	Africa Mobile & ICT Expo (MOBEX)
Award for driving the digital economy among other private sector companies in the ICT industry	Nigerian government
Huawei's Seeds for the Future program won the EIKON (a major communication award in Argentina) Silver award in the category of Sustainability in Education	EIKON Awards

Sustainability Strategy

As a leading global provider of ICT infrastructure and smart devices, Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world. We believe that ICT plays a critical role in achieving the UN's Sustainable Development Goals (SDGs), as technology is vital for socioeconomic development, environmental protection, and the well-being of humanity. Huawei prioritizes sustainability in its development strategy, using the SDGs as a basis for setting its goals and plans for sustainability. As well as implementing our own sustainability measures, we aim to proactively influence the entire industry to contribute to the SDGs.

In 2019, we made significant progress in the four major areas of our sustainability strategy.

Strategy	Description	Relevance to SDGs	Major Progress in 2019
Digital Inclusion	**Leaving no one behind in the digital world** Technology should not be for the few, but for the many. Huawei has continued to invest in technology, applications, and skills to promote digital inclusion for all. Our goal is to bring digital technology to every person, home, and organization.	SDG 3: Good Health and Well-Being SDG 4: Quality Education SDG 5: Gender Equality SDG 8: Decent Work and Economic Growth SDG 9: Industry, Innovation and Infrastructure SDG 13: Climate Action SDG 14: Life Below Water SDG 15: Life on Land SDG 17: Partnerships for the Goals	• Ran six TECH4ALL digital inclusion programs with partners; • Provided an interactive learning environment for more than 20,000 students with SmartBus; • Expanded the Huawei ICT Academy to cover 938 universities in 72 countries and regions; and • Signed a memorandum of understanding with the UNESCO Regional Office for Eastern Africa with the aim of making digital skills and AI capabilities accessible to everyone in Africa.
Security and Trustworthiness	**Taking responsibility to build trust** Cyber security and privacy protection are our top priorities. We have continued to invest and remain transparent in both areas. We have continually improved our software engineering capabilities and practices, built resilient networks, developed trustworthy and high-quality products, and supported stable network operations and business continuity.	SDG 9: Industry, Innovation and Infrastructure SDG 12: Responsible Consumption and Production SDG 17: Partnerships for the Goals	• Guaranteed network availability during more than 200 major events and natural disasters; • Published an AI security and privacy protection white paper; • Obtained more than 20 cyber security and privacy certifications for our main products; and • Saw multiple Huawei entities obtain ISO 22301 (business continuity management) certification.

Environmental Protection	**Contributing to a clean, efficient, low-carbon, and circular economy** We are committed to minimizing our environmental impact during production and operations and throughout our product and service lifecycles. We use innovative products and solutions to help industries reduce energy use and emissions, and contribute to building a circular economy. We actively work with all our industry partners to build a low-carbon society.	SDG 6: Clean Water and Sanitation SDG 7: Affordable and Clean Energy SDG 12: Responsible Consumption and Production SDG 13: Climate Action	• Increased the energy efficiency of our main products by up to 22%; • Cut CO_2 emissions intensity by 32.7% compared with the base year; • Recycled 86% of returned products; and • Used 1.25 billion kWh of clean energy, reducing emissions by 570,000 tons.
Healthy and Harmonious Ecosystem	**Collaborating for the common good** We operate with integrity and in compliance with all applicable laws and regulations. We work to ensure employee growth and maximize value. We actively contribute to the communities in which we operate. We also work with all industry partners to build a healthy and harmonious industry ecosystem.	SDG 1: No Poverty SDG 2: Zero Hunger SDG 3: Good Health and Well-Being SDG 4: Quality Education SDG 5: Gender Equality SDG 8: Decent Work and Economic Growth SDG 10: Reduced Inequalities SDG 17: Partnerships for the Goals	• Invested more than CNY13.9 billion in employee benefits; • Hired 67% of our employees locally outside of China; • Saw more than 700 of our engineering service providers pass the Occupational Health and Safety Management System certification; and • Expanded our flagship program Seeds for the Future to 111 countries and regions.

Sustainability Management System

In working towards our strategic sustainability goals, we have established a sustainability management system based on international standards and guidelines such as ISO 26000 and SA 8000. This system considers the internal and external environments and our stakeholders' needs. To manage our sustainability goals in a closed loop and increase stakeholder satisfaction, the system operates in six areas: leadership, planning, organization and skills support, process operations, performance appraisal, and continuous improvement.

6. Sustainability management system improvement
- Issue closure
- Cause analysis
- Continuous improvement

1. Leadership
- Sustainability strategies, principles, and objectives
- Sustainability policies, rules, and standards
- Tiered sustainability management authorization
- Sustainability culture, incentives, and accountability

2. Planning
- Countermeasures for risks and opportunities
- Sustainability solution planning
- Change planning

Huawei's Sustainability Management System

5. Performance appraisal
- Customer satisfaction surveys
- Maturity assessments
- Measurements, analyses, and evaluations
- Sustainability reviews
- Management reviews

4. Process operations
- Major business processes (IPD/LTC/ITR)
- E2E sustainability management (incorporating sustainability requirements into processes)
- Building sustainability into the entire value chain (suppliers/partners)

3. Organization and skills support
- Quality and operations organization
- Knowledge management
- Capacity building
- Document management
- Infrastructure

Business environment
Stakeholders
Customers

Requirements

Satisfaction

Business environment
Stakeholders
Customers

Responsibilities and Operations of the CSD Committee

Huawei's CSD Committee consists of over 10 senior executives from various departments, including human resources (HR), manufacturing, administration, procurement, and research and development (R&D). The CSD Committee is chaired by Tao Jingwen, a board member and President of the Quality, Business Process & IT Management Department. The CSD Committee established a work group responsible for coordinating and completing everyday sustainability tasks and reaching strategic goals.

Responsibilities of the CSD Committee

- Develops corporate-level sustainability strategies, guidelines, objectives, and policies; sets their course; and monitors their implementation.
- Coordinates the establishment, implementation, and continuous improvement of the sustainability management system; decides on relevant 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 matters across domains or processes and coordinates sustainability operations from end to end.
- Provides guidance on the establishment, operation, and improvement of our EHS management system, and handles major EHS issues.

Operations of the CSD Committee

- The chair and other members of the committee make collective decisions on sustainability.
- A committee meeting is held at the end of each quarter.
- A sustainability strategy workshop is held at the beginning of each year.
- The CSD workgroup is in charge of everyday work coordination and implementation.

Sustainability Risks and Opportunities

Huawei systematically manages sustainability risks by referring to the Risk, Governance, and Control (RGC) methodology. We believe that sustainability risk management should be a part of everyday company management and organizational operations, rather than approached separately. Senior management plays a critical role in this. That is why we have set a clear tone at the top and developed a code of conduct to create the right environment for controlling risk. Sustainability risk management is not just about identifying risks; it also identifies potential opportunities.

Fully identifying sustainability risks and opportunities is an important consideration in our annual strategic planning. It helps us set suitable goals and work plans, and contribute to sustainability as much as we can.

Sustainability Risk Management Framework

Examples of sustainability risks, opportunities, and measures

Strategy	Risk and Opportunity	Measure
Digital Inclusion	Individuals, households, and organizations in remote areas, extreme environments, and areas with limited access to the Internet do not have equal access to digital resources or enjoy good digital experiences.	Huawei uses innovative technologies to make connections more widespread, convenient, and affordable. This will benefit more people around the world and lower the barriers to the digital world.
	Different industry segments and specific groups need customized and scenario-based digital technologies and applications.	Huawei provides customized ICT applications and easy-to-use application development platforms, which helps the industry ecosystem thrive.
	There are large gaps in digital literacy in some places, which is not conducive to the balanced development of the global digital economy.	Huawei works with governments, businesses, organizations, and local communities around the world to improve the digital skills of individuals and societies. We also improve the digital capabilities for small- and medium-sized organizations and help governments make their digital economies more competitive.

Security and Trustworthiness	Though ICT brings opportunities and convenience, its development also poses cyber security and privacy challenges.	Huawei has made cyber security and user privacy protection its top priorities, and planned to invest US$2 billion over five years to systematically improve its software engineering capabilities.
	The widespread use of smart devices has increased the amount of user data stored on them. In addition, more applications from different sources are installed on the devices, exposing users to more privacy and security risks.	Huawei provides end-to-end security solutions like chip security, EMUI security, and Huawei Mobile Services (HMS) security without undermining the product experience.
	In the digital era, building trust in cyber security is difficult.	Huawei works with its stakeholders based on integrity and trustworthiness, openness and transparency, and accountability. Huawei's Cyber Security Transparency Centre in Brussels serves as a platform for government agencies, technical experts, industry associations, and standards organizations to address cyber security issues.
	Natural disasters and surges in demand cause networks to fail or become unavailable.	Huawei has established two global and ten regional technical assistance centers that provide 24/7 services worldwide.
	With today's highly globalized division of labor, Huawei relies on third-party manufacturers and agencies for procurement, manufacturing, logistics, and global technical services. Therefore, a discontinuity in third-party business could compromise our operations and performance.	Huawei has established a business continuity management (BCM) system to raise all departments' BCM awareness, improve capabilities to handle emergencies, and ensure everyday business risks are well managed.
Environmental Protection	Soaring data traffic is straining networks and increasing the power consumption of ICT infrastructure. Cutting energy consumption and minimizing negative impacts on the environment without curtailing network performance is a major challenge for the industry.	Huawei provides leading green products and solutions in order to reduce energy consumption and carbon emissions throughout a product's lifecycle.
	As business grows and new campuses are put into use, energy consumption increases.	Huawei has introduced an energy management system that relies on technological and managerial measures. We have also introduced clean energy to reduce carbon emissions and minimize our negative impact on the environment.
	Suppliers' non-compliance with environmental protection standards may negatively impact Huawei, or their ineffective carbon emissions programs may prevent us from meeting our customers' needs.	To build a greener supply chain, Huawei carries out green partner programs and works with suppliers to innovate in energy conservation and emissions reduction and cut carbon emissions throughout the supply chain. We also contribute to standards and attend events organized by industry organizations.
	Climate change, resource depletion, and e-waste pollution pose many challenges for global sustainable development. The ICT industry can help create a greener world.	Huawei promotes green ICT solutions to drive energy conservation and emissions reduction in various industries. We also actively carry out programs such as e-waste recycling and trade-ins.

Healthy and Harmonious Ecosystem	Huawei employees around the world face health and safety threats such as illness, conflicts, natural disasters, and crime.	Huawei has a well-established employee health assurance system. In addition to the social security stipulated by law, we also provide commercial insurance and medical assistance for employees.
	During the course of our operations, Huawei may impact local communities. Improving and contributing to communities can help Huawei win the support of local residents.	Huawei complies with local laws and regulations, creates jobs for communities, protects local environments, and contributes to charity events that support disaster relief, health, and social welfare.
	Complex political and economic climates and increasing uncertainty are complicating Huawei's global compliance environment.	Huawei is stepping up efforts to build a compliance management system because legal compliance is a strong defense against the uncertainties of international politics.
	Employees and subcontractors face health and safety risks at work.	To ensure the safety of employees and subcontractors, Huawei has established an EHS management system in line with ISO 45001, customer requirements, and applicable laws and regulations.
	Violations of social responsibility by suppliers may prevent them from supplying products to Huawei, but if they can satisfy sustainability requirements, the entire supply chain will become more competitive.	Huawei has established a supply chain security management system and incorporated sustainability into procurement processes and practices, and we drive suppliers' sustainability practices through our sourcing strategy.

Stakeholder Engagement

Huawei's stakeholders mainly include customers, consumers, employees, suppliers, governments, non-governmental organizations (NGOs), industry organizations, specialist agencies, the media, and communities. Engaging with stakeholders is an integral part of Huawei's sustainability management, and we communicate with them about topics of shared interests to understand their opinions, needs, and expectations. This helps us better identify sustainability risks and challenges, determine the priorities of our sustainability efforts, and set scientific and objective goals.

Huawei is active in key stakeholder initiatives, industry alliances, and other regional and global sustainability platforms, and we encourage innovation and collaboration to achieve sustainability goals.

The following table shows our stakeholders' major concerns, communication channels, and Huawei's strategies.

Stakeholder	Concern	Communication Channel	Huawei Strategy
Customers and consumers	• Product/Service quality • Fair transactions • Consumer health and safety • Sustainable consumption • Cyber security and privacy protection	• Customer satisfaction surveys • Customer meetings • Huawei Fan Club for consumers • Customer audits, surveys, and joint projects	• Remain customer-centric, put quality first, and succeed with quality. • Operate with integrity. Have a zero-tolerance policy towards corruption and bribery. Protect intellectual property and trade secrets. • Establish a strict product security control mechanism, adopt stringent product security standards, and provide secure and reliable products and services. • Integrate sustainability requirements into the entire product lifecycle and promote circular economy practices. • Prioritize cyber security and privacy protection.
Employees	• Health and safety at work • Compensation, benefits, and incentives • Employee training and development • Employee relations and experiences working at Huawei	• Meetings with employee representatives • Reflection sessions • Employee surveys (e.g. organizational climate surveys) • Manager Feedback Program (MFP) • Hotlines and public email addresses for filing complaints, providing suggestions, reporting misconduct, and making an appeal • Open Day with managers and experts	• Establish a quality employee health and safety management and assurance system. • Take dedicated employees as our foundation. Ensure all kinds of talent can work in the roles that best suit them, maximize their contributions while in their prime, and receive the best rewards. • Establish a comprehensive training system and clear career development paths. Fast-track top performers. • Value diversity and welcome all kinds of talent. Create a healthy work environment.

Suppliers	• Fair transactions • Training for empowerment	• Supplier sustainability audits • Supplier conferences • Supplier training	• Ethical and transparent procurement. • Zero tolerance of bribery and corruption. • Train and coach suppliers and roll out supplier development programs.
Governments	• Operational compliance • Employment and wealth creation	• Meetings on government policies • Providing input to government standardization and consultations • Government and inter-government conferences • Governmental sustainability programs	• Conduct business with integrity and comply with international conventions and applicable laws and regulations wherever we operate. • Hire local people, purchase from local companies, and pay taxes according to local laws.
NGOs, industry organizations, and specialist agencies	• Contribution to the UN's SDGs • Contribution to the economy, society, and environment • Openness and transparency	• Attending external meetings and inviting relevant organizations to attend our meetings. • Industry forums and work groups, such as ITU, GeSI, RBA, and JAC • Standards discussions • Joint sustainability programs • Attending research/academic events	• Consider the opinions and initiatives of NGOs, industry organizations, and specialist agencies, and promptly respond to their requests. • Promptly disclose sustainability information.
Media	• Information transparency and timely disclosure	• Press conferences • Exclusive interviews • Inviting the media to our conferences and events • Interaction on Huawei's websites and social media platforms	• Disclose Huawei's sustainability information and promptly respond to external concerns and doubts.
Communities	• Local employment, procurement, and skills development • Environmental protection • Contributions to communities	• Local employment and procurement • Participation in community projects • Holding charity events • Interaction on Huawei's websites and social media platforms	• Hire local people, purchase from local companies, and make upskilling an important part of Huawei's TECH4ALL initiative. • Make environmental protection one of Huawei's four sustainable development strategies. • Work with local organizations to hold charity events.

2019 Stakeholder Engagement

Huawei extensively engages with stakeholders and participates in global dialogs on addressing the world's sustainability challenges and identifying ways in which technology can help. We are working closely with sustainability initiatives, industry alliances, and other sustainability platforms at the local, regional, and global levels. We encourage innovation and collaboration to drive impactful changes and achieve sustainability goals.

Huawei at the Responsible Business Summit Europe 2019

Huawei was a key partner at the Responsible Business Summit Europe, which was held in London in June 2019. Organized by Ethical Corporation, the event brought together senior and diverse industry players, who shared their challenges and opportunities in shaping a sustainable future. The summit attracted 500 participants from businesses, governments, major international organizations (e.g., UN agencies), think tanks, associations, and NGOs. Huawei delivered a keynote speech on sustainable development and ICT. We pointed out that ICT infrastructure development meshes well with the UN's SDGs and that national ICT plans and sustainable development should supplement each other.

Huawei at the CSR Asia Summit 2019

The CSR Asia Summit 2019 was held from September 17 to 19, 2019 in Bangkok, Thailand, with nearly 400 stakeholders in attendance. Huawei was a Gold-level sponsor for the fifth consecutive year. At this year's summit themed "Sustainability: From Rhetoric to Results", Huawei emphasized that technological advances will empower social progress and quality education will drive innovation and shape the future. To achieve the SDGs set by the UN, the public sector, private sector, NGOs, and academic institutions must work more closely to improve the integrity of the global supply chain. Huawei also spoke at the Leadership Panel and at the session on Big Data, Technology, and Sustainability in the Age of Digital Transformation.

Huawei at the 2019 China Business Summit on Achieving SDGs

The Global Compact China Network held the 2019 China Business Summit on Achieving SDGs in Beijing. At the summit, leading companies from different sectors shared their experiences and examined how to find new opportunities while contributing to SDGs. Huawei won the 2019 Best Practice Award in recognition of its progress towards the SDGs (environmental protection and climate change).

Huawei and UNESCO Eastern Africa sign an MoU

On September 18, 2019, Huawei and the UNESCO Regional Office for Eastern Africa signed an MoU at HUAWEI CONNECT 2019. The two announced their partnership to make digital skills and AI accessible to everyone in Africa and to contribute to the SDGs. This is an integral part of Huawei's efforts to support equal access to high-quality education – one of the four components of our digital inclusion initiative TECH4ALL.

Huawei's ICT Sustainable Development Goals Benchmark report

Huawei believes that ICT can play a key role in driving the expansive and rapid achievement of the SDGs. In June 2019, Huawei released its third ICT Sustainable Development Goals Benchmark report. The report analyzes the impact of ICT on the SDGs on a country-by-country basis and provides insights into achieving a more sustainable world faster.

Huawei's Membership in Sustainability Organizations

Focusing on Material Issues

By identifying our material issues, we are able to find areas for improvement and optimize our sustainability management. By assessing our material issues, we have determined which issues most affect our business and which issues are important to our stakeholders. The results are shown in the following matrix, which displays impacts on stakeholder assessments and

decisions (vertical axis) and importance of economic, environmental, and social impacts (horizontal axis).

Based on the overall data from the responses of multiple stakeholders, we first determine the priority of issues on the vertical axis. Then, based on a risk analysis led by in-house experts, strategy alignment, and maturity assessment results, we determine the priority of issues on the horizontal axis.

Materiality matrix plotting "Impacts on stakeholder assessments and decisions" (vertical axis, Low to High) against "Economic, environmental, and social importance" (horizontal axis, Low to High):

- Advocating green supply chains
- Less energy consumption & carbon emissions
- R&D of eco-friendly products
- Business continuity
- Resource efficiency & circular economy
- Cyber security & user privacy
- Supply chain sustainability management
- Occupational health & safety
- Ubiquitous connectivity
- Stable network operations
- Operational integrity & compliance
- Employee upskilling & development
- Digital skills for all
- A thriving application ecosystem
- Charity events & contributions to communities
- Openness & transparency
- Sustainability management system

2 Digital Inclusion

Digital technologies drive economic growth and improve social well-being at an incredible rate on an unprecedented scale. This will help us make significant progress on the SDGs as we reduce poverty and hunger, improve health, create new jobs, ease the effects of climate change, protect biodiversity, improve energy efficiency, and sustainably develop cities and communities.

Driving Equity and Quality in Education

Protecting the Environment

Enabling Inclusion and Equity in Health

Driving Balanced Development

3 GOOD HEALTH AND WELL-BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

17 PARTNERSHIPS FOR THE GOALS

Background

Though we share this planet, we are still digitally divided. About half of the world's 7.5 billion people do not have access to the Internet or even know how to use it. If we do not act now, the digital world will leave them behind. At the same time, we are facing other serious global issues including environmental problems, unevenly distributed education resources, and widening gaps between regions. Vulnerable countries, regions, industries, and groups have fallen behind due to a lack of opportunities, and thus are unable to share in the benefits of digital technologies.

Huawei's Approach and Practices

Huawei's vision is to bring digital to every person, home and organization for a fully connected, intelligent world. We want to help everyone benefit from digital technology, and do what we can to ensure that no one is left behind in the digital world. That is why we are promoting digital inclusion with a focus on three priorities: technology, applications, and skills.

First, technology serves as the foundation. Huawei aims to build a fully connected, intelligent world using innovative technologies in connectivity, computing, AI, cloud, and mobile devices. Second, applications are the key to

unlocking inclusion. Huawei will empower ecosystem partners and help developers create customized applications for different regions, communities, industries, and groups. Third, skills provide assurance. Huawei will work with organizations, such as local governments, universities, and communities, to enhance digital skills and develop digital talent for the future.

Huawei does not simply pursue technological advances; we focus on the social value technology creates. To help more people and organizations benefit from digital technology, Huawei launched its digital inclusion initiative and action plan, TECH4ALL. Building on business sustainability, we will make long-term, non-profit investments that ensure the sustainability of digital inclusion.

By working with global partners such as UN agencies, NGOs, research institutes, governments, carriers, and enterprise customers, we will promote digital inclusion by focusing on four high-impact domains: driving equity and quality in education, protecting the environment, enabling inclusion and equity in health, and driving balanced development.At present, we have only made a small step forward. We hope that more individuals and organizations will join the TECH4ALL digital inclusion initiative to promote the achievement of the UN's SDGs.

Let's find new ways to install better education around the world

Let's find new ways to protect the planet

Let's find new ways to unlock health for all

Let's find new ways to power up economic development
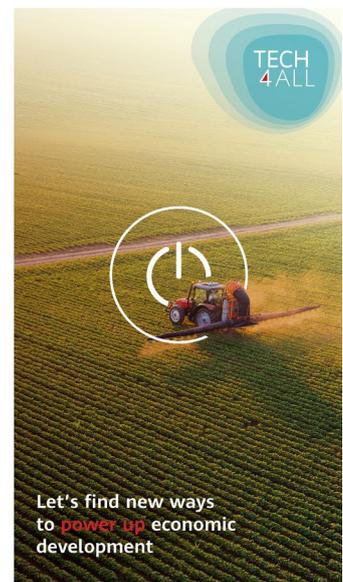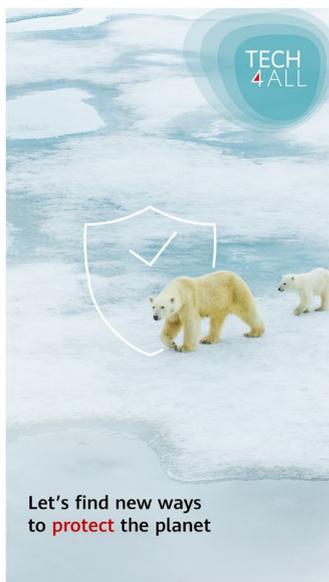
Driving Equity and Quality in Education

Knowledge and skills are the cornerstone of progress. ICT promotes equal access to education and serves as the building block for developing digital skills. In education, Huawei focuses on four types of programs: Skills on wheels, Connecting schools, Empowering the unempowered, and Building a thriving ICT talent ecosystem. Together with its partners, Huawei is committed to providing equal access to high-quality educational opportunities for people of different regions and groups using ICT.

STORY　**DigiTruck: Building a Road to Digital Skills**

Huawei's DigiTruck mobile digital classroom

A recent World Bank report estimates that 230 million jobs in Sub-Saharan Africa will require digital skills by 2030, as the global digital economy continues to develop rapidly. This sits in stark contrast to the widespread lack of digital skills in the region. Even in Kenya, where ICT infrastructure is relatively mature, less than 50% of people use the Internet. This is not just because over 75% of Kenyans live in remote areas without a stable power supply. It is also because many people do not realize the economic value of digital skills and have never used a smartphone or been online before.

Change starts with a truck

To help Kenyans in remote rural areas improve their digital awareness and digital skills, Huawei set up the DigiTruck mobile digital classroom in partnership with the Belgian non-profit organization Close the Gap, the UNESCO Regional Office for Eastern Africa, GSMA, Computers For Schools Kenya (CFSK), and the Kenyan telecom carrier Safaricom. DigiTruck is the latest program under Huawei's TECH4ALL initiative that supports access to high-quality education. It focuses on providing digital skills training for rural teachers, unemployed young people, and women in Kenya. Huawei's DigiTruck is a shipping container that has been converted into a mobile digital classroom. The 12-meter classroom is equipped with smart devices like laptops, LED screens, virtual reality (VR) headsets, smartphones,

and routers. Students can use smartphones and laptops to learn Internet skills thanks to wireless broadband access. The entire truck is solar-powered, so classes can be held in remote areas that lack a power supply.

"With the different DigiTrucks, we have been able to reach even the most isolated communities that have little or no access to ICT, bringing quality training and education to these areas," said Olivier Vanden Eynde, Founder and CEO of Close the Gap, "This will make a positive impact on the lives of Kenyans."

DigiTruck has hugely benefitted local communities in a number of ways: Local residents better understand the benefits of digital skills. Teachers in villages can use digital technologies so that students can access the world of digital information as early as possible.

Young entrepreneurs can study e-commerce and earn more revenue through the Internet. Rural women can become more financially independent thanks to computer technologies.

DigiTruck has benefited 796 people from five counties in Kenya. In the future, DigiTruck will provide digital skills training to more people in remote regions.

Allowing more African people to benefit from digital technologies

An African proverb holds that, "We go fast alone, but we go farther together." Huawei's DigiTruck and its entire digital inclusion initiative rely on the extensive support and assistance of its partners.

At HUAWEI CONNECT 2019, Huawei and the UNESCO Regional Office for Eastern Africa signed an MoU and announced the plan to make digital skills and AI capabilities accessible to everyone in Africa. The partnership will focus on areas like DigiTruck, regional forums and events, the Huawei ICT Academy program, and digital skills research to help East African countries improve their ability to adopt AI and digital technologies.

STORY **StorySign Helps Deaf Children Learn to Read**

In 2019, StorySign, an AI application powered by HUAWEI HiAI, continued to empower more children and families. Users simply scan the words on a page of a storybook. The text is then uploaded to the app. A cartoon figure appears on the screen and the words are translated into sign language. The app takes away much of the challenge that deaf children normally face when learning to read.

In 2019, the app became available in 14 different sign languages (English, French, German, Italian, Spanish, etc.), featuring 69 popular children's books. Huawei also brought StorySign to iOS in 2019, making it available to more deaf children and their families.

"The support that we have received from Huawei to date has had a genuine impact on deaf children and their families," said Mark Wheatley, Executive Director of the European Union of the Deaf. "Through our ongoing partnership, we are continuing to work closely to ensure that StorySign reaches as many families and communities as possible, helping us get one step closer to our shared ambition of helping more deaf children learn to read."

STORY   **SmartBus: Empowering Young People Online in Europe**

The Internet is an integral part of the lives of digital natives. In Europe, Internet penetration is around 90%, with almost 90 million children under 18 regularly surfing the web.

For all its incredible benefits, the Internet can be a risky place for young people. Cyberbullying and privacy protection are just two of the issues they face – issues that will only grow as people spend more time in the digital world. They need to be supported by parents, schools and the tech industry to increase the levels of necessary skills to navigate the online world in a safe and productive manner.

To address cyberbullying and privacy protection, Huawei has worked with children's rights and cyber security training organizations in Europe to roll out the SmartBus project.

SmartBus is a mobile, Wi-Fi-equipped digital classroom that provides an engaging, interactive, and fun learning environment for children between the ages of 11 and 15.

The project team designed multiple courses on cyberbullying and privacy protection. The courses help these children learn about how their personal data can be possibly leaked without their

knowledge when they are online, especially through social media. And with real-world examples, students learn about true and false information on the Internet as well as the precautions they need to take to stay safe online. SmartBus also guides students on how to cope with cyberbullying and where they can turn for help.

Since October 2019, the SmartBus project has run in Belgium, the Netherlands, Spain, and Portugal. SmartBus has visited 126 schools in 79 cities, offering interactive learning to over 20,000 students and 5,000 parents and teachers. To ensure all children are protected, the SmartBus project team has also adapted their curriculum for special education schools.

Janice Richardson, a children's rights protection and cyber security education expert, said, "Extensive research has been carried out to understand what children are doing online and to ensure that SmartBus addresses their needs. This has helped us to define new educational approaches, which we intend to further develop during and after the tour."

Protecting young people online starts with empowering them with knowledge. As the SmartBus initiative expands throughout Europe and further afield, Huawei is working with schools and governments to help equip digital natives with the knowledge they need to stay safe online.

The ICT industry is knowledge-intensive and highly dependent on talent, requiring a continual stream of new talent to keep it strong. The Chinese ICT industry will suffer a shortfall of an estimated 12.46 million ICT professionals in 2020, including 9.04 million in emerging fields such as AI, cloud computing, and big data. This is where Huawei ICT Academy comes in.

ICT Academy: Bridging gaps for the future

Launched in 2013, Huawei ICT Academy provides training on ICT technologies to university students worldwide and encourages them to participate in our certification programs. The academy aims to develop local ICT talent to meet future demand and build a sustainable talent ecosystem.

In collaboration with global universities, we have developed an end-to-end talent supply chain involving training, certification, and employment, which promotes industry development and meets the needs of enterprises.

As of December 2019, Huawei had worked with 938 universities in 72 countries and regions to help develop teaching materials, train teachers, build labs, and certify

An ICT Academy teacher answering a student's question

students. In 2019 alone, Huawei trained over 45,000 students.

Huawei also launched the ICT Competition in which university students from around the world can compete and interact, helping them apply what they've learned and seek employment in ICT more easily. In May 2019, Huawei's fourth ICT Competition was held in collaboration with more than 1,600 universities worldwide, attracting over 100,000 university students from 61 countries. Huawei provided free courses and learning materials for all participants, and helped them prepare for the competition online. Outstanding participants were also offered internships and employment opportunities at Huawei.

Huawei certification: Developing standards for cultivating talent

Huawei provides a leading talent development system and certification standards. Its certification system consists of ICT Infrastructure Certification, Platform and Service Certification, and ICT Vertical Certification. We have worked with over 100 global training partners to provide ICT training and talent certification services worldwide. By the end of 2019, Huawei had certified more than 260,000 ICT professionals, more than 11,000 of which became Huawei Certified ICT Experts (HCIEs). It is estimated that Huawei will have trained over 1 million certified professionals for the ICT industry by 2024.

Protecting the Environment

The environment that we rely on for survival is deteriorating. Problems like climate change and rising sea levels are threatening the survival and development of humanity and every species on Earth. Our experience in working with environmental protection organizations tells us that ICT can help us better understand and protect nature. From forest monitoring to the protection of endangered species, Huawei is actively seeking to work with more environmental protection organizations and partners. Huawei hopes to use its ICT expertise to protect and maintain ecological balance and ensure the environment can benefit from technology.

STORY   **Safeguarding Rainforests and Protecting Endangered Animals with AI**

Illegal logging is both destroying rainforests and creating an existential threat to species such as the spider monkey. These rare monkeys play an important role in maintaining the ecosystem of the Costa Rican rainforest – they are highly efficient seed dispersers that help trees multiply by spreading seeds throughout the forest.

Since 2019, Huawei and Rainforest Connection (RFCx) have worked together to develop a platform that includes data collection devices, storage services, and intelligent analytics. These "Guardians" monitor and prevent illegal logging, in turn protecting endangered animals such as the spider monkey.

When the monitoring system detects sounds of illegal logging, such as chainsaws and trucks, it

Topher White, the founder and CEO of RFCx, installing a Guardian

immediately pushes the specific location to forest rangers through an app so they can quickly locate the incident. Huawei's AI technology can also analyze the sounds of animals, including spider monkeys, aiding research into protecting them. With the help of AI, forest rangers and biologists are no longer alone in their fight to safeguard the world's rainforests.

In partnership with Huawei, RFCx has deployed its rainforest solutions in 10 countries and expects to conserve about 6,000 square kilometers of protected areas by the end of 2020.

Protecting Amur Tigers and Amur Leopards with Technology

Four subspecies of wild tigers are still in existence in China, and among them, a very small number of Amur tigers remain in their natural habitat in Northeast China. The Northeastern China Tiger and Leopard National Park was established in August 2017 to protect these endangered species. Covering 14,600 square kilometers, the national park is currently equipped with technology to explore how it monitors and protects the habitat.

The National Forestry and Grassland Administration of China worked with Beijing Normal University to establish the Amur Tiger and Amur Leopard Monitoring and Research Center. The center developed a sky-to-earth monitoring system using technologies such as communications networks, satellite remote sensing, video and image data collection, AI, big data, and cloud computing. In December 2019, under the Administration's leadership, the sky-to-earth monitoring system was piloted across 5,000 square kilometers of the national park where Amur tigers and Amur leopards are the most concentrated.

Huawei and Jishi Media jointly created communications networks that integrate wired and wireless networks and broadband and narrowband technologies. A total of 42 LTE wireless base stations have been set up using China Broadcasting Network's 700 MHz band which is in low costs but offers wide coverage. The base stations are installed on existing fire-resistant towers. While the radius of a single station exceeds 10 km, the signal can span 18 km if unobstructed. The networks of the Northeastern China Tiger and Leopard National Park can monitor and transmit real-time information about animals, plants, soil, water quality, and air quality, in addition to preventing fire and theft. The networks also support real-time queries of ranger patrols, video and voice calls, and real-time event reporting.

By the end of 2019, the monitoring system had captured over 1,000 activities of Amur tigers and Amur leopards, over 1 million activities of sika deer and other wild animals, as well as natural resource images. The system is expected to cover the entire park by the end of 2020. This will ensure visibility into resources and help manage personnel. Conservationists recently discovered new litters of cubs in the tiger and leopard populations of northeast China. Ten tiger cubs and six leopard cubs were caught on camera, giving hope to those who work to protect the future of these majestic animals.

Huawei will continue working with the Amur Tiger and Amur Leopard Monitoring and Research Center of the National Forestry and Grassland Administration in the areas of intelligent video and image analysis, big data analytics, and 5G solutions. The partnership will also serve as an example for how to promote digital transformation of national parks and natural reserves around the world. We hope more partners will join us in using technology to better protect wildlife habitats and achieve harmony with nature.


An LTE base station in the Northeastern China Tiger and Leopard National Park

STORY   **Huawei Smart Assistant•TODAY and Air Lens: AI Simplifies Waste Sorting**

In 2019, multiple Chinese cities began implementing waste-sorting rules in the hope of improving urban environments, using resources more wisely, and promoting civic responsibility. The payoff will come in the form of huge social, economic, and ecological benefits. However, enforcing such rules is not easy, as it means a more scientific approach to managing waste that people have to get used to. After the waste sorting rules were officially introduced in Shanghai, a waste sorting section was immediately available on Huawei Assistant•TODAY, explaining waste sorting methods to more than 100 million users in an understandable way.

Huawei also launched Air Lens to help users sort waste with a simple phone scan. The app supports the waste-sorting standards of multiple cities, and automatically switches standards based on user location. Air Lens's waste sorting function was demonstrated during the launch of the Mate 30 series of smartphones and attracted a lot of attention. Hundreds of millions of consumers now understand the AI-powered waste sorting function of Huawei smartphones, becoming more environmentally conscious in the process.
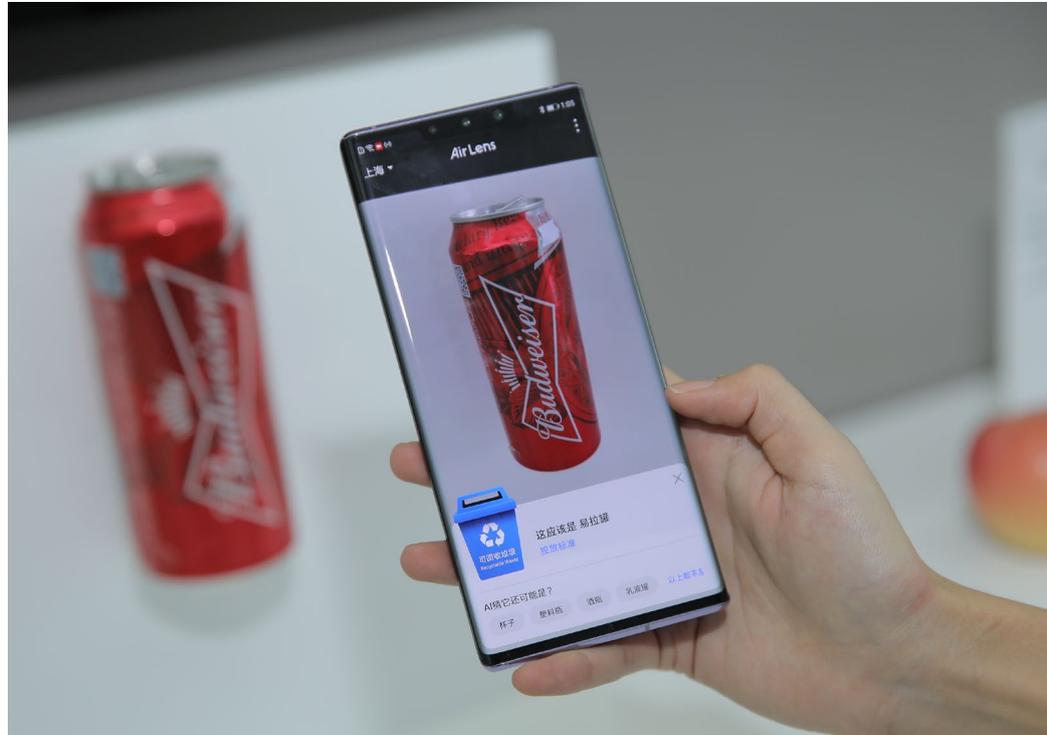
Huawei organized the DigiX digital lifestyle festival in four cities, allowing 30 million people to experience AI-powered waste sorting first hand. Compared with similar waste sorting apps, Air Lens is easier to use and more accurate.

It was listed as one of China's most cutting-edge products at INNO AWARDS 2019.

Huawei aims to use technology to make people's lives easier and add value with applications. We take this as part of our mission and social responsibility. In the future, we will continue to work with consumers to protect the environment and contribute to a higher quality of digital life.

Enabling Inclusion and Equity in Health

Digital technologies will open a new chapter for health and well-being. More affordable, inclusive, and accessible healthcare services allow people to prevent, detect, and even solve health problems early on. Equal access to high-quality healthcare makes medical resources more available and lets people live healthier lives. Huawei is committed to working with all parties to use ICT to build a more dynamic and healthy society from which everyone can benefit.

STORY   **TrackAI: Stopping Blindness in Its Tracks**
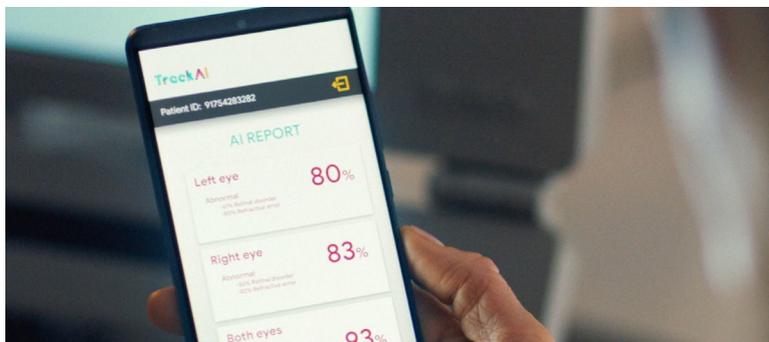
According to World Health Organization estimates, around 19 million children around the world suffer from some sort of visual impairment. Early diagnosis is essential for children – if discovered early enough, 70% to 80% of all cases are preventable or curable. However, diagnosing children can be difficult because they cannot articulate what they are experiencing. Now, AI is making this critical early diagnosis a very real possibility.

Most eye diseases occur within the first five years of life. Unfortunately, a lack of parental knowledge and awareness leads to many children missing this optimum diagnosis period. Only a third of children with an eye disease receive early treatment.

Traditionally it has largely fallen to professional ophthalmologists to detect eye diseases. Doctors have to catch the child's attention by moving their finger or an instrument and then observing the child's reaction. However, in many developing nations, professional ophthalmologists are in extremely short supply. In developed countries, rigorous referral systems mean that ordinary ophthalmologists are often not qualified to give specialist tests for eye diseases. Once a patient is transferred to a specialist, their wait time can be as long as three to six months.

To tackle the lack of eye doctors and difficulty in diagnosing eye diseases in children, the Spanish medical research institute, IIS Aragon, and the startup DIVE Medical developed the Device for an Integral Visual Examination (DIVE). DIVE is designed to provide automatic, fast, and accurate visual function testing for children and infants as young as six months old.

At the start of 2019, Huawei teamed up with IIS Aragon and DIVE Medical to jointly launch the TrackAI project. It makes use of Huawei smart devices and AI to help children who suffer from eye diseases. TrackAI's detection system consists of the DIVE device, a Huawei P30 smartphone, and a Huawei MateBook E tablet. The system can display visual stimuli on the screen and track the child's focus with the eye tracker. It can also learn the differences between children with and without eye diseases. During the test, the patient watches the stimuli displayed on the MateBook E screen, DIVE tracks the movement and reaction of the patient's gaze in real time, and sends the data to the Huawei

P30. The Huawei P30 smartphone then runs a pre-trained machine learning model to detect whether the patient has a visual impairment.

As with most conventional techniques, TrackAI's system relies on expert interpretation of the test results, and in this case the results need to be verified by an ophthalmologist. However, using AI to judge the results makes it easier for non-specialist pediatric ophthalmologists to interpret visual assessments and identify which children have visual impairments. The co-founder of DIVE Medical, Victoria Pueyo said, "As researchers, we need support from technology companies. Huawei is enabling us to globalize the impact of DIVE and take the technology to every corner of the world."

At present, a number of medical institutes in China, Spain, Vietnam, Mexico, and Russia have started to collect the data required to train the AI algorithm, gathering gaze data from over 2,000 visually impaired children so far. By continually collecting data and adjusting the machine learning model, the researchers can increase accuracy. There's still a long way to go before TrackAI is perfected, but a world where no visually impaired child goes undiagnosed is closer than ever.

STORY   **PocketVision: A Clearer World for the Visually Impaired**

There are many visually impaired people around us, and the world they see can be quite different from the colorful one we are used to. These people may be able to see only a few colors, such as black, white, yellow, or shades of gray, which can greatly inconvenience their work and lives. They may also find that reading is difficult without the support of visual aids. However, such devices are often incredibly expensive.

In response to this issue, PocketVision, a visual aid app developed by Eyecoming, was launched on the HUAWEI AppGallery. The app is empowered by the Huawei Kirin chipset, which offers incredible AI computing power, as well as the HUAWEI HiAI open platform, which provides text recognition and text to speech capabilities. PocketVision users can choose from six reading modes and utilize the text broadcasting function. The app can quickly identify, magnify, and broadcast text even without a network connection. It also provides users with both audio and visual assistance, allowing the visually impaired to see text more clearly.

Huawei is dedicated to bringing out the warmth of technology and making it inclusive for everyone. We hope that more partners will join us to enable people, families, and organizations to benefit from the digital world.
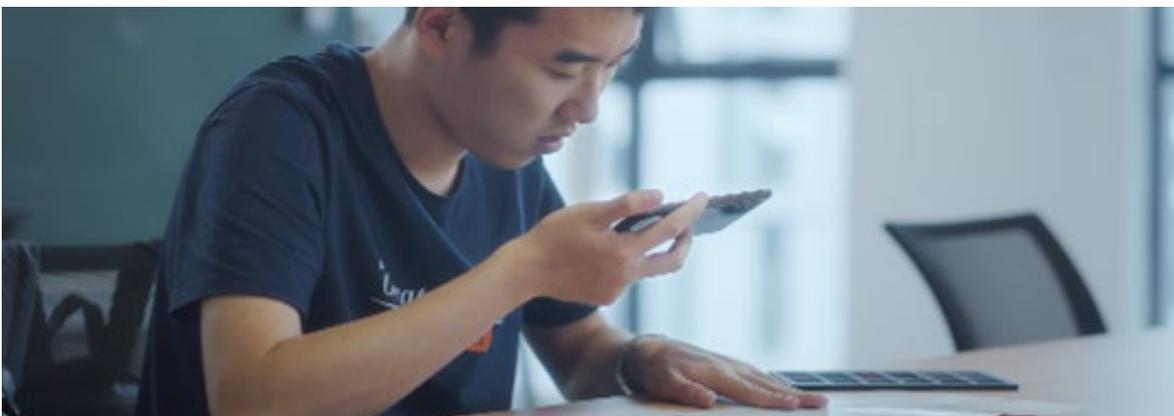
PocketVision helps the visually impaired see text more clearly

Healthcare inequality is a global problem that disproportionately affects people in rural and remote areas. The densely populated province of Henan in China is no exception, with the bulk of the province's healthcare resources concentrated in big cities. Medical resources in rural and remote areas are very scarce, so effective diagnosis and treatment can be hard to receive in many towns and counties.

Huawei has built up a broad array of telemedicine solutions and mature applications, including an HD video conferencing system that forms the foundation of a telemedicine system. Back in 2011, Huawei teamed up with China Mobile Henan to build a telemedicine platform and a joint innovation center for healthcare big data for the First Affiliated Hospital of Zhengzhou University, putting in place the ICT infrastructure necessary for a telemedicine system. Since its launch, the telemedicine system deployed by the National Telemedicine Center at the First Affiliated Zhengzhou University Hospital has covered the whole of Henan Province, providing people in remote areas with top-tier medical services.

Remote expert services for villages

Thanks to the system, 90% of diagnoses and treatment can remain at county-level healthcare facilities, with only critical cases referred to better-equipped provincial hospitals. The system has helped form a tiered national diagnosis and treatment system, which in turn enables resources to be used more efficiently.

The current system provides telemedicine services for more than 500 medical centers in Henan and over 900 centers outside Henan, including centers in African countries like Zambia and Morocco. Each year, the platform supports more than 40,000 teleconsultations and over 500,000 specialized diagnoses, including those that require ECG, pathology, and imaging services. It also enables more than 300 remote training sessions for over 500,000 medical personnel annually.

Telemedicine beyond borders

In 2018, the National Telemedicine Center of China started to provide daily cross-border telemedicine services and telemedicine training for Belt and Road countries as part of a seven-level healthcare service system, spanning international, national, provincial, city, county, township, and village levels. Plans are in motion to establish the National Telemedicine Center of China as a comprehensive service platform at the national and even global level.

Since the center was established, many medical workers from over 10 countries participated in telemedicine training provided there. In August 2019, more than 30 doctors, technicians, and nurses from Morocco took part in a two-week telemedicine training program.

Driving Balanced Development

ICT has become a key driver of digital and intelligent transformation across industries and inclusive growth in different regions. However, a huge digital divide still exists between different countries and regions and between different industries. Huawei provides affordable and easy-to-use digital technologies for different application scenarios, especially in regions and industries that are relatively underdeveloped. We aim to eliminate the development gaps between different industries, businesses, regions, and groups through broad collaboration, and provide equal access to digital resources so that they are inclusive to everyone.

STORY   **Financial Empowerment in Kenya with Flexible and Fast Overdrafts**

Safaricom's M-PESA is one of the world's best examples of mobile payment services. After ten years of development, M-PESA has a penetration rate of 95% among Kenyan adults, with more than 40% of Kenya's GDP being transacted and generated through M-PESA each year. However, M-PESA still faces several problems, including approaching its limits in terms of user base, limited service offerings, and high transaction failure rates when user account balances run too low.

In January 2019, Safaricom launched a new financial service called Fuliza based on Huawei's Mobile Money solution. This service allows 26 million M-PESA users to borrow money to complete their transactions when they have insufficient funds in their accounts. Fuliza facilitated 6.2 billion Kenyan shillings (approximately US$62 million) in transactions during its first month post-rollout and directly benefited a total of 14 million users during its first six months, with over 1 million monthly active users. These transactions covered a variety of daily financial activities, including payments for utility bills, tuition, family remittances, and shopping. Fuliza has brought a new source of revenue to Safaricom and greatly improved customer satisfaction.

Fuliza provides overdraft services to individual users and SMEs. These services have delivered two critical benefits for Kenyan consumers.

First, Fuliza provides credit services to individuals without bank accounts.

When a child starts school, for example, the family may not be able to afford tuition and book fees. In the past, it would have been impossible to pay for with M-PESA if the account was running low on funds. However, with Fuliza, families can apply for an overdraft

of, say, 1,000 Kenyan shillings, to meet key expenditure like school fees.

Second, Fuliza makes it easier for SMEs to get loans.

Small grocery stores often rely on bank loans to maintain turnover growth. However, loan application processes are slow and complicated. To encourage growth, business owners need simpler and more flexible ways to get loans.

With the Fuliza overdraft service, small loans are available almost directly at their fingertips. Such loans can be approved in seconds, and users can continue to use the Fuliza overdraft services as many times as they need, as long as they are within the allocated loan limit.

In addition, Fuliza offers interest-free loan terms. No interest is incurred as long as repayment is made within the agreed period. Once that period passes, interest is only calculated on a daily basis without additional penalties. The Fuliza financial service has driven local economic development and made people's lives more convenient.

STORY   5G Unmanned Smart Mining: Saving Lives and Reducing Costs

Mining has traditionally been a hot, tough, and dangerous occupation, with collapses, landslides, and dust clouds possible at any moment. While remote-controlled trucks are considered to be a safer and more efficient alternative in some mining scenarios, they have failed to deliver expected efficiency and safety gains due to the long latency caused by slow network transmission. Now 5G is bringing us hope.

With the shift from manual mining and remote-controlled mining trucks to 5G-powered unmanned smart mining, the mining industry is entering the digital age. With Huawei and China Mobile, China Molybdenum has built a 24/7 safety monitoring system that covers the whole mining process for all outdoor mining areas, thanks to the high-speed transmission made possible by 5G. Sensors and controllers within the mining vehicles are connected with high-speed 5G networks, sending onsite environment and equipment status information back to the

China Molybdenum workers remotely operating an excavator over a 5G network

control room in real time.

Drivers can now remotely work from a control center, with three screens in the front of the driver's seat showing a close-up of the excavator's robotic arm, a mid-range view from the driver's perspective, and a panoramic view of the excavator and surrounding environment. These images allow drivers to understand actual conditions in the mining area while eliminating almost all blind spots and latency.

This project represents China's first unmanned mine and a significant evolution for the entire mining industry. According to Yang Hui, President of Operations of Henan

Yuexin Intelligent Machinery and Chief Designer of its 5G unmanned smart mining initiative, "We run 40 electric unmanned vehicles for transportation and mining work, 30 of which are transport vehicles. Their speed has increased from 15 km/h to 30 km/h. Our overall operating efficiency has greatly improved, productivity has increased by about 30%, and we're saving about CNY12 million per year in labor costs."

4G has changed our lives. 5G will change society. With 5G, miners can remotely control excavators in air-conditioned rooms. This ensures worker safety, reassuring their families while increasing mining efficiency.

STORY Mine Brain: Safe, Fast, and Smart

The coal sector is an important segment of the Chinese energy industry. In addition to productivity, safety is another top priority in each coal mine. One small mistake in a mine can have unimaginable consequences. More than 5,800 coal mines in China now use AI to accelerate automation and intelligence, embarking on a new path.

Huawei and Jingying Shuzhi Technology have come together with the China Coal Research Institute to develop the Mine Brain solution. The Mine Brain features Huawei's FusionCube, an all-in-one intelligent edge infrastructure that provides powerful basic computing power and management support. Jingying Shuzhi's strength in algorithms delivers an AI model for Mine Brain that includes early warning algorithms and expert models.

Mine Brain can replace humans in hazardous environments and handle tedious and repetitive tasks. For example, Mine Brain's computer vision capabilities can monitor scraper conveyors. It can also identify unsafe behaviors like people sitting on conveyor belts, running after containers on aerial ropeways, or not wearing a helmet. It then reports these behaviors to the onsite monitoring system, which will then issue warnings. Following this, the system generates records, making these types of incidents part

of future safety assessments. As well as monitoring and protecting workers, Mine Brain can increase actual production hours by 10%, thanks to early identification and warning alarms for problems that may interrupt production. This will increase the direct economic benefits that continuous production brings. Even in a mine with an annual output of a million tons, Mine Brain can mean a bottom-line gain of CNY30 million. Mine Brain can also free up coal mine management personnel and allow them to focus on optimizing processes rather than managing people.

Mine Brain has been installed

in mines across China, including in Shanxi, Inner Mongolia, and Shaanxi, to manage tasks like water prospecting and gas extraction. Mine Brain has also allowed acceptance testing to move from underground to above ground, greatly improving efficiency. It provides remote intelligent diagnosis and warning alarms for operations and construction compliance, building a solid foundation for safety. By deploying the Mine Brain solution, coal can be transported directly to a coal washing plant on conveyor belts in a closed aisle, reducing the amount of coal dust and ash released into the environment, make mining cleaner and greener.

3 Security and Trustworthiness

Thanks to the development and application of ICT technologies, countries and regions have seen increasing productivity gains. At the same time, however, malicious activities such as privacy invasions, ransomware, and phishing scams are undermining trust in the digital world, including trust between countries, and this is having a negative impact on the innovation and development of various industries. Countries need to protect their critical infrastructure from cyber security threats and to prevent any acts that are harmful or likely to endanger international communications security. They should also figure out how to work together in a way that helps address cyber security risks and challenges.

Cyber Security and Privacy Protection
Openness and Transparency
Supporting Network Stability
Business Continuity

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

17 PARTNERSHIPS FOR THE GOALS

Background

All industries are undergoing digital transformation, and technologies such as cloud computing, big data, 5G, IoT, and AI are being applied extensively. In addition, business ecosystems are becoming more open, service rollout is becoming faster, and solutions are becoming more diversified. These innovations bring convenience, opportunities, and benefits. However, they also create new challenges to cyber security and privacy protection.

Such challenges are very complex because they involve not only legal and regulatory requirements, but also many elements and stakeholders. To address these challenges, the industry and society need to work together. Huawei believes that an open, transparent, and visible security assurance framework and privacy protection mechanism promote technological innovation and sustainable development for the industry. They also facilitate smooth and secure communications for individuals.

A world where everything senses and where everything is connected and intelligent is fast approaching. More open, reliable, and stable ICT infrastructure is the foundation of this intelligent world. Supporting stable network operations and business continuity is thus the mission and key social responsibility of all ICT infrastructure companies.

Huawei's Approach and Practices

Huawei supports and promotes an open, secure, stable, and peaceful cyberspace, and respects and protects all basic human rights advocated by the UN's Universal Declaration of Human Rights, including those relating to privacy and communications. We ensure cyber security and protect users' personal data in accordance with all applicable laws and industry best practices.

Supporting network stability is our paramount social responsibility. We strive to ensure that everyone is able to communicate, access data, and share information anytime, anywhere. Specifically, we have established a comprehensive customer network support system that covers a range of areas, including organizational structures, designated personnel, processes, and IT tools. We have also established a mature business continuity management (BCM) system to ensure our supply continuity and the timely delivery of our products and services to customers during key events. The BCM system provides contingency plans for a range of emergencies, such as major natural disasters; political, economic, and trade upheavals; and Internet virus attacks.
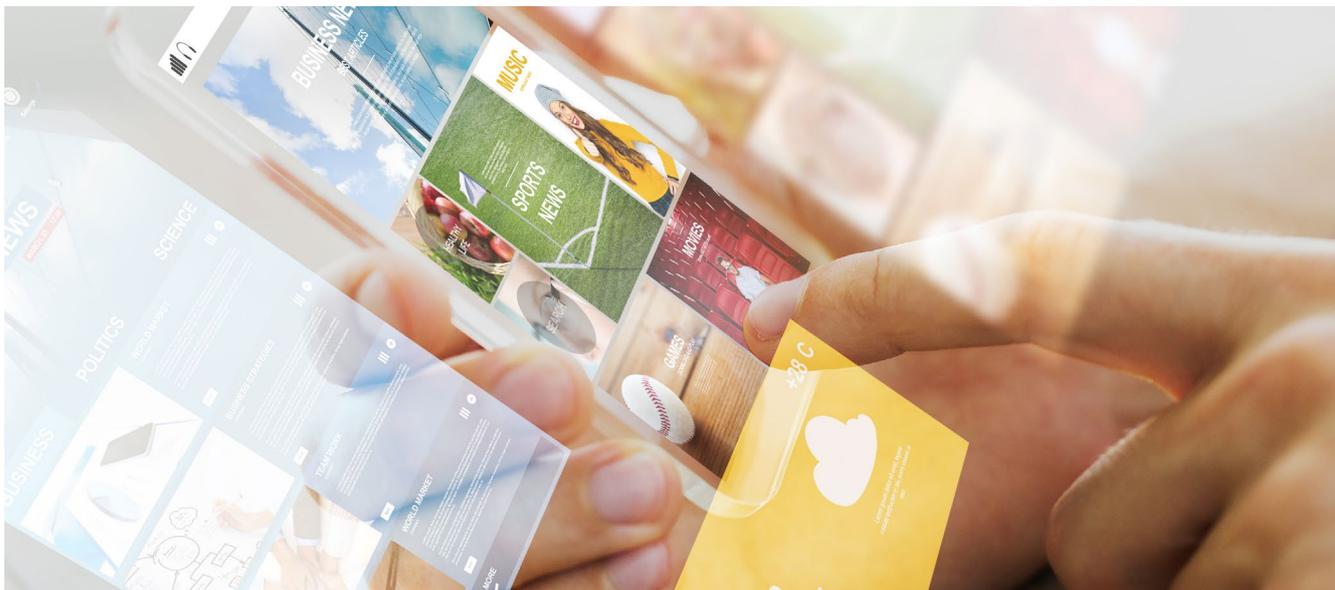
Cyber Security and Privacy Protection

As a leading global provider of ICT infrastructure and smart devices, Huawei plays an active role in the digital transformation of industries to bring digital to every person, home, and organization. As digital transformation initiatives accelerate across the world, we have a clear responsibility to ensure that cyber security and privacy protection remain a top priority. We have implemented and maintained a comprehensive end-to-end cyber security assurance system.

Over the past three decades, we have maintained a solid track record in security throughout. Huawei is the leading provider and designer of enhancing 5G security. We have provided more manpower and resources to the international bodies than anyone else, and we are the number 1 contributor of 5G security proposals which have been accepted and adopted by the industry. For example, 385 proposals submitted by Huawei were accepted by 3GPP, which accounts for 24.6% of all proposals accepted in 2019, making Huawei the top contributor of security proposals.

End-to-End Cyber Security Assurance and Privacy Protection System

Building and fully implementing an end-to-end global cyber security assurance and privacy protection system is one of Huawei's most crucial strategies. We are referencing industry best practices to build a system that is sustainable, reliable, and compliant with applicable laws and international telecom standards. This system covers everything from policies, organizational structures, processes, and management to technologies and standard practice. Huawei

End-to-end cyber security assurance system

transparently works with governments, customers, and partners to tackle cyber security and privacy challenges and meet our customers' demands.

We are addressing cyber security and privacy needs by incorporating best practices into our processes, baselines, policies, and rules. This makes cyber security and privacy protection central to Huawei's daily operations.

Huawei's top-down cyber security governance structure supports the success of its security strategy. The Global Cyber Security and User Privacy Protection Committee (GSPC) is Huawei's highest cyber security management body, and it is responsible for approving its strategy for cyber security assurance. The Global Cyber Security and User Privacy Protection Officer (GSPO) is an important member of the GSPC and reports directly to the CEO of Huawei. The GSPO is in

charge of developing Huawei's security strategy, and plans, manages, and oversees how departments (e.g., R&D, supply chain, marketing, sales, project delivery, and technical services) structure their security teams and ensure security in their business activities. The system now covers all departments, geographies, and processes. The GSPO also facilitates effective communication between Huawei and its stakeholders, including governments, customers, partners, and employees.

Cyber Security and Privacy Protection with Secure, Trustworthy, and High-quality Products

Over the past two years, we have reviewed our approach to security and privacy, analyzed the directions in which new technologies are heading and the current and future challenges facing our customers. As a consequence, we have enhanced our cyber security and privacy frameworks operating on the assumption that in this globally intertwined world, the cyberspace will face constant attacks.

Throughout 2019, the frameworks guided the way in which we continued to drive process transformation, solutions, security engineering capabilities, security technologies and standards, independent verification, supply chain, and personnel management. This has enabled us to proactively enhance our end-to-end cyber security assurance capabilities. Some of our key activities are highlighted here:

Heavily invested in software engineering capability transformation to ensure secure, trustworthy, and high-quality products

We simplified our products and solutions as much as possible, implemented the latest thinking about security architecture and development, and we are progressively upgrading all appropriate products and solutions to reflect the latest thinking, technology

components, and partners. We have systematically built and deployed resilient architecture design methods, and have launched the distributed automatic binary vulnerability mining platform. Moreover, we have improved our security design tools, code security scanning cloud, security test cloud, and fuzz test cloud. These initiatives greatly enhanced our security engineering capabilities enabling us to help our customers safely digitize their businesses and create value for their customers.

Maximizing the use of AI in developing security products and solutions

We have launched a series of security products and components centering on AI-powered security risk identification, security situational awareness, security risk prevention and response, and security ecosystem. These tools are integrated with our 5G, IoT, and cloud solutions to provide intelligent network boundary protection and defense, real-time situational awareness, and efficient closed-loop handling of security risks, helping customers build network resilience and protect themselves and their customers.

Maximizing technological innovation to reduce risks to customers

We have introduced full-stack security technologies into ICT products to enhance product security and resilience. These technologies include host intrusion detection, sandboxing functionality, container security, CPU side-channel attack detection, web application security, and intelligent risk control. We have also deployed memory code integrity measurement on 5G base stations, ensuring runtime code security. Furthermore, we have enhanced kernel integrity protection on mobile phones, and applied key security technologies such as the real-time detection of kernel attacks and AI-based detection of unknown threats to improve mobile phone security. Another area that we have innovated in is mobile apps. Dynamic and static privacy technologies for data access compliance detection will detect exceptions in mobile applications,

such as permission abuse, malicious behavior, and pirated applications. This not only ensures that the AppGallery complies with Android Green Alliance 2.0, but also provides for a clean and sustainable application software ecosystem.

Strengthened the independent verification mechanism

We have fully supported the independent verification of Huawei cyber security by stakeholders. In addition, we have assured and verified our cyber security management systems, products, services, and personnel through quality monitoring, internal and external auditing, and standards certification, meeting stakeholders' cyber security requirements across all of our business processes (e.g., R&D, sales, service, and supply) helping us to enhance external confidence in Huawei's overall approach to cyber security.

Supply chain cyber security risk management and capability building

Huawei's comprehensive supply chain security management system is ISO 28000-certified, enabling us to identify and control security risks throughout the supply chain lifecycle. We produced 28 types of industry-leading material security specifications and security sourcing test standards, along with 11 sets of industry-leading standards for the certifications of our suppliers' cyber security systems. Our suppliers must pass a rigorous security sourcing test and obtain system certification before they are accepted. In 2019, we assessed, tracked, and managed the risks of more than 3,800 suppliers worldwide. We signed data processing agreements (DPAs) with more than 3,000 suppliers and continue to run due diligence to ensure compliance with privacy obligations.

We released the supply availability security baseline and implemented it in all of our 145 newly developed products. Furthermore, we developed an in-transit exception dashboard to provide real-time warnings about exceptions such as abnormal stay and route

deviation. We restructured the product delivery tracing system, allowing us to trace software information within one hour and trace hardware information (from incoming materials to delivery to customers) within one day to facilitate the fast and transparent resolution of issues and to eliminate risks.

Employee awareness and skills enhancement

We conducted training across a range of cyber security and privacy protection topics and held exams for all Huawei employees, with a 99% success rate. Employees continue to be encouraged to improve their cyber security and privacy expertise through external training and professional certification. To date, more than 500 employees have obtained external professional certifications such as IAPP (privacy) and CISSP (cyber security). Huawei has the most IAPP-certified employees in the world. Our Cyber Security & Privacy Protection Knowledge Center, a one-stop learning and training platform was launched and is already helping employees improve their skills and enhance their knowledge. Over 620,000 hours of coursework has been completed by our employees, with a total of more than 290,000 individual enrollments in our 111 courses. This means the average Huawei employee spent more than two hours taking cyber security and privacy training.

User privacy protection obligations

Huawei remains committed to complying with privacy protection laws and regulations around the world. We have adopted industry-recognized best practices, and have embedded Privacy by Design into product and service development processes. These initiatives contribute to a holistic framework for personal privacy protection policy. We have increased our investment in the management of data subject rights assurance, developed explicit management requirements and processes, and deployed them in a unified IT system, ensuring that we can promptly process data subjects' requests. To date, we have handled more than 10,000 data subjects' requests. In addition, we completed

26 internal audits to ensure that our personal privacy protection policy has been implemented in a consistent and effective manner, and we passed five external audits as well as one professional inspection by a regulator.

AI governance

In 2019, Huawei released the Thinking Ahead About AI Security and Privacy Protection white paper, setting out Huawei's viewpoint on the current security and privacy challenges surrounding AI. The paper explores key topics such as technical reliability, societal applications, and legal requirements and responsibilities. In addition, the paper proposes a number of feasible governance models, including planning trustworthy technical solutions, and adopting a shared responsibility model for AI security and privacy. The paper calls on all stakeholders to work together towards shared goals and for the healthy development of AI into the future.

Our experience tells us that no one has a monopoly on good ideas. The more we share and discuss the challenges we all face, the more we can improve solutions, standards, and approaches to raise the bar for everyone. Huawei remains determined to communicate and cooperate with stakeholders in a manner characterized by openness and transparency; integrity and trustworthiness; and accountability. We strive to address cyber security and privacy protection challenges through technological innovation, standards development, and management improvement. We are relentless in our mission to help customers establish their own cyber resilience and risk mitigation strategies.

STORY   **Building a Privacy Protection Brand Trusted by Users**

Mobile Internet developments have made smart devices the most popular way to go online. These devices store a wealth of user data with an increasing number of apps installed from uncontrolled sources. This has made user privacy and security at risk, drawing increasing scrutiny to the security of mobile smart devices. Huawei takes the security of smart devices extremely seriously. We do everything we can to protect user privacy and ensure data security as we work to provide a premium user experience.

Huawei's Consumer BG is committed to building a brand that is trusted by global consumers in terms of privacy protection. We strictly comply with the Generally Accepted Privacy Principles (GAPP), the EU's General Data Protection Regulations (GDPR), and all other applicable laws and regulations in the countries where we operate. We believe that privacy is our consumers' basic right, and that they should have full knowledge and control of what is done to their personal information. Achieving this goal is part of everything we do.

Guided by the idea of "Privacy Under Your Control", our Consumer BG adheres to four basic principles – transparency, user benefits, security, and legal compliance – and incorporates Privacy by Design throughout its business.

Protecting user privacy requires advanced technologies. We leverage leading security technologies to protect user data and to incorporate privacy protection principles starting from the product design stage. These principles continue throughout the entire product development process to fully protect user data.

Huawei has built a Trusted Execution Environment Operating System (TEE OS) that supports hardware isolation. Sensitive user data such as fingerprints, facial biometrics, and lock screen passwords are all encrypted, verified, and stored in the TEE to prevent privacy leaks. The TEE OS's microkernel obtained the CC EAL5+ certification, the highest for a commercial OS and uses the formal verification method. Compared with traditional verification methods, formal verification starts from code and uses mathematical methods for verification. It then analyzes each possible execution of that code, which eliminates system vulnerabilities from the source to enhance systemic security. The key features of the Emotion User Interface (EMUI) – Huawei over-the-air (HOTA), Celia, and HiView – received the EU's ePrivacyseal, making Huawei the first mobile phone manufacturer to receive this certification.

In the HMS domain, we have established a complete system for managing personal data protection, and we are the global leader in terms of personal data security management, transparency, and privacy compliance. For example, the AppGallery manages the security of apps with a unique four-layer system – malicious behavior detection, security vulnerability scanning, privacy leak checks, and manual real-name reviews. This system ensures that only secure apps are available for download from the AppGallery. HUAWEI Mobile Cloud encrypts the data transmitted in device-cloud channels and the data it stores to protect user data from end to end. In November 2019, HMS became one of the first recipients of the ISO/IEC 27701 privacy protection system certification issued by the British Standards Institute (BSI), an authoritative international standards organization. This shows that our ability to protect user privacy and manage information security is recognized by world-leading organizations.

Openness and Transparency

Huawei remains determined to communicate and collaborate with stakeholders in a manner that is characterized by openness and transparency, integrity and trustworthiness, and accountability. We strive to address cyber security and privacy protection challenges through technological innovation, standards development, and management improvements. We are relentless in our mission to help customers establish their own cyber resilience and risk mitigation strategies.

Paris Call for Trust and Security in Cyberspace

Huawei joined the Paris Call for Trust and Security in Cyberspace. By becoming a member, we have made a public commitment to a secure and stable cyberspace built on trust. Through this platform, we will improve trust and security in cyberspace by working more closely with stakeholders such as governments, customers, industries, and international organizations.

Huawei Cyber Security Transparency Centre

On March 5, 2019, Huawei unveiled a Cyber Security Transparency Centre in Brussels. The Centre serves as a platform where government agencies, technical experts, industry associations, and standards organizations can communicate and collaborate to address the issue of cyber security. Openness, transparency, and collaboration define the way the center operates. Through open collaboration with ecosystem partners, we create lasting value for our customers, empower people, enrich life, and inspire innovation.

The Centre has three major functions:

- The Centre showcases Huawei's end-to-end cyber security practices, from strategies and supply chain to R&D and products and solutions.
- The Centre facilitates communication and

Huawei Cyber Security Transparency Centre in Brussels

cooperation between Huawei and key stakeholders to explore and promote the development of security standards and verification mechanisms, facilitating technological innovation in cyber security across the industry.

- The Centre provides a product security testing and verification platform and related services to Huawei customers.

Since it opened, the Centre has received more than 1,500 visitors from governments, customers, the media, industry organizations, and standards organizations. Several verification and testing projects have been completed successfully. Moving forward, we welcome all stakeholders to use the platform to collaborate more closely on security standards, verification, and secure innovation. Together, we can improve security across the entire value chain and build mutual, verifiable trust.

Security Standards and Certification

Security Standards

Huawei advocates and promotes cyber security standards that are upheld globally. Huawei is also active in the events of industry standards organizations. We promote creating new standards organizations as technology and industries continue to evolve, making significant contributions to standards development.

As of the end of 2019, Huawei was an active member of more than 400 standards organizations, industry alliances, and open source communities, in which we held more than 400 key positions. We are on the board or executive committee of many organizations, including 3GPP, IETF, IIC, IEEE-SA, the Linux Foundation, BBF, ETSI, TMF, WFA, WWRF, CNCF, OpenStack, LFN, LFDL, IFAA, GP, CCSA, AII, CUVA, and VRIF.

Huawei is not only active in the existing industry standards organizations; we also support the establishment of new industry standards organizations to keep up with developments in technology and industry. For example, to address cyber security challenges in the ICT supply chain, Huawei was part of the Open Trusted Technology Forum (OTTF)'s efforts to develop standards. We worked with our industry partners and jointly released the Open Trusted Technology Supplier Standard V1.0.

Security Certification

Huawei believes that trust needs to be based on facts, facts need to be verifiable, and verification needs to be based on common standards. According to industry practices, certification based on common standards is the best way to address security issues and build trust.

Management system certification: Huawei has established an information security management system and a supply chain security management system, which are ISO 27001- and ISO 28000-certified. This helps guarantee the trustworthiness of our R&D and production activities through organizational measures and processes.

Product certification: We continue to work with authoritative certification organizations and third-party labs in the UK, Germany, France, the Netherlands, Spain, and Sweden to obtain high-level certification. In 2019, our major products obtained more than 20 cyber security and privacy certifications inside and outside of China. These include:

- HongMeng Kernel: CC EAL5+ certification
- HUAWEI CLOUD: World's first batch of ISO/IEC 27701:2019 certification
- EulerOS: CC EAL4+ certification
- EMUI 10.0: ePrivacyseal
- Kirin 990 5G chip: Financial security certification from the People's Bank of China

Cyber Security and Privacy Protection White Papers

In May 2019, Huawei published a 5G security white paper covering how experts from industry and standards organizations ensure that 5G security risks can be managed through security protocols and standards. The paper also describes the security assurance mechanisms and the technical measures that Huawei has adopted for all its equipment. It offers recommendations for carriers on how to securely deploy and operate 5G networks and calls on all stakeholders to play their part in improving 5G security.

At HUAWEI CONNECT 2019, Huawei released the white paper Thinking Ahead About AI Security and Privacy Protection at a summit focusing on how to build a comprehensive AI security and privacy protection system. The paper sets out Huawei's viewpoint on the current security and privacy challenges surrounding AI. It explores key topics such as technical reliability, societal applications, and legal requirements and responsibilities. In addition, the paper proposes a number of feasible governance models, including planning trustworthy technical solutions, and adopting a shared responsibility model for AI security and privacy. The paper calls on all stakeholders to work together towards shared goals and for the healthy development of AI into the future.

Open Communication

There are no backdoors in Huawei products, and our front door remains wide open. In 2019, we hosted over 4,500 journalists, more than 3,000 experts and researchers, and over 1,000 government delegations from around the world at our headquarters in Shenzhen. They visited our labs, production lines, our Shareholding Room, and countless other facilities. Huawei executives gave nearly 300 speeches and interviews, reflecting a sharp increase in proactive engagement.

5G security white paper
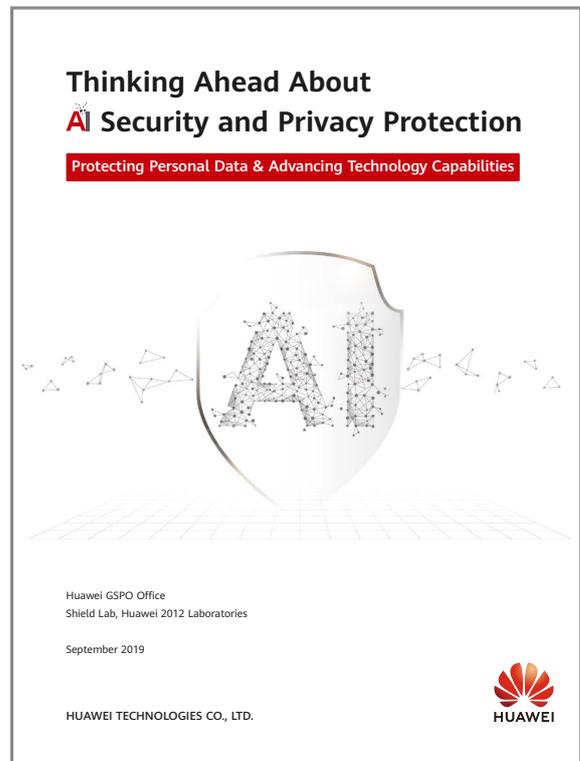
AI security and privacy protection white paper

African and Middle Eastern media outlets interview Ren Zhengfei on October 20, 2019

Regular Press Conferences

Over the past year, we have held 20 press conferences to pass on first-hand information to our customers, partners, the media, and the general public. Some of these gatherings include:

- The unveiling of our Kunpeng and Ascend processors, including an in-depth analysis on the trillion-dollar computing industry.
- Press conferences for the release of our sustainability report and white paper on intellectual property, demonstrating Huawei's confidence in the company's sustained operations and commitment to fulfilling its social responsibilities.
- Huawei Innovation Days in Europe, Asia Pacific, and Latin America, where we shared our thoughts and innovations with regard to future technology.
- The opening of the Huawei Cyber Security Transparency Centre in Brussels and the release of Huawei's Position Paper on Cyber Security to clarify our approach to, and policies on, cyber security.

Supporting Network Stability

Over three decades, we have always put secure and stable network operations at the forefront of our corporate social responsibility and mission. We are well aware of the responsibility on our shoulders. A network failure would cause significant losses to our customers, consumers, and society as a whole. That is why we have built a comprehensive customer network assurance system to offer better services to our customers and quicker access to networks for individuals.

We have always been in the heart of the action. Whether it was in the radioactive fallout of Fukushima or the earthquake-stricken areas of Nepal, our employees have held their ground. When others fled, our employees went in. This is because we know how important network connectivity is for people during a disaster.

More than 5,000 Huawei customer support engineers and maintenance experts provide 24/7 service worldwide. Huawei has established two global and 10 regional technical assistance centers. Huawei's network assurance team is always there for customers, helping them ensure stable network operations, maintain smooth communications, and quickly recover from network failures.

In 2019, we supported smooth communications for more than one-third of the world's population, and the stable operations of over 1,500 networks in more than 170 countries and regions. We guaranteed network availability during more than 200 natural disasters and major events such as the major power outage in Indonesia, the earthquake in the Philippines, and typhoons Hagibis and Bualoi in Japan.

● Canada ● Russia ●● Romania ● Mexico ● Egypt ● Pakistan ●● China ● India ● Malaysia ● Brazil

● Global Technical Assistance Center (GTAC)
● Regional Technical Assistance Center (RTAC)

STORY **Supporting Network Stability During Ramadan in Saudi Arabia**

On June 6, 2019, the network assurance project for Ramadan in Saudi Arabia was successfully completed. During the festival, Huawei's network assurance team worked on our customer's premises and supported their networks 24/7. There were no network incidents, major issues, or complaints during this period.

The success of the project was largely due to being fully prepared ahead of time – Huawei's network assurance team had begun to identify and mitigate possible risks in February 2019. These risks included things that might undermine

network stability like old equipment deployed on live networks, spikes in demand for 4G, and a large number of concurrent users. To ensure network stability, experts were mobilized from Huawei's frontline and second-line support teams. They conducted a thorough examination of network equipment to mitigate possible risks.

Huawei's network assurance team solved more than 5,000 problems and potential risks, developed contingency plans for more than 300 scenarios, and carried out drills with the customer on key contingency plans. In the end, the team managed to support stable network operations during Ramadan. This project demonstrated Huawei's technical expertise and helped us win the customer's respect.

STORY **Huawei Employees Guaranteed Smooth Network Operations After a Major Power Outage Hit Indonesia**

At noon on August 4, 2019, the Java Island was hit by a major power outage – the largest it had seen in the last two decades. High-speed trams stopped suddenly and shopping malls went dark. More than 30 million people in Jakarta and the surrounding areas were affected. Local carrier networks were set to experience large-scale disconnection when their communications equipment exhausted their batteries.

About 15 minutes after the accident occurred, the O&M director of a local carrier and Huawei's network assurance team initiated the assurance plan for power failure. Huawei Indonesia's business continuity and network assurance teams arrived at their network monitoring center immediately and kicked off a repair plan. This plan included dispatching diesel generators to ensure central equipment rooms and backbone sites could continue operating by sending additional subcontractor workers to replenish generator fuel and repair faulty generators, and organizing experts to review and activate an anti-shock plan for any potential spikes in data traffic. This helped minimize communication interruptions caused by the large-scale power outage.

Huawei's network assurance team and the customer did everything they could to repair the affected sites and restore communications services. A total of 141 onsite emergency recovery teams were deployed and 899 generators were dispatched. On August 6, after three long days, all communications network services were restored. Huawei and the customer managed to ensure the rapid recovery of the affected networks and guarantee smooth communications for more than 30 million residents in Indonesia despite the largest power outage the nation had seen in two decades.

STORY Supporting Communications Recovery after Istanbul's Earthquake

On September 26, 2019, Turkey's largest city Istanbul was struck by a 5.7-magnitude earthquake, seriously disrupting the communications services of multiple local carriers. About 20 million users had difficulty making voice calls.

Five minutes after the earthquake, Huawei initiated a network assurance and emergency plan. Within 15 minutes, Huawei Turkey's general manager led a team of 15 communications maintenance experts to the customer network O&M center. The team was joined by Turkey's deputy minister in charge of telecommunications and the CTO of the carrier, who provided onsite guidance to restore services. The second-line and third-line teams from Huawei's Global Technical Assistance Centers (GTACs) put 40 personnel on standby in the emergency recovery room. The business continuity team worked out a traffic control solution for the emergency within 20 minutes to relieve network congestion. Within one hour, eight engineers were dispatched to the telecom equipment room in the capital to restore services together with the customer's maintenance engineers.

A total of 128 personnel from Huawei's network assurance team and the customer worked together to overcome the challenges caused by the earthquake and ensure smooth network communications as fast as possible. After 36 long hours, all services had been restored. The deputy minister of Turkey's telecommunications division thanked Huawei's general manager in person for our support.

STORY Supporting Network Stability During Typhoon Hagibis

On October 12, 2019, Typhoon Hagibis made landfall in Japan. Subway stations in the Greater Tokyo Area were closed on October 10 and 1,126 flights were canceled. Huawei's network assurance team immediately initiated its contingency plan for natural disasters.

To ensure uninterrupted technical support, Huawei sent four network maintenance teams to join the local carrier's emergency repair team starting on October 12, so that communications could continue in three key sites. A technical support team inspected the network status with the customer every day and provided 24/7 services to respond to network failures as soon as possible. Huawei's team also reviewed the shortage of spare parts with the customer to replenish local inventory. This was to ensure that key spare parts were available and that networks could be repaired quickly.

On October 17, the carrier issued a notice, saying that all of its services had been restored. We had once again shown our commitment to supporting smooth network communications by working alongside our customers.

Business Continuity

With today's highly globalized division of labor, Huawei must rely on a wide variety of third parties for procurement, manufacturing, logistics, and global technical services. This makes business continuity management critical for Huawei.

Through years of ongoing investment, Huawei has established a BCM system for domains such as procurement, manufacturing, logistics, and global technical services. This system covers end-to-end processes, from suppliers to Huawei, and on to our customers. As part of this system, we have developed and established effective measures to manage risks that arise during our daily work. Specifically, we have built up management organizations, processes, and IT platforms, prepared business continuity plans and incident management plans, and organized BCM training and exercises for employees.

For more details about business continuity, see pages 67–68 and 144 of the Huawei 2019 Annual Report:

https://www.huawei.com/en/press-events/annual-report

BCM Policy						
BCM process	Business Impact Analysis	Risk Assessment	Strategy Selection	IMP/BCP	Training	Exercising & Testing	Maintenance & Improvement

Incident Management Plan (IMP)

Conflicts · Earthquakes · Storms & typhoons · Epidemic · Fire · Strike · Traffic accidents · Economy/Trade · Politics/Policies

Regional offices, representative offices, and ex-China departments

Business Continuity Plan (BCP)

R&D · Procurement · Manufacturing · Supply chain · Service delivery/Network support

Finance · IT · HR · Admin

Supplier BCM · Customer BCM

Departments & responsibilities, operational mechanisms, execution & assessment

Business Continuity Management System

4 Environmental Protection

Environmental protection is part of our triple bottom line for sustainable development, and is closely related to the SDGs. Unsustainable practices continue to intensify pollution, use more energy, deplete resources faster, and increase extreme weather events. Development should not come at the expense of the natural environment. Instead, we need to shape a sustainable future together.

Every country, every business, and every individual must act now. We need to set goals and take the right steps to reduce our negative impact on the environment and the huge increase in demand for resources. We should use renewable energy more and work and live in a low-carbon and environmentally friendly way to cope with the impacts of climate change.

Reducing Carbon Emissions
Promoting Renewable Energy
Contributing to a Circular Economy

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

Our Commitment: Tech for a Better Planet

As part of our commitment to technology for a better planet, we will invest more in the following three areas:

- **Reducing carbon emissions:** Our green ICT solutions will enable industries to reduce power consumption and emissions. We will continue to make the operations of both Huawei and our supply chains greener and take steps to reduce carbon emissions.
- **Promoting renewable energy:** We will continue investing more in renewable energy and providing green power for the intelligent world. We will also drive the transition to renewable energy and make the most of it.
- **Contributing to a circular economy:** We will improve well-being by using less resources.
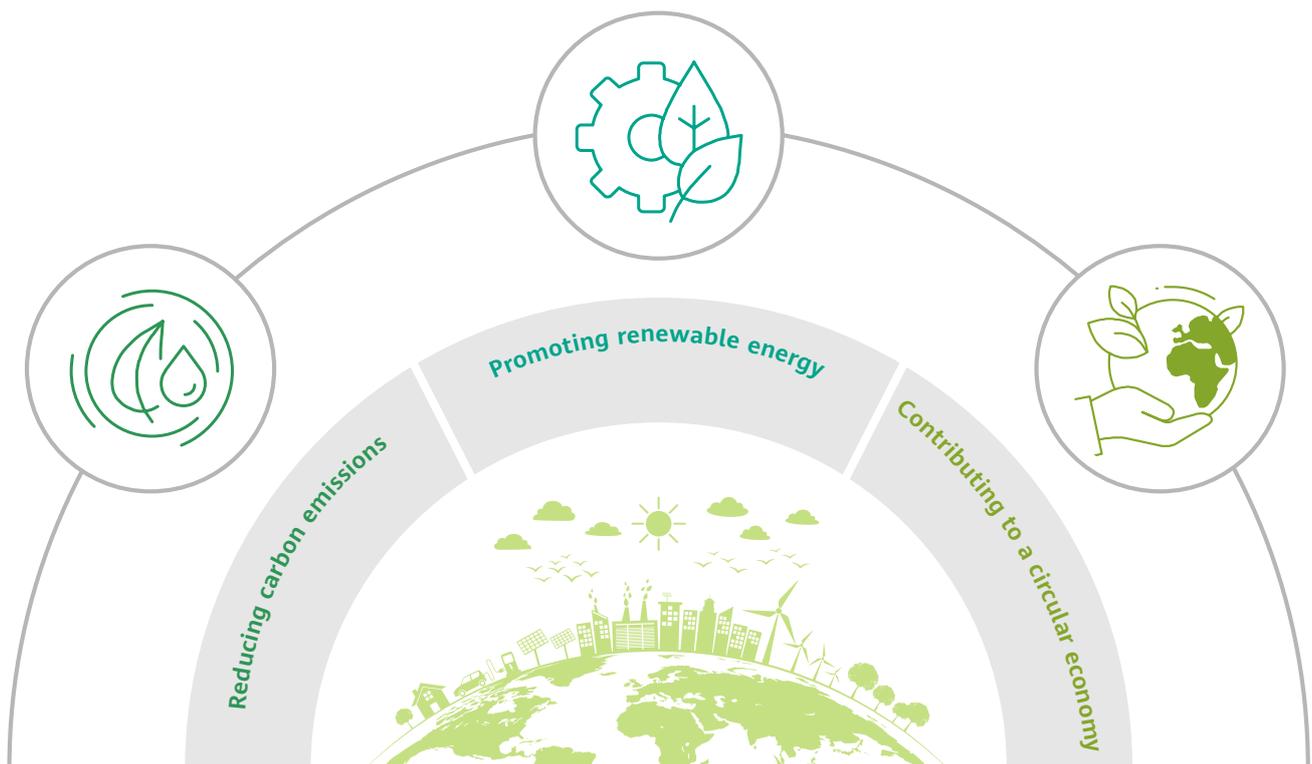
Our environmental protection targets for 2025:

Reduce carbon emissions (Scope 1 and Scope 2) per million RMB of revenue by 16% compared with 2019

Increase the energy efficiency of our main products by 2.7 times compared with 2019

Background

According to the UN's World Economic Situation and Prospects 2019, climate risks are intensifying, with the world experiencing an increasing number of extreme weather events. Over the last six years, more than half of extreme weather events have been attributed to climate change. Risks from marine inundation of coastal infrastructure will increase substantially when global warming reaches 1.5°C, which may be reached as early as the 2030s.

According to GeSI's SMARTer 2030 report, ICT emissions as a percentage of global carbon emissions will decrease over time due to the expected improvements in the energy efficiency of ICT products. ICT's own carbon footprint is expected to reach 1.25Gt in 2030, or 1.97% of global emissions. The report also found that by rolling out ICT solutions across the global economy, the total global carbon emissions could be cut by 12Gt by 2030, nearly 10 times higher than ICT's expected footprint.

ICT is playing an increasingly important role in addressing global environmental issues and is helping to make progress in achieving the SDGs. ICT can help reduce power consumption and emissions in every industry, utilize more renewable energy, and mitigate the impacts of climate change.

Huawei's Approach and Practices

Huawei's vision is to bring digital to every person, home and organization for a fully connected, intelligent world. To make this vision a reality, Huawei will continue to focus on ICT infrastructure and smart devices as we work with our partners to enable the digital and intelligent transformation of every industry. These efforts will help us create greater value for our customers and society, and allow everyone to benefit from digital technology. This intelligent world will also be a greener one where humans and nature live in harmony.

As a leading global provider of ICT infrastructure and smart devices, we are committed to protecting the planet with technology.

We have spent decades working to minimize power consumption by pushing the boundaries of innovation. We are doing everything in our power to protect the planet with innovative technology and open up new possibilities for the future.

Reducing Carbon Emissions

As reducing CO_2 emissions can help slow climate change, we pay attention to the carbon emissions at each stage of the lifecycle of our products. We use our technologies to address the increased power consumption of our high-performing equipment and to minimize our carbon footprint. We hold ourselves to high standards for greener operations and constantly look for opportunities to reduce carbon emissions. We are also carrying out green partner programs in which we work with our suppliers to reduce power consumption and emissions and build a greener ecosystem.

Minimizing Carbon Footprint through Lifecycle Assessments

We systematically assess our equipment by following a lifecycle assessment (LCA) methodology. Our lifecycle assessment found that for network equipment, the carbon footprint generated in the use phase accounts for 80–95% of the total. In other words, carbon emissions mainly come from power consumption, and so energy-saving technologies are key to cutting the carbon footprint of our products. In recent years, we have made significant progress in reducing energy use by our ICT products and solutions throughout their lifecycles, which in turn has helped numerous industries become greener.

Carbon footprint of the lifecycle of three types of products

| Raw material selection | Production | Transportation | Use | End of life |

Network equipment — Use (80–95% of total footprint)

Customer-premise equipment — Use (50–70% of total footprint)

Devices — Raw material selection (80–95% of total footprint)

0% 20% 40% 60% 80% 100%
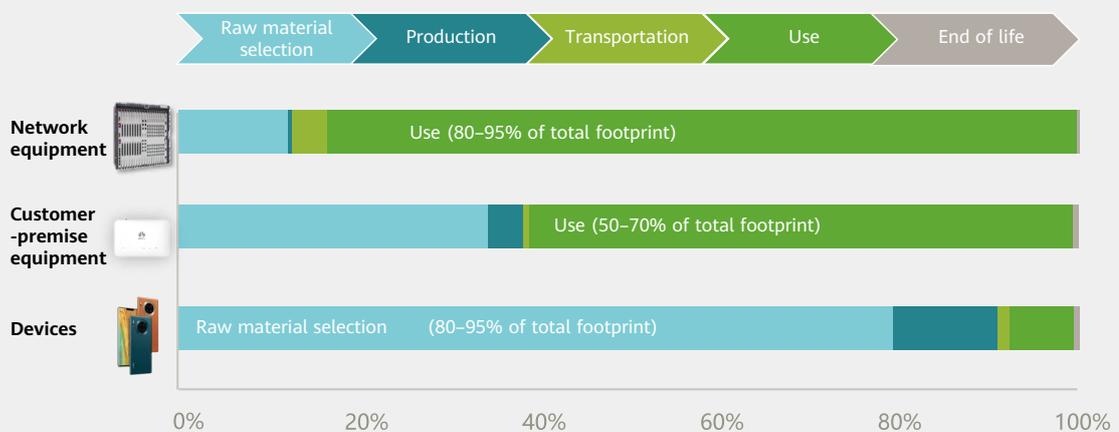
* Carbon footprint of network equipment during the use phase: 80% to 95% of the total
* Carbon footprint of customer-premise equipment (CPE) during the use phase: 50% to 70% of the total
* Carbon footprint of devices during the raw material selection phase: 80% to 95% of the total

Wireless Access: Energy-saving – A Priority for Faster 5G Deployment

5G integrates many different technologies and its energy efficiency per bit is 50 times that of 4G. While 5G will deliver larger bandwidth, ultra-low latency, and massive connections, further technological innovation will be needed to address its increased power consumption.

We use cutting-edge technologies in hardware materials, high-performance algorithms, and heat dissipation to make our products more energy efficient. To make 5G networks more energy efficient and help carriers cut carbon emissions, our technological innovation focuses on three levels: equipment, sites, and networks. For example, Huawei's fully outdoor 5G solution does not need air conditioning, which reduces power consumption of a single site by at least 40%.

STORY **The Three-level PowerStar Solution Cuts Power Consumption by 12%**

In 2019, Huawei worked with carriers in China, Europe, and Africa to deploy the three-level PowerStar solution at more than 100,000 sites on live networks. Since February 2019, Huawei has helped a Chinese customer deploy PowerStar in 17,000 sites, cutting electricity use by 12% without compromising network performance.

Huawei's three-level energy saving solution PowerStar won the GSMA's 2020 GLOMO "Best Mobile Innovation for Climate Action" award, showing the industry's regard for our efforts in combating global climate change.

Data Communications: High-performing and Energy-efficient Intelligent IP Networks

In the digital world, data centers, metropolitan area networks (MANs), and backbone networks are responsible for aggregating and exchanging network traffic of different cities, regions, and countries. Routers and switches deployed in these locations must have ultra-high performance, but the high performance means higher requirements for heat dissipation and ambient temperature.

Huawei's technological breakthroughs – including power source switching enabled by magnetic blow-out, carbon nanomaterials with high thermal conductivity, VC phase-change heat dissipation, and mixed flow fans – provide higher power efficiency and faster heat dissipation. This means that we lower the power consumption of our products without compromising performance.

In 2019, Huawei launched two series of products: the CloudEngine 16800 series switches for data center networks and the NetEngine 8000 series routers for MANs. When we designed these products, we focused on how to make power supply and heat dissipation more efficient, which led to the equipment as a whole consuming less power. Our products' power consumption per bit is 26–50% less than similar products in the industry. Each NetEngine 8000 X8 router, for example, can save about 90,000 kWh of electricity every year.

Optical Network: Intelligent OptiX Network for a Greener Future

At the transport network layer, we continuously push the limits of energy efficiency with optical fiber to build greener networks. Our proprietary optical backplane technology allows our optical cross-connect (OXC) to "print" more than 1,000 optical fibers onto a backplane the size of an A4 piece of paper. It lowers the equipment footprint by up to 90% and power consumption by 60%.

STORY **China Telecom Sichuan's Optical Cube Network Saves 250,000 kWh Each Year**

China Telecom Sichuan has built an optical cube network using Huawei's OXC on 12 core nodes. The solution saves 250,000 kWh of electricity for the entire network each year as it brings higher-quality networks with faster speeds for local residents and meets the demands of different industries.

In **optical access,** we address performance and power consumption challenges through systematic innovation. Our new products' power consumption is 43% lower than the standard defined by the EU's Code of Conduct on Energy Consumption of Broadband Equipment (CoC) Version 7.0.

For **home networks**, Huawei released the industry's first AI-powered gigabit-capable optical network terminal (ONT) – OptiXstar. The product can automatically detect inactivity and switch to an intelligent sleep mode during idle periods. The power consumption of this product is 20% lower than defined by CoC Version 7. Each unit can save about 38 kWh of electricity annually.

For **enterprise campus networks**, our passive optical LAN solution reduces the space needed for equipment rooms and cabling by 50% and energy consumption by 30%.

Huawei's OptiXstar V-series gigabit-capable ONT for homes

Site Energy: Green Power Supply to Reduce Carbon Emissions

As technologies like PV, lithium batteries, and AI develop, new possibilities for eliminating site emissions are emerging. We are removing technical barriers in power supply for base stations, and continuously improving our site energy solutions to minimize site emissions.

Our AI-enabled 5G Power site energy solution enables us to make the most of solar energy and other clean sources to power base stations and ultimately drop carbon emissions to zero.

STORY **5G Power Cuts Energy Used Per Site by 51%**

According to the results of a joint trial by Huawei and China Tower, the 5G Power solution can save 4,130 kWh of electricity per site per year. About two million 5G sites are expected to be built or reconstructed between 2019 and 2022 in China. This is expected to save 8.3 billion kWh of electricity each year.

A similar trial with a European customer suggests that with the 5G Power

solution, each site uses 51% less energy.

At the ITU Telecom World 2019, the Huawei 5G Power solution won the Global Industry Awards: Sustainable Impact for its outstanding contribution to saving energy and reducing emissions in mobile networks.

A power supply being tested as part of the experiment conducted by Huawei and China Tower

Huawei 5G Power won the Global Industry Awards: Sustainable Impact

Data Center Energy: Technological Breakthroughs Help Data Centers Consume Less Energy

Data centers use a considerable amount of energy. To reduce the amount they use, Huawei launched a modular uninterruptible power supply (UPS) solution that can save 5 million kWh for a data center with a capacity of 10 MW when its load rate is 40%

and coefficient of performance (COP) is 3. Our indirect evaporative cooling technology makes full use of natural cooling sources, reducing the energy consumption of cooling systems by 40–60%.

Huawei's iCooling solution, powered by big data and AI technologies, helps data centers save energy and automatically optimize energy efficiency, reducing power usage effectiveness (PUE) by 8–15%.

STORY **Huawei's iCooling Solution Saves 6 Million kWh Annually for China Mobile Zhongwei Data Center in Ningxia**

In November 2019, China Mobile Zhongwei Data Center in Ningxia – an AI-powered energy efficient data center – announced the innovations it was using for energy conservation. This data center is a joint innovation between China Mobile and Huawei. By using iCooling@AI, it used 3.2% less energy in field tests during the first phase of 100% free cooling in winter with a low load rate. Thanks to increased loads, cooling mode switching, and enhanced AI learning, this data center is expected to save 6 million kWh of electricity annually, equivalent to reducing CO_2 emissions by 3,000 tons.

Smart Devices: Lower Power Devices for a Better Future

The increased use of 5G means data-hungry applications such as 8K video, HD video conferencing, and cloud gaming will soon become mainstream applications for mobile phones. However, the increasing power consumption of baseband units caused by large data traffic will become a major inhibitor of battery life. Huawei is working to reduce our phones' power consumption and to prolong their battery life, providing consumers with a superior experience.

Launched in 2019, Huawei's Mate 30 smartphone is powered by our latest chip, which is 20% more energy efficient than its predecessor. We have also optimized our major applications for different scenarios, so that our products use much less power. Huawei is working with Software Green Alliance to promote low-power design practices, which has helped us increase battery life. The battery life of the Mate 30 series smartphones is 10% longer than the Mate 20 series.

2015	2016	2017	2018	2019
Mate 8	**Mate 9**	**Mate 10**	**Mate 20**	**Mate 30**
125% better GPU processing; 70% more energy efficient	15–20% more energy efficient	First phone to integrate neural network processors for energy efficient facial, image, and voice recognition	• 30% longer battery life • Ark Compiler that makes Android OS more efficient	Energy-efficient 5G and AI applications First phone powered by 5G SoC

Reducing Energy Consumption and Emissions for Greener Operations

Building green, sustainable campuses has always been a priority for us. We constantly explore and implement new managerial and technological measures for green, low-carbon campuses. We attach great importance to conserving energy and reducing carbon emissions in all aspects of our operations, from campus facilities and R&D labs to manufacturing plants.

Energy consumption statistics of Huawei's global operations (2015–2019)

Energy	Unit	2015	2016	2017	2018	2019
Natural gas	10,000 m³	522	993	711	1,114	1,313
Gasoline	Ton	363	358	600	347	650
Diesel	Ton	41	116	256	77	106
Electricity (China)	10,000 kWh	134,700	168,653	207,095	235,504	302,093
Electricity (Overseas)	10,000 kWh	/	/	/	/	21,032
Steam	Ton	20,561	20,352	21,801	23,143	22,613

Huawei's GHG emissions in 2019

GHG	Scope 1	Scope 2	Total
Emissions (t-CO₂e)	42,947	2,170,599	2,213,546
Proportion	1.94%	98.06%	100%

Scope 1 includes stationary combustion emissions, mobile combustion emissions, and fugitive emissions.

Scope 2 includes indirect emissions from energy.

In 2016, Huawei set a carbon emission target (for Scope 1 and Scope 2) for 2020: reducing carbon emissions per million RMB of sales revenue by 30% compared to the base year (2012). In 2019, our carbon emissions per million RMB of sales revenue were 2.58 tons. This represented a 32.7% decrease compared to the base year (2012).

Unit: Ton

Unit: Ton/CNY 1mn of revenue

2015: 1,272,553
2016: 1,585,369
2017: 1,876,496
2018: 2,083,666
2019: 2,213,546

Total GHG emissions (2015–2019)

2015: 3.22
2016: 3.04
2017: 3.11
2018: 2.89
2019: 2.58

Intensity of GHG emissions (2015–2019)*
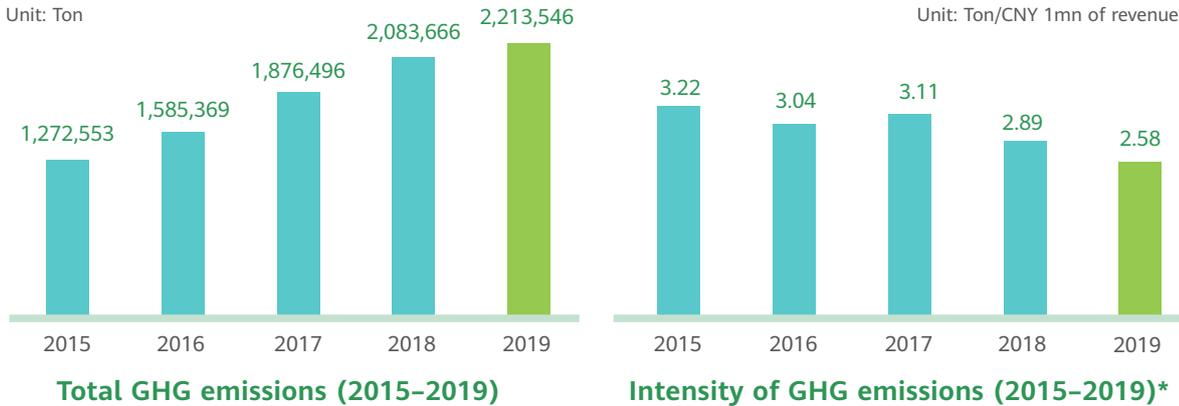
* Figures for 2019 are for Huawei's global operations, while 2015–2018 are for our operations in the China Region.

Building Green Campuses

Huawei makes the most of ICT to manage energy consumption of facilities on our campuses. These initiatives, combined with continuous upgrades to our facilities (e.g., installing LED lighting systems and frequency converters on pumps) and refinements to our control parameters, have helped us cut energy use on our campuses.

In 2019, we completed multiple energy conservation projects, including upgrading free cooling and refrigeration, lighting, and the frequency converters used in condenser water pumps. These projects helped us save an additional 17.97 million kWh of electricity, equivalent to reducing CO_2 emissions by 17,000 tons. In 2019, 1.257 billion kWh of the electricity we used came from clean energy sources (natural gas), which was more than 2018 (1.195 billion kWh).

Select Energy-Saving Projects on Huawei Campuses in 2019

No.	Type	City	Project Name
1	Technological	Dongguan	Upgrading pressure control of vacuum pumps in Huawei Southern Factory
2	Managerial	Dongguan	Upgrading the basement lighting system in Songshan Lake Campus
3	Technological	Shanghai	Upgrading the drinking water heating system in Shanghai Research Center
4	Technological	Shanghai	Installing a smart lighting system in the parking lot
5	Technological	Shanghai	Upgrading the free cooling and refrigeration system
6	Technological	Nanjing	Installing frequency converters on the primary pumps of the chilled water system
7	Technological	Nanjing	Implementing the uninterruptible operation mechanism of the free cooling system
8	Technological	Xi'an	Optimizing the start-up and shut-off mechanism of water chilling units
9	Technological	Chengdu	Upgrading the auxiliary refrigeration function of the ventilation system
10	Technological	Wuhan	Upgrading the frequency converters of chilled water pumps
11	Technological	Wuhan	Connecting air compression systems
12	Technological	Beijing	Installing a smart lighting system in the underground parking lot and installing LED bulbs in corridors

Digital Campus Management: Saving over 15% in Energy Annually

In 2019, Huawei adopted the Intelligent Campus Energy Management Solution as part of its digital transformation of campus management. Based on the Huawei Horizon Digital Platform's intelligent big data analytics and diagnosis model and algorithms, Huawei moved its solution from the traditional extensive power supply mode to a demand-driven power supply mode.

Compared with the rigid management model used in chiller plant systems, Huawei's solution for campus chiller plant systems formulates dynamic energy consumption control policies with the data provided by the big data platform such as per-phase operational status, environment changes, and people density. This solution reduces waste, enables intelligent and automatic control of chiller plant systems and power supplies, and cuts energy consumption costs by more than 15%. Huawei's Intelligent Campus Energy Management Solution uses big data and IoT technologies to dynamically and intelligently control lighting by detecting the movement of people.

By deploying its Intelligent Campus Energy Management Solution, Huawei saved 1.4 million kWh of electricity in the second half of 2019 in Section B of its Bantian campus, and reduced carbon emissions by about 1,150 tons in total. By the end of 2019, the Intelligent Campus Energy Management Solution had been rolled out across all Huawei campuses, bringing remarkable benefits, including energy savings of more than 15% across the whole year.

As digital and intelligent campuses become more widespread, Huawei's intelligent campus solution offers a more comprehensive, fine-grained, and intelligent mode of energy management. Huawei's Intelligent Campus Energy Management Solution will be applied in more campuses to help save energy and reduce power consumption, contribute to a low-carbon economy, and transform our campuses into greener ones.

STORY **Reducing Natural Gas Consumption at Heating Plants**

We opened a new campus at the Huawei Wuhan Research Center in 2018. Cleanroom standards require that the local heating plants supplying the center have to work around the clock during winter. At night, when demand for heating was low, boilers would have to be shut down frequently, wasting a huge amount of energy.

In 2019, we optimized the operations of these heating plants based on statistics on on-campus employee activity in our integrated operating platform. After 18:00, a certain number of boilers, water pumps, and air conditioning units now shut

Energy consumption of heating plants vs. On-campus employee activity

—On-campus employee activity   — Energy consumption
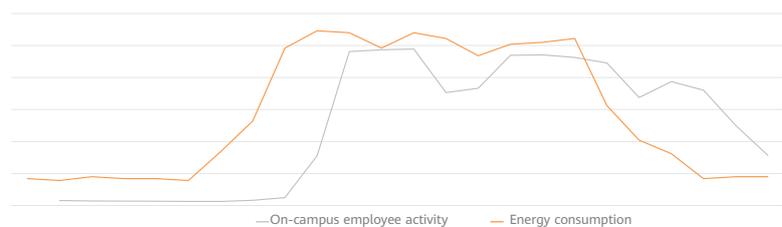
down automatically based on actual temperatures. In the deepest part of winter, all boilers are closed after 22:00, as the residual heat from the water already in the system is sufficient for the campus's needs. By 04:00, one to two boilers come back online to pre-heat the water in the pipelines. By adjusting the temperature of the boilers' supply and return water to outdoor and indoor temperatures, we have reduced the need to restart as many boilers as frequently and increased their combustion efficiency. If we compare our natural gas usage in 2019 with that from 2018, we used around 30% less natural gas (327,000 m^3), equivalent to a reduction of 653 tons in CO_2 emissions.

Green by Design

Environmental protection has always been one of our primary considerations when we design, construct, and manage buildings on our newest campuses. We want to build green campuses with strong eco-designs integrated into all aspects of our buildings, including the materials used to construct walls, thermal insulation, windows, and doors, and the heating, cooling, and lighting systems. At our new Songshan Lake Campus in Dongguan, China, we have applied natural lighting and ventilation designs wherever possible while retaining the facade of buildings. To reduce thermal loss, we used low-emissivity insulating glass, and added a cavity structure between stone walls, tiles, and the main structure. LED bulbs are also used throughout the campus. All of these measures contribute to our goal of reducing energy use.

On the campus, a train system shuttles people between office blocks. The train is powered by a 12000F supercapacitor – the largest of its kind in the world. It can fully recharge in less than 30 seconds and the battery can be recharged more than 1 million times throughout its lifecycle. This capacitor ensures efficient energy use without emitting any pollutants. Inside the train, LED bulbs are used, reducing energy consumption by an additional 30% over conventional fluorescent bulbs.

On our campuses in colder regions, Huawei has installed heat pumps that reclaim thermal energy from lab equipment to heat up offices in winter.

Labs: New Solution Saves 290 Million kWh of Electricity Each Year

We have developed green policies tailored to our labs and established a complete energy-saving management system for our labs across the entire lifecycle in line with the company's energy management principles. When planning, designing, and constructing our labs, we use new energy-efficient technologies, such as free cooling and refrigeration, natural air cooling, separate hot and cold air conduits, and precision air flow for micro modules.

Our R&D labs used to be spread out, but now we are centralizing them. Their new, energy-efficient infrastructure reduces power usage effectiveness (PUE) from 2 to 1.24 and improves energy efficiency by 38%. The infrastructure has been deployed across more than 70,000 square meters of our labs. In addition, we have continuously improved our energy-saving technologies and energy management capabilities. For example, we have used frequency converters at refrigeration stations, put servers on energy-saving mode, phased out energy-intensive equipment, shared equipment, and used inspection robots to monitor the environment 24 hours a day. These measures have helped us save more than 290 million kWh of electricity each year.

Manufacturing: Higher Standards for Minimal Carbon Emissions

We reduce energy consumption during manufacturing by upgrading our facilities (e.g., upgrading frequency converters of chilled water pumps and using pressure stabilizing technology for air compressors) and equipment (e.g., solid-to-liquid phase change energy storage and heat preservation for wave soldering equipment), as well as onsite energy management. In 2019, Huawei saved 19.2 million kWh of electricity and reduced 16,065 tons of CO_2 emissions during manufacturing.

A building on the Songshan Lake Campus

Shuttle train on the Songshan Lake Campus

A 24-hour inspection robot

STORY Digital Management of Manufacturing Equipment Power Consumption

High-power equipment stays running even when it is not scheduled for production. To address this issue, Huawei uses intelligent energy management technologies (e.g., intelligent energy meters) to monitor and provide alerts for power consumption and electrical current. When a unit that is not scheduled for production consumes power above the threshold, its power consumption is displayed and it automatically switches to idle mode. For example, an upgraded wave soldering unit consumes 25.6% less energy and can save about 31,000 kWh of electricity each year.

STORY Thermal Energy Storage for Cold Energy Reuse

Huawei has deployed a solid-to-liquid phase change energy-saving solution. When the temperature cycling equipment is kept at low temperatures, excess cooling capacity is stored in an energy storage box. When the equipment is operating at high temperatures, all compressors are shut off, and chilled water is pumped into the liquid heat exchanger through a water circulating pump to release cold energy and achieve a temperature balance. This has greatly reduced energy consumption. Each upgraded temperature cycling unit uses up to 31.5% less energy, and can save about 52,000 kWh of electricity each year.

Working with Suppliers to Build a Greener Supply Chain

Huawei has incorporated environmental protection requirements into its procurement strategy and end-to-end procurement process, including supplier qualification, selection, review, performance management, and material selection. We aim to ensure compliance with all applicable environmental laws and regulations, encourage suppliers to make continuous improvements through our sourcing strategy, and build a competitive and green supply chain.

We encourage our suppliers to develop energy metering systems, audit their energy usage, identify opportunities to reduce energy use and carbon emissions, study industry-leading practices, and develop and implement their own energy conservation and emission reduction plans. In 2019, 35 suppliers took part in our program, and collectively reduced CO_2 emissions by 80,144 tons. This was mainly achieved through renovating air compression, air conditioning, and lighting systems; upgrading production equipment and processes; and reusing excess heat.

We plan to set carbon emission reduction targets for all top 100 suppliers by 2025. In 2020, Huawei will expand its power-saving and emission reduction program for suppliers. We will encourage more of our suppliers to regularly collect carbon emission statistics, develop emissions reduction plans, and implement emissions reduction programs. Our goal is to promote the sustainable development of Huawei's supply chain.

CO_2 emissions reduced by suppliers under our program (2015–2019)

Year	Number of Suppliers	CO_2 Emissions Reduced (Ton)
2015	35	77,144
2016	20	55,000
2017	25	63,000
2018	20	51,094
2019	35	80,144

Promoting Renewable Energy

Countries, regions, and organizations are increasingly concerned about accessing and using renewable energy. We hope that we can play an active role in the transition from fossil fuels to clean and renewable energy.

Converting Every Joule of Solar Energy into Electricity

To promote the widespread use of renewable resources around the world, we are sparing no efforts to convert every joule of solar energy into PV electricity. By integrating information technology with PV systems, Huawei is committed to improving solar power generation and making it a major source of energy. We will continue to integrate smart PV with our full-stack, all-scenario AI portfolio and increase energy yields by more than 3% compared with traditional solutions.

Higher energy yields

Featuring 144 Maximum Power Point Trackers (MPPTs) for solar arrays, our smart PV solution minimizes the mismatch between PV strings and better adapts to bifacial PV modules for higher energy yields. Our Smart DC System (SDS) allows trackers to be adjusted at the right angle through optimized astronomical algorithms and AI-based self-learning. Field test results show an energy yield increase of 0.5% to 1.31% after the system is deployed.

Faster inspections

The remote management system can inspect a 100 MW PV plant within 15 minutes, eliminating the need for manual inspections.

Stronger support for power grids

With an industry-leading grid connectivity algorithm powered by AI, Huawei has provided over 200 power grid models for more than 30 countries and regions. This has helped power plants stably connect to grids in all scenarios and has gradually made PV a high-quality, mainstream energy source.

PV Plants on Huawei Campuses: Reducing Emissions by 89,000 Tons Since 2012

We are building PV plants on our campuses and using more renewables to continuously optimize the energy mix we need for our operations. Our Southern Factory in Dongguan, Hangzhou Research Center, and Nanjing Research Center finished constructing their PV plants and connected these plants to the grid in 2012, 2015, and 2017, respectively. These PV plants have a combined capacity of 19.35 MW, and generated over 13.57 million kWh in 2019, which is equivalent to reducing CO_2 emissions by 11,000 tons. These PV plants on our campuses have generated a total of 107.14 million kWh – a reduction of about 89,000 tons in CO_2 emissions since being connected to the grid.

Smart PV plant at Huawei's Southern Factory in Dongguan
Capacity: 17.5 MW
Connected to the local grid in June 2012

Smart PV plant at Huawei's Hangzhou Research Center
Capacity: 1.8 MW
Connected to the local grid in March 2015

Smart PV plant at Huawei's Nanjing Research Center
Capacity: 0.05 MW
Connected to the local grid in December 2017

Clean Power Illuminates Homes in Argentina and Saudi Arabia

Huawei is committed to building a green and intelligent world. As such, we expect our smart PV solution to become a main power source that is accessible to all.

Jujuy, a province located in Argentina's Northern Highlands, recently put up a sign in the central square of San Salvador: "Jujuy, a Province of Energy." With the help of Huawei, Argentina is developing solar energy projects that will benefit its citizens.

The 300 MW PV plant in Cauchari, Jujuy province was commissioned in October 2019. Fully supported by Huawei's Smart PV solution, the plant has an expected service life of 25 years and will generate about 660 million kWh of electricity annually, enough to provide clean electricity for 160,000 homes. The PV plant occupies an area equal to half the size of Buenos Aires, and it is the highest-situated PV plant in Latin America at 4,200 meters above sea level. Before the PV plant was built, local authorities in Jujuy province had to buy electricity from other provinces. Now, it is self-reliant when it comes to electricity, greatly alleviating the local electrical load and reducing electricity prices.

On the opposite side of the world, Saudi Arabia has taken its first steps in shifting from fossil fuels to clean energy. The Sakaka 300 MW PV plant in Al Jouf to the north, is the first and largest PV plant that has been built after Saudi Arabia released its Vision 2030. Powered by Huawei's Smart PV solution, this PV facility will generate enough clean energy to power 45,000 households in Al Jouf and reduce an estimated 430,000 tons of CO_2 emissions per year.

The 300 MW PV plant in Cauchari, Jujuy Province, Argentina

The Sakaka 300 MW PV plant in Al Jouf, Saudi Arabia

Contributing to a Circular Economy

Less is more
Materials
Lightweight design
Architecture innovation

Optimized packaging and transportation
Weight/Volume
Reuse

Longer product lifespans
Upgrades
Maintenance
Modular design
Durability design

Product recycling
Design for disassembly

Eco-friendly materials
Renewables
Recyclables
Biomaterials

Design
Production & transportation
Use
End of life
Raw material selection

To use less raw materials and make the most of resources, we are taking steps at the very beginning – the design stage. These include using more eco-friendly materials, reducing the raw materials needed, making products more durable and easier to disassemble, and improving the product recycling system. Huawei maximizes material utilization and minimizes resource consumption throughout the lifecycle of its products. This is how we promote the circular economy.

Making Things Simpler and Products Lighter

Huawei is committed to making things simple for its customers. We use lightweight designs from the very beginning, and we do everything we can to make things simple and user-friendly to contribute to a circular economy.

- Huawei's third-generation 5G active antenna units (AAUs) are much more integrated and lighter than their predecessors. The 64T64R 5G AAU weighs only 25 kg, so that it can be deployed and installed by one person in most countries.
- The simplified design of Huawei Blade AAU integrates the active 5G AAU and passive 2G/3G/4G antennas into one box, for a total height of around two meters. One Blade AAU can support all sub-6 GHz frequency bands, greatly reducing the space and materials required for antenna deployment.
- Previously, different remote radio units (RRUs)

were needed to support different frequency bands. With Huawei's innovative ultra-wideband technology, only one RRU is needed for multiple bands, which reduces the number of RRUs by two-thirds.

We Saved Over 90,000 m^3 of Wood in 2019

Huawei has implemented the green packaging strategy "6R1D": Right Packaging (the core), Reduce, Returnable, Reuse, Recycle, Recovery, and Degradable. Our lightweight and compact packaging design reduces packaging materials as well as warehousing and transportation costs. We use eco-friendly and renewable packaging materials so they can be recycled and reused as much as possible, saving both materials and energy. We have also established an effective recycling system to facilitate this practice and extend the lifespans of packaging materials.

Since 2008, Huawei has continuously optimized

Huawei's green packaging strategy "6R1D"

- Right
- Reduce
- Returnable
- Reuse
- Recovery
- Recycle
- Degradable

Reduce

Returnable

Recycle

Right

Recovery

Reuse

Right & Reduce

Reduce packaging material consumption through smaller and lighter packages. Continue to develop reasonable and right packaging designs. Reduce comprehensive costs for packaging and logistics.

Returnable & Reuse

Extend the lifecycle of packages by establishing and improving an effective recycling system.

Recycle & Recovery

Reuse resources and energy by using eco-friendly and renewable materials on a large scale.

its packaging design and processes. More Huawei products use greener packaging designs, saving a considerable amount of packaging materials. In 2019, Huawei shipped more than 400,000 pieces of green packaging, saving more than 90,000 m^3 of wood.

Over the years, Huawei has worked to apply green packaging to the products it ships around the world. We have developed many innovative materials and processing techniques, including high-strength corrugated carton boxes, multi-density integrated expanded polypropylene (EPP), plastic-steel lightweight pallets, and thin paper honeycomb panels.

Green packaging shipments (10,000 pieces)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0.0	3.0	4.0	4.8	9.3	21.5	24.7	23.6	26.9	21.8	41.7	42.0

Wood saved (10,000 m^3)

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0.0	0.4	0.5	0.5	2.0	4.6	4.4	4.4	5.8	6.6	9.3	9.1
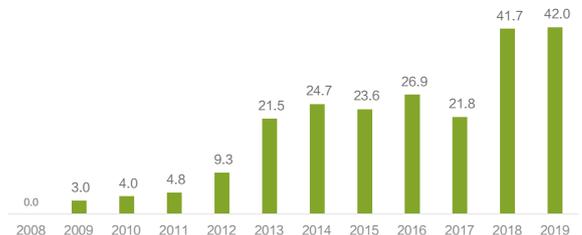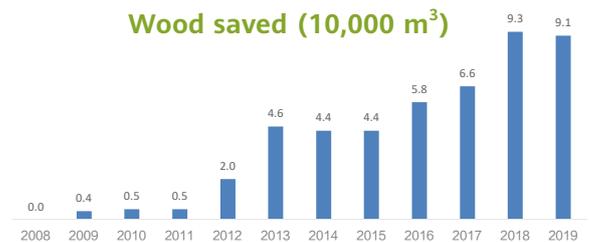
STORY **Replacing Plywood Pallets with Lightweight Plastic-Steel Pallets**

Plywood pallets are usually used for product shipment and transportation. However, plywood pallets are not ideal for long-term use in many complex logistics environments and they require a

Disposable plywood pallets

Lightweight plastic-steel pallets

considerable amount of wood.

In 2019, Huawei developed lightweight plastic-steel pallets for packaging 5G base station equipment and other products, and promoted the reuse of these pallets. Compared with traditional pallets, plastic-steel pallets can reduce the total weight by 1,367 tons per year, saving about 11,000 m^3 of wood and reducing CO_2 emissions by 6,890 tons. In the future, we plan to gradually apply the plastic-steel pallets to packaging servers and devices to further reduce wood consumption.

STORY   **Multi-density Cushioning Process for Lightweight Packaging**

In 2019, Huawei invented an integrated molding process for cushioning materials of different densities. This process enables the seamless integration and integrated molding of materials with different densities in the same mold, and has been applied to protect wireless base station equipment and servers. The new process provides the same level of protection as traditional single-density foam, but it reduces the packaging volume by 30% on average and weight by 20%. For example, packaging for 5G MIMO in 2019 used the multi-density cushioning process, which shrunk the packaging volume by 38% and reduced the combined weight by 291 tons, which is the equivalent of reducing CO_2 emissions by 463 tons.

Longer Product Lifespans Means Less Resources Used

One of the most effective ways to conserve resources is to make high-quality and durable products. That's why we conduct strict reliability tests so that our devices are more durable. In addition, we are optimizing the software and hardware of our mobile phones so there are fewer problems, and have established a convenient global repair system to extend the service life of our products and further reduce resource consumption.

Using a product for longer means using less resources in the long run. We always want our mobile phones to look nicer, perform better, and have longer battery life. Our latest EMUI 10.1 system for our smartphones has seen significant improvements in file fragmentation and memory resource scheduling. With these new features, our phones do not freeze up after being used for 18 months. In addition, our hardware system is reliable enough to handle moisture changes and extreme temperature throughout assembly, production, and use.

No matter how reliable a product is, problems are inevitable and repairs are the best way to save material.

Huawei has rolled out its battery replacement program globally. The program supports more than 110 models of Huawei phones and allows users to replace their batteries at a fixed price. Each month in 2019, the batteries of hundreds of thousands of mobile phones were replaced through this program.

Our discounted repair program helps reduce maintenance costs for consumers and makes the most of spare parts while ensuring maintenance quality.

We have also established a recycling program for used, out-of-warranty screens in multiple countries outside China so we can continuously reduce resource consumption and maximize resource utilization.

Green Action: Recycling, Reusing, and Upgrading

Recycling is a vital part of the circular economy. To fulfill our extended producer responsibility, Huawei has built a global recycling system that allows consumers to recycle their used electronics and reduce their environmental impact. Huawei wants to give consumers a better understanding of the recycling

channels available to them, and involve them more deeply in our recycling process, contributing to the circular economy. By the end of 2019, Huawei was running nearly 1,300 recycling stations in 48 countries and regions around the world. Through a paid recycling program, Huawei's service centers took back more than 300,000 used spare parts (totaling 60 tons) every month in 2019.

Huawei has further scaled up its product trade-in program where we give consumers a discount on new Huawei products and thus increase the reuse rate of used products. In China, we also introduced a new online credit-based recycling program where we give consumers coupons in return for recycling. Outside China, our trade-in program was available in nine countries, including Russia, Italy, Germany, and the United Arab Emirates.

Giving New Life to Waste

In 2019, we disposed of 12,756 tons of waste, 1.24% of which was landfilled. In close collaboration with leading recycling companies, Huawei aims to minimize the environmental impact of waste through category-based waste collection and disposal, exploring ways to reusing as much waste as possible, and reducing landfill.

	1.54%	1.69%	1.24%
	2017	2018	2019
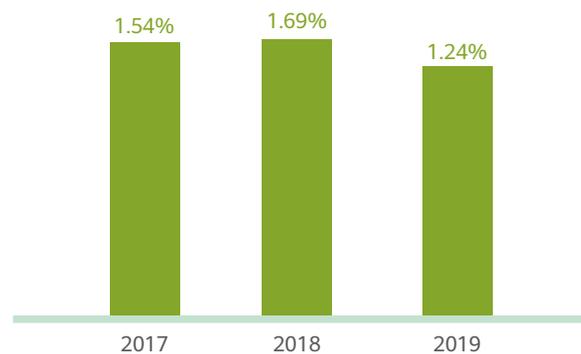
Waste landfill rate (2017–2019)

STORY   **Working with Suppliers to Recycle and Reuse e-Waste**

Resin powder accounts for a large percentage of e-waste in landfills and is difficult for companies to deal with. Huawei worked with suppliers to analyze its waste landfill data and worked out a solution for reusing resin powder in partnership with the Chinese Research Academy of Environmental Sciences. Together we turn resin powder into new products (through procedures such as modification and prilling), forming a virtuous cycle of waste

reuse. In 2019, we made huge headway and trial-produced many

new products from resin powder, including trash cans and baskets.

Trash cans and baskets made from used boards

Making Every Drop of Water Count

In 2019, we used 12.94 million m³ of water, up 28% year-on-year. This increase was largely attributable to

business growth, larger construction sites, and bigger landscaping areas. We found that most of the water we consumed in our operations was used for landscaping, canteens, and air-conditioning.

To reduce water usage, we have rolled out clean production technologies and adopted a variety of measures such as collecting rainwater, recycling cooling water, recycling condensate, and buying reclaimed water for cleaning and landscaping on campuses.

We also reuse most of the grinding wastewater from product processing and manufacturing. Before 2019, grinding wastewater was handled by professional environmental protection organizations as hazardous waste. However, this liquid waste is a pollutant and poses safety risks during storage and transportation. Therefore, the environmental improvement workgroup of our Manufacturing Department developed measures to recycle all grinding wastewater using bag filters, ultrafiltration, UV disinfection, and ozone treatment. These measures save about 20 m^3 of water per year. Our Manufacturing Department has also used multi-stage biochemical processing technology, membrane biological

reactors, and electrodeionization (EDI) to treat organic wastewater. These technologies help recycle 60% of the wastewater back into the manufacturing process, saving 15,000 m^3 of water each year.

Year	Value
2015	700
2016	936
2017	813
2018	1041
2019	1294
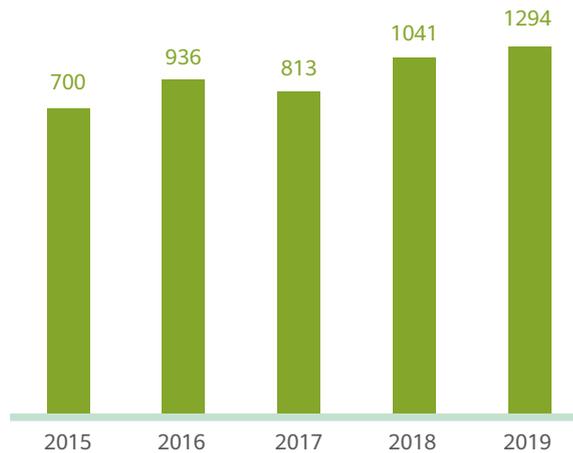
Water usage at Huawei from 2015 to 2019 (10,000 m^3)

STORY   **Using Excess Heat from Condensate to Make Water Purification Systems More Productive**

Our Shanghai Research Center uses a water purification system that pre-treats tap water and uses reverse osmosis (RO) to purify the water. Both drinking water and concentrated water are produced during this process. Normally, when the inlet water temperature is 10°C, the water yield is 60% of the rated yield, and the water yield increases 3% for every one-degree increase in temperature. The RO membrane yields the most water when the inlet water temperature is 25°C.

In the winter, our Shanghai Research Center uses the municipal steam heat exchange system. When steam is converted into heat energy through the heat exchanger, a large amount of warm condensate is created. We use this extra heat to heat tap water and keep the inlet water temperature at 25°C, so that our water purifier is much more productive. We save 1,200 m^3 of water each year, with the yield of drinking water up 40% and the water production rate up 10%.

Our Consistent Efforts Are Widely Recognized

We pay close attention to the environment when designing products – minimizing environmental impact is one of our most important metrics for assessing product quality. This is also a major focus of our customers and consumers. We implement rigorous controls in this area throughout product lifecycles, including during the selection of raw materials, manufacturing, packaging, transportation, customer use, repairs, disposal, and recycling. Our goal is to minimize the environmental impact of our products, and offer customers and consumers eco-friendly products.

In 2019, Huawei participated in multiple green certification programs, including programs from ENERGY STAR®, TÜV Rheinland, TÜV SÜD, the China Environmental United Certification Center, and the China Quality Certification Center. A total of 626 consumer products and network products received green certifications last year.

China Quality Certification (CQC) for Environmentally Friendly Electrical and Electronic Products

This is a certification program from the China Quality Certification Center that assesses the environmental factors of electrical and electronic products at each stage of their lifecycle. Assessed factors include ecological design, energy/resource consumption, material use, pollutant discharge, packaging, and reuse. The assessed product is assigned a grade – A, B, or C, with A being the highest level of certification.

In 2019, 28 Huawei smartphones and tablets received an A grade.

The A grade CQC certificate for 28 Huawei products

TÜV-WT Certification

The TÜV-WT Certification is a joint program organized by TÜV SÜD and Wearable Technologies Group AG (WT AG). The certification program provides testing and certification services for wearables in terms of environmental protection, safety, performance, interoperability, and durability.

In 2019, the Huawei 3X and 3s watches for children were TÜV-WT certified.

TÜV-WT Certification for Huawei 3X watch for children

ENERGY STAR® Certification

ENERGY STAR® is an international voluntary program that assesses energy efficiency in products. Its goal is to reduce energy use and GHG emissions for environmental protection.

In 2019, five tablets and laptops received ENERGY STAR® certification, including the M5 Lite tablet and the MateBook and MagicBook laptops.


Huawei MateBook 14 laptop with the ENERGY STAR® certification

China Environmental Labeling

Any product that bears a China Environmental Label is high-quality, eco-friendly, and energy-efficient, and designed with a limited amount of toxic and hazardous substances.

In 2019, the Huawei MateBook E laptop received a China Environmental Label.

Huawei also obtained a China Environmental Label for our FusionServer Pro servers, TaiShan servers, and Atlas products.
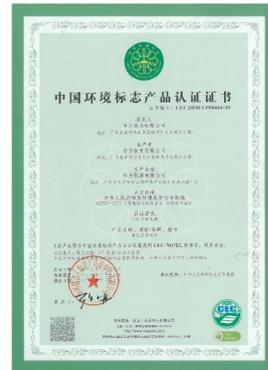
China Environmental Labeling certificate

In 2019, we received green certifications for multiple types of network equipment, including our servers and switches. The China Quality Certification was granted to 64 of our servers and switches (including the FusionServer Pro servers, TaiShan servers, and CloudEngine 6800 switches), and TÜV Rheinland certificates were granted to 40 products. These certificates are evidence that our products can meet requirements for safety, electromagnetic compatibility, recycling, energy efficiency, carbon footprint, and social responsibility.

China Quality Certification for a TaiShan server

China Quality Certification for the CloudEngine 6820 switch
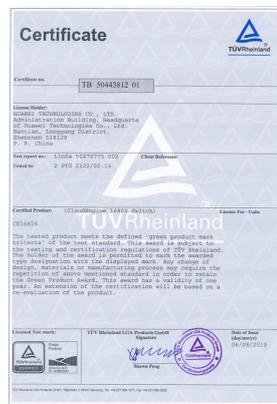
TÜV Rheinland certificate for the CloudEngine 16816 switch

5 Healthy and Harmonious Ecosystem

Companies of all sizes can play a role in reducing poverty and hunger by creating jobs and giving people equal access to decent work. They can make lasting contributions to local communities by doing their part in cultural and educational programs, health and well-being, and disaster relief efforts.

Companies should make sustainability a strategic goal, and recognize the importance of their partners in achieving this goal. Responsible companies should focus on the social, economic, and environmental impact of the entire value chain. They should also pay attention to the potential risks, overall compliance, and sustainability of their supply chains. These companies must consider how to create greater value and contribute to the sustainable development goals of their customers.

As we move towards a digital and intelligent world, the key to narrowing the gaps between different countries and regions is the ability to access and use information, which is in turn underpinned by ICT literacy and skills. All companies, particularly ICT companies, should deliver training and education to local communities and support the spread of new technologies and talent development. They should also take part in events that expand access to information and drive socioeconomic progress.

Business Ethics
Caring for Employees
Supply Chain Responsibilities
Community Responsibilities

1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
8 DECENT WORK AND ECONOMIC GROWTH
10 REDUCED INEQUALITIES
17 PARTNERSHIPS FOR THE GOALS
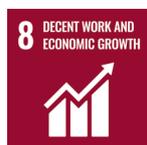
Background

A cloud of political and economic uncertainty looms over global markets and unexpected events are commonplace, jeopardizing the achievement of the UN's sustainable development goals (SDGs). Every organization must take concrete policy actions to mitigate economic risks and reinforce the foundation for stable and sustainable economic development. A dynamic and inclusive global economy is essential to achieving the ambitious goals set out in the 2030 Agenda for Sustainable Development.

With the SDGs becoming part of the development agenda of the global community, leading companies will have the opportunity to show how they will achieve sustainable development by minimizing negative impacts on humanity and the environment and by maximizing their positive influence. SDGs cover a broad range of sustainability topics relating to companies, including poverty, health, education, gender equality, decent work, and economic growth. With the SDGs, companies can better align their business with global priorities. Companies can use the SDGs as their overall strategic framework, based on which they can develop, guide, communicate, and report their own strategies, goals, and business activities. Companies can also work with partners along the value chain, doing their due part to contribute to the SDGs.

Huawei's Approach and Practices

At Huawei, business integrity, ethics, and compliance are the fundamental prerequisites for all business activities, and we have implemented policies and processes to get everyone on board. The company attaches great importance to employees' professional development and self-actualization, and we provide our diverse workforce with easy and equal access to opportunities for learning and training.

Deep engagement from our supply chains is vital for Huawei to foster a robust business ecosystem and attain its sustainability goals. Huawei emphasizes responsible procurement as part of its wider efforts to reduce risks to sustainable supply chains. To make our supply chains more sustainable and competitive, the company constantly looks for new models in supplier management and helps suppliers grow their capabilities.

We pay taxes, create jobs both directly and indirectly, and stimulate the development of the ICT value chain in every country in which we operate. Furthermore, we deliver innovative ICT solutions that drive the digital transformation of all industries, foster economic growth, and improve people's quality of life. We do everything we can to support and give back to local communities and directly benefit local people.

Business Ethics

Ensuring Operational Compliance

We conduct business with integrity, adhere to common business ethics, and observe all applicable laws and regulations in the countries and regions in which we operate. This is a guiding principle for our management team. For years, we have worked hard to build a compliance management system that aligns with industry best practices and embeds compliance management into every link of our business activities and processes. These efforts continue to this day. Huawei values and works hard to create a culture of integrity, and requires all employees to comply with its Business Conduct Guidelines (BCGs). Outside of the organization, we openly engage and share experiences with our business partners, giving them insights into our development of a global compliance system.

Huawei has appointed a compliance officer for each of its subsidiaries worldwide and established oversight-oriented subsidiary boards, which manage and oversee the operational compliance of these subsidiaries.

- The company has incorporated compliance into the key performance indicators (KPIs) of its subsidiaries, and established an award and disciplinary mechanism to steer compliance management among subsidiaries.
- Under the guidance of the group's unified compliance requirements, all subsidiaries set their own compliance management policies and systems with reference to local laws and regulations, and ensure appropriate compliance management in the countries and regions where we operate.

- Following thorough risk identification and assessment processes, subsidiaries set annual compliance objectives, develop and implement control measures, and regularly review progress, thereby ensuring compliance objectives are achieved.
- Subsidiaries also perform self-checks, ad-hoc inspections, and independent internal audits, and invite third parties to audit key compliance areas, to ensure that compliance management is effective.

Huawei
Employee
Business
Conduct Guidelines

Employee
Behavior Guidelines

Subsidiaries' code of conduct
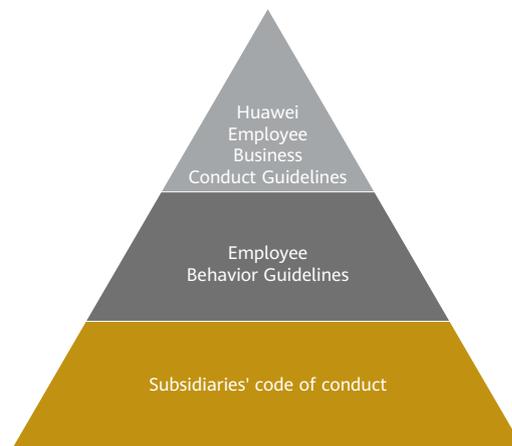
Huawei Employee Business Conduct Guidelines +
Subsidiaries' code of conduct: Incorporating compliance requirements into employee behavior

- Huawei values and works hard to create a culture of integrity, and requires all employees to comply with its BCGs. On this basis, each subsidiary has released detailed code of conduct to ensure employees incorporate compliance requirements into everything they do.
- In 2019, 99.98% of our employees studied and signed the BCGs.

In 2019, Huawei continued to strengthen its compliance across multiple domains, including trade compliance, financial compliance, anti-bribery compliance, intellectual property and trade secret protection, and cyber security and privacy protection. Compliance requirements have been embedded

into our business activities and processes. We have worked openly and proactively with stakeholders like customers, partners, and government regulators, and shared our compliance initiatives and practices with them to foster mutual understanding and trust. Through ongoing efforts to strengthen compliance, Huawei continues to win the respect and recognition of governments and partners around the world.

Anti-corruption and Anti-bribery

Integrity is at the core of our operations. We adhere to common business ethics and observe all applicable laws and regulations in the countries and regions in which we operate. We have zero tolerance for bribery or corruption.

We conduct all business under the 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 management system in four ways: a culture of compliance, governance and oversight, prevention-discovery-response, and continuous operations. We regularly conduct compliance audits to identify potential risks in all business scenarios, develop targeted control measures, and embed these measures into our business activities and processes.
- Huawei values and works hard to create a culture of integrity.
  - All employees are required to study, sign, and comply with the company's BCGs and its anti-bribery and anti-corruption policies. We also provide anti-bribery and anti-corruption training programs for key employee groups.
  - All third parties who do business with Huawei must comply with and uphold Huawei's anti-

bribery and anti-corruption policies, and observe the Huawei Supplier Social Responsibility Code, Code of Conduct for Partners of Huawei, and Honesty and Integrity Agreement.
- We have established complaint channels through which employees and other parties can report violations. We have also established three lines of defense through which we can identify risks, discover problems, and make improvements.
- We continually communicate with our stakeholders, including industry peers, consultants, partners, and NGOs, about compliance, clarifying our views on anti-bribery and anti-corruption. This helps ensure that all stakeholders have a clear understanding of Huawei's compliance regulations and policies.

Intellectual Property Rights (IPR) and Trade Secret Protection

Huawei applies common international IPR rules and handles IPR affairs in accordance with international conventions. We adopt a proactive, amicable attitude towards addressing IPR issues through various channels like cross-licensing and business partnerships. In addition, we invest in long-term R&D and continuously enrich our IPR portfolio. Huawei is one of the world's largest patent holders. As of December 31, 2019, Huawei held more than 85,000 active patents, over 30,000 of which were granted in China and over 50,000 outside of China.

As a follower, practitioner, and contributor of IPR rules, as well as an innovator, Huawei protects its own IPR and respects the IPR of others. We have embedded requirements for protecting trade secrets into our policies, systems, and processes. We have also defined clear requirements for employees to respect IPR and the trade secrets of third parties during business activities, and we ensure all employees are aware of related requirements and carry out business activities in a lawful and contractual manner.

Caring for Employees

Outstanding, dedicated employees are the mainstay of Huawei's sustainable development approach and the key to sustaining its competitive edge and leadership position. Huawei takes a positive, diverse, and open approach to talent management. Our talent management system is built on shared success between the company and its employees. Employees' professional development has always been one of our major considerations, and this includes our ongoing commitment to inspire all employees to develop the expertise that their jobs require. We also open up multiple channels to help our employees realize their personal value.

The importance of a diverse workforce should never be underestimated. At Huawei, we are serious about developing local teams in the hopes of turning them into a leading force for local business development. We put people in positions that play to their strengths, regardless of their seniority. To expand our talent pipeline, we continuously identify high performers with hands-on experience and give them more growth opportunities. In addition, our fast-track promotion mechanism for high performers inspires everyone to unleash their creativity and invigorate the organization.

Workforce Diversity

Huawei operates in more than 170 countries and regions. Outside of China, we aim to hire local professionals and work to build a diversified workforce. All employees at Huawei, regardless of their gender, race, ethnicity, or religious beliefs, are offered equal opportunities to work, learn, and develop. As of December 31, 2019, Huawei had approximately 194,000 employees worldwide, 49% of whom (about 96,000 employees) work in R&D. Our employees come from 157 countries and regions. Among our Chinese employees, 43 different ethnic groups are represented.

We are committed to creating a harmonious, inclusive, and efficient workplace, so that every employee at the company has sufficient room to grow and maximize their potential.

Employee ages (2019)

Ratio of female employees to male employees (2015–2019)

72% 71% 70% 70% 67%

2015 2016 2017 2018 2019
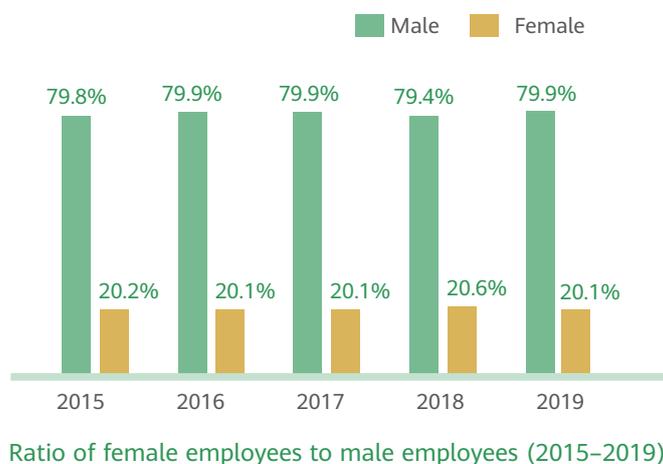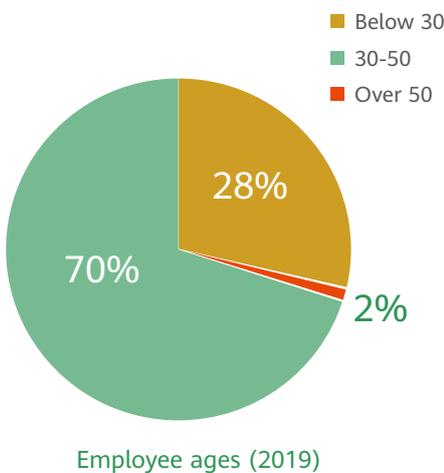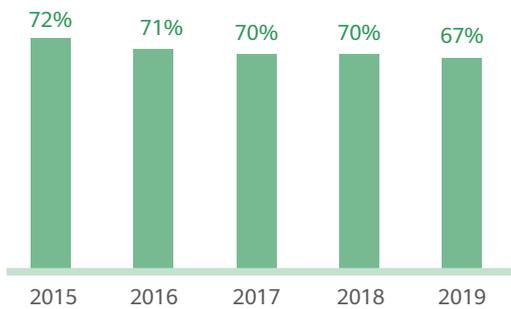
Overseas workforce localization rate (2015–2019)

*Overseas workforce localization rate = Number of local hires / Total number of employees in an overseas office x 100%

As a global company, we recruit staff from all over the world to boost workforce localization.

Hiring local employees enables us to better understand the unique culture of each country and region in which we operate, while promoting local employment and economic growth. In 2019, Huawei employed over 37,000 people in countries outside of China, with an average localization rate of 67%*.

34%   55%

2%
8%
1%
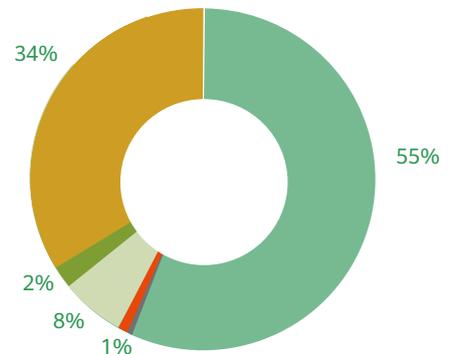
Huawei's online learning resources

359
Small private online courses

18
Live-streaming courses

21
Other

9,049
Micro courses

5,616
Exams

1,259
MOOCs

Total resources: 16,322
Total course series: 139

Employee Training and Development

We greatly value employee capability and career development, and offer abundant opportunities and differentiated career paths to support employee growth and development.

In 2019, Huawei offered over 36,000 offline courses to more than 120,000 employees, with total attendance exceeding 300,000. In 2019, our offline courses were taken by 48% of our total workforce, and these employees spent over 30 hours in training sessions on average.

Huawei has also established an online iLearning platform, through which employees can receive online training anytime, anywhere. This platform keeps them abreast of the latest practical skills needed for their work and professional development. The iLearning platform offers numerous high-

quality training courses. Its interactive model makes training both efficient and engaging. Training on this platform takes many different forms, including live-streaming courses, micro courses, and small private online courses. By the end of 2019, 139 course series and 16,322 learning resources were available to employees.

In 2019, Huawei's iLearning platform recorded an annual attendance of 9.047 million, and more than 53,819 training certificates for massive open online courses (MOOCs) were awarded.

Huawei brings in top minds by providing world-class projects that promise to broaden their global vision. Fostering local teams is a priority for us. In addition, we create an open, inclusive climate that encourages experimentation and values expertise, so that everyone has more room to apply ingenuity.

Creating a Broad Development Platform for Diversified Local Workforces

As a global company, Huawei is able to use its global value chain to smoothly transfer capabilities around the world and maximize value. We take a positive, diverse, and open approach to managing our human resources and we are committed to developing talent in local communities. In 2019, we created a large number of jobs in local communities and more than 4,000 of our new hires were made locally, contributing to local economic development.

To help employees grow and realize their value, we offer them ample and equal opportunities for training and promotion. We assign mentors to local employees and provide them

Training employees worldwide

with systematic training, including more than 4,000 online courses in multiple languages that are available on a variety of platforms including Huawei's own iLearning platform. Our training also includes new employee orientation, specialized training for non-Chinese managers, and training for senior technical experts, helping improve employees' technical skills, expertise, and management capabilities. Huawei's training sessions

for local employees have an annual attendance of over 38,000.

Localization is a key focus in Huawei's global operations. We prefer to hire local professionals. We attract talented people from around the world, and provide them with a platform where they can fully realize their value. We also develop tailored models for different groups of employees to maximize their value.

The Strategic Reserve: Upskilling Employees and Promoting Mobility

The Strategic Reserve lets Huawei rapidly develop its strategic capabilities, optimize its workforce in line with strategies and business changes, and reserve human resources to respond to business fluctuations. The Strategic Reserve boosts morale among participants and helps them develop – through involvement in real-world projects – the skills and capabilities needed by requesting departments. The mechanism supports organizational restructuring, business adjustment, skill upgrades, and workforce optimization. It is instrumental to staff mobility across the company.

The Strategic Reserve is also an important part of Huawei's commitment to corporate social responsibility. When representative offices roll out pilot transformation programs aimed at increasing efficiency and cut out unnecessary positions, the Strategic Reserve absorbs those employees so that they can refine their skills and

train in new areas. This gives them the capabilities they need to work elsewhere within the company. This mechanism within the Strategic Reserve helps Huawei avoid massive layoffs and increase job security for its employees. During an interview with The Wall Street Journal on November 5, 2019, Huawei CEO Ren Zhengfei said,

"The Strategic Reserve is a buffer for employees who will no longer be needed in their current positions. They won't be laid off. Instead, they'll be given training and take exams within our Strategic Reserve. After they become qualified for new responsibilities, they will have the chance to take up new positions and work on new projects. In this way, we want to ensure stable transformation and transition in the company, and avoid excessive layoffs."

Since its founding in 2014, the Strategic Reserve has established a dozen elite teams for all business domains in various business scenarios (e.g., 5G and Big Transportation). In 2019 alone, more than 2,000 employees participated in Strategic Reserve training and practice sessions, significantly improving their professional skills and developing the capabilities required for their jobs.

Huawei attracts top minds by offering clear career paths, a strong platform, and competitive compensation. After new employees come on board, we help them fit into their teams and explore how they can best contribute. The company values dedication and gives everyone the chance to make the most of their own talents and create value. The company also offers monetary and non-monetary incentives to increase employee morale.

Health and Safety

Huawei has a robust employee health and safety management system. In 2019, the company established an integrated healthcare platform by pooling internal and external resources. This platform not only responds to medical emergencies, but provides easy access to various healthcare resources and services. On top of that, the platform is connected to leading, certified healthcare providers in local countries and regions in which Huawei operates, especially in hardship regions where medical resources are scarce. With this platform, our employees can more easily access medical care and enjoy a better healthcare experience.

As safety risks continue to escalate worldwide, Huawei has ramped up safety protection in regions with a high level of risk, strengthened its proactive risk monitoring and alerting system, and provided field offices with guidance on how to handle external crises such as terrorist attacks, political unrest, and natural disasters. These initiatives are essential to Huawei's business continuity and employee safety.

We provide sufficient benefits to ensure that our employees are comprehensively protected. In addition to mandatory insurance plans required by law, we offer all employees commercial insurance (for example, accident insurance, critical illness insurance, life insurance, and business travel insurance), as well as a medical assistance program in special circumstances. In 2019 alone, Huawei invested more than CNY13.9 billion in employee benefits.

We run facilities like gyms, cafes, and lactation rooms on our campuses. We aim to create a comfortable and healthy workplace that provides high-quality services that meet the diverse needs of our employees.

Investment in global employee benefits from 2015 to 2019 (CNY billion)

Employee Wellness Programs

By creating a positive workforce, Huawei believes its employees can enjoy both work and life. To this end, we foster an efficient, relaxed, and caring working environment, which gives employees a strong sense of happiness and inspires them to find a good work-life balance.

In 2019, we continued to carry out different types of team building activities around the world, such as the Race Against Time, We Are Family, 3+1

Health Week, and Running for Love initiatives. These initiatives have encouraged managers at all levels to care for employees, while inspiring our employees to care for others, stay optimistic, and spread positive energy to create a better workplace.

UK Rep Office employees participating in a dragon boat race

Creating a Healthy Workplace

In 2019, Huawei further upgraded its on-campus health and safety facilities. We also commissioned healthcare experts from specialized medical institutions to provide services to employees, including health management (e.g., health consultation and illness tracking and intervention), emergency handling (e.g., pre-hospital emergency care and first-aid training and drills), and healthcare services (e.g., health knowledge sharing and exercises). In the same year, Huawei also refined its medical emergency response mechanism.

By the end of 2019, Huawei had opened 16 healthcare centers and more than 30 healthcare service stations on its campuses across China, and put in place nearly 500 sets of automated external defibrillators and first-aid kits. The company trained more than 10,000 emergency response team (ERT) members from amongst both in-house staff and security service providers. These ERT members can rapidly deliver emergency services to over 120,000 employees on the Chinese mainland. Huawei's multifaceted approach to healthcare has created a safe workplace for all employees.

Healthcare for Employees Outside China

Natural disasters, epidemic outbreaks, and regional social conflicts pose serious challenges to employee health and safety. Huawei is deeply concerned with the health of its employees, especially those working in challenging regions, and has invested heavily to keep every employee safe and sound.

In 2019, Huawei dispatched many senior medical experts from leading Chinese medical institutions to check on employees in 22 challenging countries in Latin America, Southeast Asia, the Middle East, and Africa. These experts studied the medical needs of nearly 200 employees, visited about 60 local medical institutions, organized over 50 training sessions on health and insurance, and provided face-to-face medical consulting to more than 120 employees and their families. Based on the evaluations on local hospitals conducted by the experts, Huawei identified and forged partnerships with leading local hospitals to

An injured employee on his way back to China for treatment

Employee healthcare center

make more types of medical resources easily available to employees working in those countries.

In April 2019, two Huawei employees were seriously injured in a road accident during a business trip in Latin America. The company responded promptly and reached out to an international rescue institution. Given the severity of the injuries, a medical aircraft was chartered to bring the employees back to China for treatment. This is one of the many examples that has demonstrated Huawei's commitment to protecting its employees.

Health and Safety Management Systems

Throughout its operations, Huawei always puts health and safety first. We are working to build our occupational health and safety management system worldwide. So far, 60 Huawei representative offices (representing about 79 countries) outside of China have been OHSAS 18001 and ISO 45001 certified, accounting for 83.33% of the total. Our security practices cover everything from the security management system to manufacturing safety and R&D safety. We do everything within our power to ensure the health and safety of Huawei employees, subcontractors, and other stakeholders.

STORY   **Manufacturing Safety**

In 2019, we furthered our intrinsic safety efforts, working with safety consultants to enhance safety standardization, precision, digitization, and automation management. We applied intrinsic safety techniques during field management of manufacturing, and gradually extended them to cover R&D, suppliers, and EMS providers. We aim to provide a comprehensive assurance mechanism that protects employees' health and safety. In 2019, no major incidents were recorded in relation to our manufacturing safety.

Intrinsic safety: Ensured intrinsic safety throughout the entire product lifecycle. Standardized the safety control baselines and deeply integrated them into

Production safety speech contest

product design, manufacturing processes, automated equipment development, equipment purchase, and precision manufacturing. Extended intrinsic safety management to cover suppliers and EMS providers, transforming safety management from a resource-consuming activity into a value-added activity.

Digital safety management: Shifted to a new safety management approach that supports proactive prevention and early warnings. Digitized occupational health management, managing all high-risk scenarios through digital means. Managed safety maps by production line and sources of onsite safety risks by

hierarchy.

Key safety capabilities: Improved technical specifications relating to the safety of new product domains and established an electricity safety lab. Developed techniques and operation control standards for manufacturing-related wastewater treatment, monitored the state of lithium-ion batteries, and gradually introduced

and verified phase change materials for lithium-ion batteries.

Safety precision management: Learned best practices from safety consulting firms, and introduced autonomous management and Felt Leadership. Obtained certifications for national green factories, clean manufacturing, and safe manufacturing.

Developing safety leadership and a safety culture: Continued implementing a safe manufacturing ownership mechanism and improving employees' safety awareness through activities such as Safe Manufacturing Month, Felt Leadership, sharing industry best practices, and online training on safety skills and awareness.

Creating a Favorable Workplace

A favorable workplace that fosters healthy employee relations is the foundation for a business to grow sustainably. Huawei has a presence in over 170 countries and regions, and we comply with applicable laws, regulations, and industry standards and respect local customs and conventions when we execute HR policies or develop and implement local business regulations. For example, Huawei has opened prayer rooms on its campuses in a move to meet the needs of employees of various faiths.

Our Employee Care Policy stipulates corporate principles and requirements for employee care, and our local subsidiaries have tailored and released relevant policies in accordance with local laws and regulations. The company has also put in place effective processes, systems, and baselines to create an open, inclusive workplace that encourages mutual respect and diversity.

When it comes to employee recruitment, promotions, and compensation, we never discriminate against anyone on the basis of race, religion, gender, sexual orientation, nationality, age, pregnancy, or disability. We prohibit the use of forced, bonded, or indentured labor, and we have detailed, equitable regulations

that cover each major phase of an employee's relationship with the company, including recruitment, employment, and exit. No incidents of forced labor have ever taken place in Huawei's history.

We prohibit the use of child labor, and have effective policies and measures in place to prevent the recruitment and use of child labor. We also require the same of our suppliers and conduct regular audits to ensure their compliance.

We respect the legal rights of our employees regarding freedom of association and collective bargaining. We never prevent employees from participating in the lawful activities of registered labor unions as long as participation is voluntary and does not violate local laws.

Huawei has multiple effective mechanisms for employee communication. For example, we gather and understand employees' opinions and suggestions through the Manager Feedback Program (MFP), the organizational climate survey, and department-specific HR business partners (HRBPs). Employees can file complaints through channels such as the complaint hotline of the Committee of Ethics and Compliance (CEC) and the HR complaint and suggestion hotline.

Supply Chain Responsibilities

Sustainability plays a vital role in our procurement strategy and is a key part of our supplier management process, from supplier qualification and selection to performance appraisals and day-to-day management. We regularly appraise suppliers' sustainability performance and continuously set new benchmarks. We work closely with customers, suppliers, and industry organizations on sustainability, and we steer our suppliers towards sustainable development through procurement quotas and business opportunities. Our "Learning by Benchmarking" model enables suppliers to learn from each other to enhance their sustainability. These efforts help minimize supply risks, increase customer satisfaction, and boost the competitiveness of our supply chain. Huawei also actively collaborates with industries and participates in the development of industry standards. In 2019, Huawei led efforts to modify the IPC-1401 standard for CSR management systems. Social responsibility is not just a basic requirement for our products and the supply chain. We are also finding new ways to fulfill this responsibility to make our company and wider supply chain more competitive.

New Supplier Qualification

We require all suppliers to sign our Supplier Sustainability Agreement, which is based on industry standards such as the Responsible Business Alliance (RBA) Code of Conduct, and guidelines from the Joint Audit Cooperation (JAC).

We have a comprehensive qualification process for all new suppliers, including their sustainability systems. This process examines suppliers' capacity and compliance with applicable laws, regulations, and the Supplier Sustainability Agreement. Those

who fail the qualification are not deemed qualified suppliers.

In 2019, Huawei audited 111 potential suppliers in terms of their sustainability performance, and the two that failed were not allowed to work with us.

Number of qualified new suppliers (2015–2019)

Supplier Risk Rating and Auditing

Every year, we audit suppliers. Combined, they represent 90% or more of our procurement spending. We assign them one of three ratings: high, medium, or low. On this basis, we draw up a list of suppliers that require annual audits. In 2019, we assigned risk ratings to 1,335 suppliers, and conducted onsite audits on 169 suppliers that posed medium or high risk. We also worked with some suppliers to help them audit their own suppliers' sustainability. By doing this, we were able to evaluate our suppliers' CSR system maturity and their suppliers' risks.

In 2019, Huawei entrusted a third party to audit 107 suppliers. For suppliers that were rated medium- or high-risk, we performed onsite reviews and urged

them to improve until they reach the low-risk level. We also commissioned a third-party auditor to examine 28 suppliers on their environmental impact, fire safety, and occupational health capabilities.

If we discover a problem during an onsite audit, we help the supplier resolve the issue by using our Check, Root Cause, Correct, Prevent, and Evaluate (CRCPE)

methodology to identify common problems, analyze root causes (Man, Machine, Material, Method, and Mother Nature [5M] and Plan-Do-Check-Act [PDCA] management system), and take targeted actions. Ongoing assessments and improvements are made against established benchmarks. All problems are recorded in Huawei's Supplier Corrective Action Request (SCAR) system for follow-up until closure.

Number of suppliers audited onsite (2015–2019)

- High-risk suppliers
- Medium-risk suppliers

Year	High-risk	Medium-risk
2015	14	59
2016	14	39
2017	28	89
2018	20	174
2019	14	155
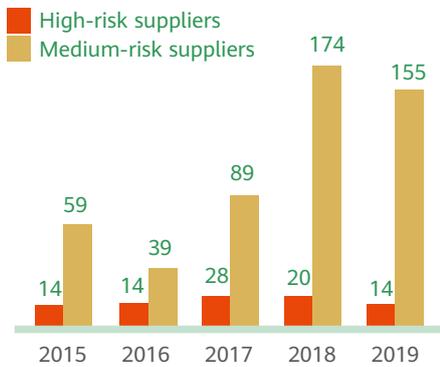
Number of suppliers of each risk rating (2015–2019)

- High-risk suppliers
- Medium-risk suppliers
- Low-risk suppliers

Year	High-risk	Medium-risk	Low-risk
2015	14	59	797
2016	14	67	857
2017	28	94	966
2018	20	88	1075
2019	14	98	1223

Problems discovered during 2019 supplier CSR audits

Note: There were no instances of child or forced labor discovered during our 2019 supplier audits.

Category	Percentage
Fire control safety	19%
Management systems	18%
Chemical safety	14%
Equipment safety and health	11%
Environmental protection	10%
Working hours and salaries	6%
Dormitories and canteens	5%
Child and underage labor	4%
Discrimination and punitive measures	4%
Forced labor	3%
Freedom of association and communication	3%
Business ethics	1%

Audit on fire safety

Supplier Performance Management

Every year, Huawei appraises suppliers' overall performance based on their sustainability performance, onsite audit results, and improvements made. When we appraise the sustainability performance of our suppliers, we take into account how they manage their suppliers. We encourage our suppliers to gradually establish a CSR management system based on the IPC-1401 Supply Chain Social Responsibility Management System Guidance. Suppliers are classified into four grades (A, B, C, and D) based on their performance. These grades represent supplier performance in descending order of acceptability. In 2019, we appraised the sustainability performance of 1,502 suppliers.

The amount of business we do 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. Suppliers that perform well are given a larger quota of procurement and more business opportunities. The reverse is true for low-performing suppliers, especially those who have crossed the line we draw for CSR. Depending on the situation, we instruct low-performing suppliers to resolve existing issues within a specified timeframe, reduce their quotas of procurement or business opportunities, and

may even terminate business relationships with those that display exceptionally poor performance. In 2019, we disqualified five suppliers from new partnerships or reduced their quotas due to poor sustainability performance.

Supplier Capability Development

Huawei regularly provides training and coaching for suppliers, and encourages them to adopt industry best practices and integrate sustainability into their business strategies. This lowers their risk and enhances their efficiency. Each supplier has their own experience and competence that can benefit their peers. After years of exploration, Huawei has developed a cost-effective and efficient "Learning by Benchmarking" model that inspires suppliers to learn by benchmarking and by competing to further improve their skills. Under this model, the first step is to collect issues that concern most (if not all) suppliers and industry best practices. This is followed by face-to-face workshops and online or offline meetings where suppliers can share their own best practices and benchmark themselves against industry best practices.

In 2019, 341 suppliers participated in our training programs on Learning by Benchmarking. The topics of these programs included fire prevention, environmental compliance, and tier-2 supplier management.

Safety management training concerning fire and hazardous chemicals

Improving Suppliers' CSR Management Capabilities

Huawei attaches great importance to suppliers' CSR capability improvement and has taken a series of measures to help them more efficiently manage their CSR, reduce risks, and become more competitive. These measures include holding supplier conferences, organizing CSR management workshops, evaluating and coaching suppliers, rolling out targeted programs to improve suppliers' CSR capabilities, and implementing a strategic supplier development program.

In 2019, Huawei invited executives from 196 suppliers to attend our Consumer BG's Supplier Conference, aiming to get buy-in of leadership in CSR efforts and raise their awareness of CSR. Huawei also required the executives of high-risk suppliers to report all of their CSR improvement plans and progress directly to Huawei.

Huawei arranges for professionals to evaluate and coach potential and new suppliers. This helps them understand and meet Huawei's CSR requirements as well as establish or improve their CSR management systems. Huawei regularly holds workshops on supplier CSR management, and provides guidance to suppliers on how to adopt industry best practices and incorporate CSR requirements into business strategies to reduce business risks and improve efficiency. In 2019, Huawei's Consumer BG worked with specialist agencies on programs intended to improve capabilities in domains like labor rights and interests, environmental protection, fire safety, and occupational health, benefiting more than 150 suppliers.

Helping Suppliers Better Manage Hazardous Substances

Huawei urges suppliers to completely ban the use of hazardous substances (e.g., chlorinated flame retardants and brominated flame retardants) in smartphones, tablets, wearables, and other devices. Huawei also helps suppliers improve how they manage hazardous substances. During a 2019 sampling

inspection on the environmental attributes of devices on the market, there were no reported violations or customer complaints for Huawei products.

Huawei has developed a Declaration of Non-use of Restricted Substances in accordance with international environment protection laws and regulations (e.g., Restriction of Hazardous Substances [RoHS] and Registration, Evaluation, Authorisation and Restriction of Chemicals [REACH]). Suppliers must sign this declaration and are only qualified after passing the required product environmental certification. All of our suppliers have developed and implemented their certification programs based on the QC 080000 specification. In addition to examining environment risks, Huawei also entrusts third parties to audit all high-risk suppliers, and requires them to resolve the issues identified within a predefined timeframe.

In 2019, Huawei hosted multiple salons on product environmental protection with more than 150 suppliers and over 280 experts present. This type of communication helps suppliers manage the environmental attributes of their products better. In the same year, Huawei also expanded communication with environmental experts to reinforce the green supply chain.

Deepening Cooperation with Customers and Industry Organizations

We work closely with customers on supplier management. For example, we invite customers to visit supplier facilities, conduct joint supplier audits with customers, and carry out employee surveys and supplier capacity-building projects. This collaborative approach enhances sustainability management across the supply chain. In 2019, Huawei and five customers ran onsite audits on 14 suppliers, and we shared the audit results with the customers.

Huawei proactively works with industry organizations

Driving Suppliers to Improve Through JAC

In 2019, Huawei chose three suppliers for a JAC joint audit, with onsite audits by a third-party auditor commissioned by our customers. A specialist agency was commissioned to collect feedback from the suppliers' employees. The customers and third-party auditor were satisfied with the audit results. We also communicated with suppliers about the issues that were found in the audits and employee feedback, and we shared industry best practices with them.

In 2019, Huawei continued to participate in the JAC Academy

pilot project and designated experts to attend its seminar. We chose five suppliers to be audited by the JAC Academy. Huawei auditors performed onsite audits using JAC's

models, and submitted audit reports to JAC. In January 2020, three suppliers who had performed well in JAC audits were presented medals at the 9th JAC CSR Forum.

Huawei representatives at the JAC CSR Forum

to promote industry cooperation and standardization. We also work with upstream and downstream companies in the supply chain and convert industry best practices into industry standards to raise the sustainability of the entire industry to a new level.

In 2019, Huawei was active in setting standards and sharing experience in organizations such as the China Electronics Standardization Association (CESA), China Association of Communication Enterprises (CACE), and Association Connecting Electronics Industries (IPC). As the chair of the IPC-1401 Technology Group, Huawei led efforts to modify the IPC-1401A standard so it could be expanded from procurement to all activities along the value chain (e.g., marketing, R&D, manufacturing, post-sales, logistics, facilities, human resources, and finance). The revised standard defines CSR as a customer requirement, and CSR innovation as a competitive edge. It stresses the importance of benchmarking against industry best practices. As businesses fulfill their CSR, they should consider compliance and risk management as the means and competency improvement as the end. Following expert peer review, the revised standard is estimated to be released in 2020.

Prohibiting the Use of Conflict Minerals

Huawei takes the problem of conflict minerals very seriously, and has released an open statement announcing that we will not procure or support the use of conflict minerals. We require all suppliers not to procure conflict minerals. We also ask our suppliers to cascade this requirement to their suppliers. As a member of the Responsible Business Alliance (RBA), we work with companies around the world to jointly address this problem through the Responsible Minerals Initiative (RMI). We use the RMI conflict mineral questionnaire and the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas to survey the supply chain and share results with our customers. In 2019, we shared the survey results with 13 customers. We are also an active participant in the projects of multiple industry organizations, seeking to jointly work out viable solutions to conflict mineral issues.

Huawei Statement on Conflict Minerals:
https://www.huawei.com/en/declarations/statement-on-conflict-minerals

Due Diligence in the Cobalt Supply Chain

Lithium-ion batteries have required more cobalt in recent years, which has in turn attracted more attention on due diligence in the cobalt supply chain. Huawei attaches great importance to ethical procurement. As a member of the Responsible Cobalt Initiative (RCI) and RMI, Huawei exercises due diligence on our supply chain according to the Five-Step Framework specified in the OECD's Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. We have released our due diligence policy for the cobalt supply chain, mapped out supply chain risks, commissioned third-party audits, and disclosed the status of cobalt due diligence. Through these efforts, Huawei has driven the development and improvement of due diligence systems on the cobalt supply chain.

In November 2019, OECD and RCI launched an onsite survey covering the cobalt supply chain in the Democratic Republic of the Congo (DRC) to learn about the current state of the cobalt mines there. As a downstream player in the cobalt supply chain, Huawei participated in the survey, provided training on cobalt due diligence, and held a multi-stakeholder conference with large cobalt mine owners.

In the future, Huawei will work more closely with industry organizations, governments, and companies throughout the supply chain. We will take concrete measures to responsibly manage the cobalt supply chain, making it more stable, organized, diversified, responsible, and sustainable.

Engineering Supplier EHS Management

Huawei takes a series of measures to continuously enhance engineering suppliers' EHS management. More specifically, we use digital technologies to manage EHS risks, and AI to identify EHS violations. By monitoring major risks in real time, deploying alerts based on preset parameters, and taking preemptive measures, we are able to prevent numerous risks. To improve the EHS awareness and skills of operating staff, we have released an EHS training video covering multiple scenarios. In addition, we nurture our EHS culture to improve the awareness of all employees. In 2019, more than 108,000 Safety Passport holders were registered in Huawei's online system.

Huawei encourages its engineering suppliers to build and optimize their EHS management systems and to pass the occupational health and safety management system certification. So far, more than 700 engineering suppliers are OHSAS 18001 or ISO 45001 certified. In 2019, Huawei held 13 regional supplier conferences with EHS as a key topic, sharing our approaches and best practices in EHS. To drive suppliers to improve their EHS capabilities, Huawei launched a supplier EHS capability development program, covering EHS leadership improvement, process management, capability assessments, reward and accountability systems, and so on.

A delegation with DRC government officials

Engineering suppliers at an EHS conference

Due diligence training for DRC cobalt mining companies

Informing suppliers of EHS requirements

Community Responsibilities

Huawei is committed to creating value for the communities in which we operate. From local governments to international and regional organizations, we work with partners to create a positive, lasting impact, and we leverage innovation and collaboration to address economic, environmental, and social issues. As a responsible corporate citizen, we believe in the power of communications to connect people and enable access to information across all boundaries. Technology should be made accessible to all, as digital inclusion is key to progress in the economy, education, and healthcare. We are aware that access to education is vital for creating opportunities that support sustainable and fair development. We recognize the responsibility for everyone to take part in protecting the world's natural resources and addressing climate change. We support the development of countries and communities in which we operate by contributing to their welfare, health, and disaster relief needs.

The Seeds for the Future Program Nurtures ICT Professionals

The Seeds for the Future program provides students in various countries and regions in which Huawei operates with unique opportunities to learn about and access advanced ICT and products. Through this program, Huawei shares the ICT knowledge and experience it has gained during its global business operations, and helps students broaden their horizons and gain more ICT knowledge and skills. These students will eventually drive their own local ICT industries and the global ICT industry forward. This program acts as a bridge for communication between different countries and cultures, allowing young people from around the world to learn from each other.

Seeds for the Future Program

In 2019, 1,130 students from 111 countries and regions visited and studied at Huawei's headquarters as part of the Seeds for the Future program. 2019 also marked the 11th anniversary of the Seeds for the Future program, and by the end of the year, about 5,800 students had participated.

2008
first launched
in Thailand

126+
countries & regions

500+
top universities
worldwide

70+
endorsements from heads
of state and government

30,000+
applicants
around the world

5,770+
studied in China
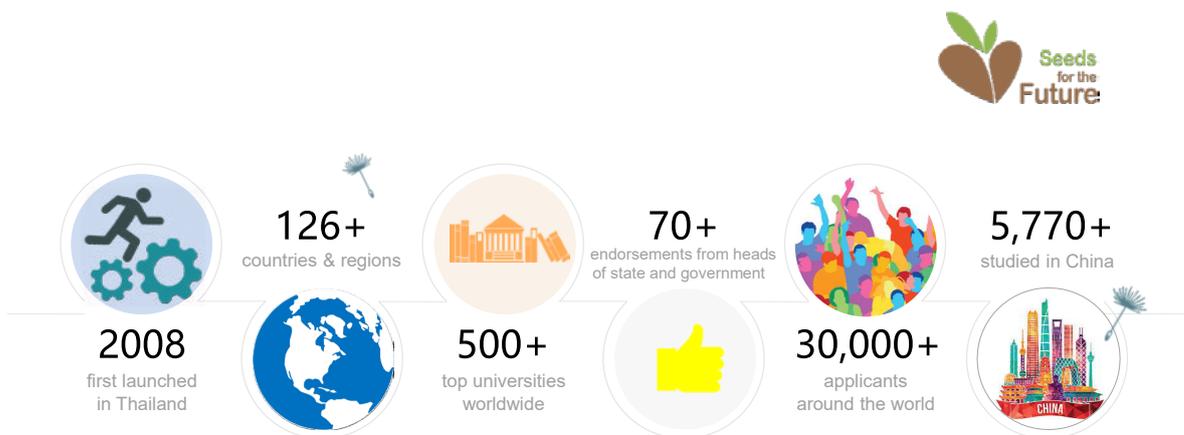
For more information, please visit:
https://www.huawei.com/en/sustainability/win-win-development/social-contribution/seeds-for-the-future

or scan the QR code:

Argentina

2019 was the third consecutive year for the Seeds for the Future program in Argentina. With the continued support of the country's Ministry of Modernization and Ministry of Education, the program has covered 55 universities across 16 provinces and cities.

In November 2019, the program was given the EIKON (a major communication award in Argentina) Silver award in the category of Sustainability in Education in recognition of Huawei's ongoing contributions to Argentina.

Closing ceremony for the program in Shenzhen

Myanmar

In May 2019, Huawei launched the Seeds for the Future program in Yangon. More than 50 attendees were present at the launch event, including Vice Chairman of the National Education Policy Commission, the Rectors' Committee, the Myanmar Investment Commission, rectors, and representatives of program participants.

Dr. Zaw Wai Soe, Chairman of the Rectors' Committee in the Ministry of Education, said, "Now, this is the opportunity for you to see the ICT in China and see how Huawei is working and how they are organizing. And this is an opportunity for you individually. Based on that, you can help us to develop

Closing ceremony for Myanmar students in 2019

our universities and in Myanmar. That's why I also like to say thanks Huawei for all these organizing and giving the chance for Myanmar students and Myanmar universities. That will be very helpful for us in future."

Guinea

Huawei is dedicated to advancing Guinea's education system and ICT industry. As part of this goal, Huawei launched the first Seeds for the Future program in Guinea in February 2019 in collaboration with the President's Office and Communications Ministry. In May, 10 outstanding students set off for China for a two-week study trip. In the first week, they were immersed in Chinese culture, including Mandarin lessons in Beijing. In the second week, they visited Huawei's headquarters in Shenzhen to study ICT, including Huawei's exhibition center and 5G lab.

Program participants on the Great Wall

On June 12, the closing ceremony of the program was held in Guinea's capital and attracted nearly 200 guests, including government officials, rectors, and student representatives.

Contributions to Local Communities

A company will earn the support and respect of a community only if it considers the impact of its operations and takes effective measures to help local communities. This can include helping local communities improve their living conditions, supporting traditional activities, empowering disadvantaged groups, and supporting local education. As a responsible corporate citizen, Huawei works with community organizations to contribute to charity events such as disaster relief, health, and social welfare.

In 2019, Huawei supported over 170 social contribution programs where we served local communities, provided tangible benefits, and positively influenced socioeconomic development. These programs came in many forms, such as helping to solve local issues; volunteer services; supporting events for culture, art, sports, and environmental protection; and supporting disadvantaged groups, including women, children, the impoverished, and those with serious health issues.

Below are some of Huawei's social contribution programs for 2019:

India: DAKSHA

Huawei India's umbrella CSR campaign "DAKSHA" (meaning excellence) focuses on promoting education by supporting the Indian government's goals for Digital India and Skill India.

The Huawei Telecom Sector Skill Development Center was launched as part of the program. In March 2019, the center was inaugurated by the then Union Minister of Telecom Shri Manoj Sinha in a ceremony attended by over 500 local stakeholders. The center works to address the skills gap in the telecom industry and improve youth employability, especially in rural areas. With the Telecom Sector Skills Council (TSSC, a quasi-government body) as its knowledge and certification partner, the center has trained 134 participants as customer care executives, handset repair engineers, and optical fiber technicians, with 56 trainees having already found jobs.

Uzbekistan: Smart Class Project

Huawei Uzbekistan implemented a smart class project in a new building of an ICT school named after Muhammad Al-Khwarizmi. The school was founded by the decree of President in 2017 and was directed to teaching future IT talent.

The smart class was presented to the President of Uzbekistan in December 2019 during his official visit to the school. Huawei's intelligent videoconferencing system CloudLink was used to visually demonstrate the educational process.

Bolivia: Donation for Disaster Relief During Amazon Fires

In September 2019, wildfires decimated large areas of Bolivia's Amazon rainforest, wreaking havoc on lives, property, and nature. Huawei donated funds and disaster relief materials, including those used for putting out the fires, to the Disaster Relief Commission of Bolivia's Ministry of Defense. The commission's representative was appreciative of Huawei's donations, stressing that the funds were much needed. The representative added that relief teams would collaborate efficiently and spend the money on the people and places hit hardest. The representative also expressed hopes that they would work and communicate more with Huawei to benefit the peoples of Bolivia and China.

Poland: "One Thousand Dreams" Program

The "One Thousand Dreams" program is a five-year social contribution program. Through continuous investment in this program, Huawei aims to improve the digital skills of young people in Central and Eastern Europe (CEE) countries, acquaint more people with the benefits of digital technology, and encourage them to work in the ICT sector and help their countries build an intelligent society. The program also provides care for children in these countries.

Through the program, Huawei will train 1,000 ICT professionals across 16 CEE countries and donate 1,000 books to university libraries and 1,000 toys to children's hospitals in each country over the next five years.

South Korea: Programming Contests for Female High School Students

From 2015 to 2019, Huawei and Ewha Womans University (the top women's university in South Korea) hosted five programming contests for female high school students.

In 2019, the contest brought together 150 participants, and 18 won awards. It is South Korea's only ICT competition for female high school students.

Brazil: Centre for Competence and Innovation Development

Huawei and Brazil's National Institute of Telecommunications (Inatel) established the Centre for Competence and Innovation Development – the world's first center for innovation and capability development between a business and universities. The Centre focuses on Fiber to the X (FTTx) and wireless solutions. It has four labs (wireless, transmission, data, and cyber security), with equipment donated by Huawei.

In addition to training much-needed communications professionals, the Centre also provides certifications that can serve as a passport to finding employment, with 95% of certified graduates having secured jobs. The Centre's achievements have been recognized by the industry and the Brazilian government.

Indonesia: Community Support During Ramadan

During Ramadan in Indonesia in 2019, Huawei launched a breakfast program for about 500 children from orphanages in eight cities, also donating books and stationery. In partnership with Nahdlatul Ulama, Huawei arranged for Eid al Fit, provided food, and signed an MOU on providing ICT training for about 1,000 children. After forests in Palembang and Pekanbaru were ravaged by fire, Huawei donated a healthcare center and provided masks, physical examinations, basic medicine, food, and water.

South Africa: Training ICT Professionals

In 2019, Huawei's South Africa Representative Office established the National ICT Talent Development Project. It was created to help develop the Fourth Industrial Revolution (4IR) in South Africa and to nurture 10,000 4IR professionals in the country. The project has delivered a range of CSR programs, such as ICT competitions, telecom professional development, enterprise partner development, the Seeds for the Future program, 4IR technology training, and training for female employees of the Department of Communication and Digital Technologies (DCDT). These programs have benefited over 6,000 people and the ICT competitions have attracted over 10,000 participants.

Appendix I: Sustainability Goals and Progress

● Achieved　○ Underway　◯ Not achieved

Sustainability Strategy	Goals and Initiatives	Progress	Status
Digital inclusion	Release the third ICT Sustainable Development Goals Benchmark report	Released in June 2019	●
	Incubate and run six digital inclusion programs	Six programs (e.g. DigiTruck, StorySign, and TrackAI) were carried out in 2019	●
	Expand the Huawei ICT Academy to cover more than 70 countries and regions	Huawei forged partnerships with 938 universities in 72 countries and regions	●
	Expand the Seeds for the Future program to cover 108 countries	The Seeds for the Future program covers more than 111 countries and regions	●
Security and trustworthiness	Support network continuity during every major incident or disaster	Achieved 100% network continuity	●
	Rectify over 90% of incidents within an hour	Rectified 94.2% of incidents within an hour	●
	Manage suppliers' cyber security and privacy protection	Signed data processing agreements with more than 3,000 suppliers involving privacy protection	●
	Obtain third-party certifications in cyber security and privacy protection	Major products had more than 20 certifications in cyber security and privacy protection	●
	All employees are trained and tested on privacy awareness	Over 99% of our employees passed the privacy exam	●
Environmental protection	Make major products at least 20% more energy efficient	Major products were 22% more energy efficient	●
	Recycle 83% of returned products	Recycled 86% of returned products	●
	Use 1.19 billion kWh of clean energy	Used 1.257 billion kWh of clean energy in 2019	●
	Become QC080000-certified	Huawei passed the SGS certification in March 2019	●
	Less than 1.75% of our products go to landfills	1.24% of our products went to landfills in 2019	●
	More than 20 devices receive the industry's highest-level certification	28 of our mobile phones and tablets received level-A certification from the CQC	●
	Participate in the Carbon Disclosure Project (CDP) and receive a rating of at least a B	Huawei received an A- from the CDP in 2019, which is at the Leadership level and is above both the industry and regional averages	●

Healthy and harmonious ecosystem	Subsidiaries develop and learn their own employee behavior guidelines	99.8% of subsidiary employees passed this exam	●
	Complete sustainability audits on all suppliers that are either new or that pose medium or high risk	Completed all sustainability audits	●
	All suppliers selected pass customer audits	In 2019, 5 customers audited 14 suppliers, and all of these suppliers passed the audits	●
	No serious safety incidents in manufacturing	No serious safety incidents occurred in manufacturing	●
Sustainability management system	Update and publish our sustainability strategy based on our new vision and mission	An updated sustainability strategy was published in June 2019	●
	Build a digital operations platform for sustainable development	Currently underway	○

Appendix II: GRI Standards

General Disclosures			
Organizational profile			
Disclosure	Indicators	SDG	Page
102-1	Name of the organization		6
102-2	Activities, brands, products, and services		6
102-3	Location of headquarters		6
102-4	Location of operations		6
102-5	Ownership and legal form		6
102-6	Markets served		6
102-7	Scale of the organization		6
102-8	Information on employees and other workers		83-89
102-9	Supply chain		90-95
102-10	Significant changes to the organization and its supply chain		/
102-11	Precautionary Principle or approach		/
102-12	External initiatives		23
102-13	Membership of associations		23
Strategy			
102-14	Statement from senior decision-maker		1-5
102-15	Key impacts, risks, and opportunities		17-19
Ethics and integrity			
102-16	Values, principles, standards, and norms of behavior		81-82
102-17	Mechanisms for advice and concerns about ethics		81-82
Governance			
102-18	Governance structure		16
102-19	Delegating authority		16
102-20	Executive-level responsibility for economic, environmental, and social topics		16
102-21	Consulting stakeholders on economic, environmental, and social topics	SDG16	20-23
102-22	Composition of the highest governance body and its committees	SDG5,16	16
102-23	Chair of the highest governance body		16
102-24	Nominating and selecting the highest governance body	SDG5,16	16
102-25	Conflicts of interest		/

102-26	Role of highest governance body in setting purpose, values, and strategy		16
102-27	Collective knowledge of highest governance body		16
102-28	Evaluating the highest governance body's performance		16
102-29	Identifying and managing economic, environmental, and social impacts	SDG16	15
102-30	Effectiveness of risk management processes		16
102-31	Review of economic, environmental, and social topics		15
102-32	Highest governance body's role in sustainability reporting		16
102-33	Communicating critical concerns		23
102-34	Nature and total number of critical concerns		23
102-35	Remuneration policies		89
102-36	Process for determining remuneration	SDG16	89
102-37	Stakeholders' involvement in remuneration		89
102-38	Annual total compensation ratio		/
102-39	Percentage increase in annual total compensation ratio		/
Stakeholder engagement			
102-40	List of stakeholder groups		20-21
102-41	Collective bargaining agreements		89
102-42	Identifying and selecting stakeholders		20-21
102-43	Approach to stakeholder engagement		20-21
102-44	Key topics and concerns raised		20-21
Reporting practice			
102-45	Entities included in the consolidated financial statements		7
102-46	Defining report content and topic Boundaries		23
102-47	List of material topics		23
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102-55	GRI content index		Appendix 2
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Management Approach			
103-1	Explanation of the material topic and its Boundary		23
103-2	The management approach and its components		15
103-3	Evaluation of the management approach		15
Specific Disclosures			
Economic Performance			
Disclosure	Indicators	SDG	Page
201-1	Direct economic value generated and distributed	SDG2,5,7,8,9	6
201-2	Financial implications and other risks and opportunities due to climate change	SDG13	/
201-3	Defined benefit plan obligations and other retirement plans		86
201-4	Financial assistance received from government		/
Market Presence			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	SDG1,5,8	89
202-2	Proportion of senior management hired from the local community	SDG8	84
Indirect Economic Impacts			
203-1	Infrastructure investments and services supported	SDG11,2,5,7,9	/
203-2	Significant indirect economic impacts	SDG1,10,17,2,3,8	99-101
Procurement Practices			
204-1	Proportion of spending on local suppliers	SDG12	/
Anti-corruption			
205-1	Operations assessed for risks related to corruption	SDG16	82
205-2	Communication and training about anti-corruption policies and procedures	SDG16	82
205-3	Confirmed incidents of corruption and actions taken	SDG16	82
Anti-competitive Behavior			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	SDG16	/
Materials			
301-1	Materials used by weight or volume	SDG12,8	/
301-2	Recycled input materials used	SDG12,8	71-74
301-3	Reclaimed products and their packaging materials	SDG12,8	71-74

Energy			
302-1	Energy consumption within the organization	SDG12,13,7,8	64
302-2	Energy consumption outside of the organization	SDG12,13,7,8	64
302-3	Energy intensity	SDG12,13,7,8	65
302-4	Reduction of energy consumption	SDG12,13,7,8	65-68
302-5	Reductions in energy requirements of products and services	SDG12,13,7,8	60-64
Water			
303-1	Water withdrawal by source	SDG6	74-75
303-2	Water sources significantly affected by withdrawal of water	SDG6	/
303-3	Water recycled and reused	SDG6	74-75
Biodiversity			
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	31-33
304-2	Significant impacts of activities, products, and services on biodiversity	SDG14,15	31-33
304-3	Habitats protected or restored	SDG14,15,6	/
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	SDG14,15,6	/
Emissions			
305-1	Direct (Scope 1) GHG emissions	SDG12,13,14,15	64
305-2	Energy indirect (Scope 2) GHG emissions	SDG12,13,14,15	64
305-3	Other indirect (Scope 3) GHG emissions	SDG12,13,14,15	68
305-4	GHG emissions intensity	SDG13,14,15	65
305-5	Reduction of GHG emissions	SDG13,14,15	
305-6	Emissions of ozone-depleting substances (ODS)	SDG12,3	None
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	SDG12,14,15,3	/
Effluents and Waste			
306-1	Water discharge by quality and destination	SDG12,14,3,6	/
306-2	Waste by type and disposal method	SDG12,3,6	74
306-3	Significant spills	SDG12,14,15,3,6	None
306-4	Transport of hazardous waste	SDG12,3	N/A
306-5	Water bodies affected by water discharges and/or runoff	SDG14,15,6	/
Environmental Compliance			
307-1	Non-compliance with environmental laws and regulations	SDG16	None

Supplier Environmental Assessment			
308-1	New suppliers that were screened using environmental criteria		90
308-2	Negative environmental impacts in the supply chain and actions taken		92
Employment			
401-1	New employee hires and employee turnover	SDG5,8	83
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees		86
401-3	Parental leave	SDG5,8	89
Labor/Management Relations			
402-1	Minimum notice periods regarding operational changes		/
Occupational Health and Safety			
403-1	Workers representation in formal joint management–worker health and safety committees	SDG8	88
403-2	Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	SDG3,8	88
403-3	Workers with high incidence or high risk of diseases related to their occupation	SDG3,8	88
403-4	Health and safety topics covered in formal agreements with trade unions	SDG8	86-88
Training and Education			
404-1	Average hours of training per year per employee	SDG4,5,8	84
404-2	Programs for upgrading employee skills and transition assistance programs	SDG8	85
404-3	Percentage of employees receiving regular performance and career development reviews	SDG5,8	100%
Diversity and Equal Opportunity			
405-1	Diversity of governance bodies and employees	SDG5,8	
405-2	Ratio of basic salary and remuneration of women to men	SDG10,5,8	89
Non-discrimination			
406-1	Incidents of discrimination and corrective actions taken 6	SDG16,5,8	89
Freedom of Association and Collective Bargaining			
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	SDG8	89
Child Labor			
408-1	Operations and suppliers at significant risk for incidents of child labor	SDG16,8	89
Forced or Compulsory Labor			
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	SDG8	90,91

Security Practices			
410-1	Security personnel trained in human rights policies or procedures	SDG16	100%
Rights of Indigenous Peoples			
411-1	Incidents of violations involving rights of indigenous peoples	SDG2	/
Human Rights Assessment			
412-1	Operations that have been subject to human rights reviews or impact assessments		89
412-2	Employee training on human rights policies or procedures		89
413-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	SDG1,2	/
Local Communities			
413-1	Operations with local community engagement, impact assessments, and development programs		96-101
413-2	Operations with significant actual and potential negative impacts on local communities		/
Supplier Social Assessment			
414-1	New suppliers that were screened using social criteria		90
414-2	Negative social impacts in the supply chain and actions taken		91-92
Public Policy			
415-1	Political contributions	SDG16	/
Customer Health and Safety			
416-1	Assessment of the health and safety impacts of product and service categories		/
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	SDG16	None
Marketing and Labeling			
417-1	Requirements for product and service information and labeling	SDG12	/
417-2	Incidents of non-compliance concerning product and service information and labeling	SDG16	/
417-3	Incidents of non-compliance concerning marketing communications		/
Customer Privacy			
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	SDG16	/
Socioeconomic Compliance			
419-1	Non-compliance with laws and regulations in the social and economic area		None

Appendix III: Abbreviations

Abbreviations	Full Name
3G	The Third Generation Mobile Communication Technology
4G	The Fourth Generation Mobile Communication Technology
5G	The Fifth Generation Mobile Communication Technology
APP	Application
AI	Artificial Intelligence
BCG	Business Conduct Guideline
BCM	Business Continuity Management
CEO	Chief Executive Officer
CPU	Central Processing Unit
CQC	China Quality Certification Center
CSR	Corporate Social Responsibility
CSD	Corporate Sustainable Development
CTO	Chief Technology Officer
EHS	Environment, Health and Safety
EMS	Electronics Manufacturing Services
GDP	Gross Domestic Product
GDPR	General Data Protection Regulation
GeSI	Global e-Sustainability Initiative
GRI	Global Reporting Initiative
GSMA	Global System for Mobile Communications Association
ICT	Information and Communications Technology
IEC	International Electrotechnical Commission
IoT	Internet of Things
IPC	Association Connecting Electronics Industries
ISO	International Organization for Standardization
ITU	International Telecommunication Union
JAC	Joint Audit Cooperation
KPI	Key Performance Indicator
LCA	Life Cycle Assessment
LED	Light Emitting Diode
NGO	Non-governmental Organization
OECD	Organisation for Economic Co-operation and Development
PUE	Power Usage Effectiveness
RBA	Responsible Business Alliance
RMI	Responsible Minerals Initiative
RCI	Responsible Cobalt Initiative
SDG	Sustainable Development Goal
SCAR	Supplier Corrective Action Request
UNGC	United Nations Global Compact
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPS	Uninterruptible Power Supply

Appendix IV: External Verification Certificate

BUREAU VERITAS
Certification

INDEPENDENT ASSURANCE STATEMENT

Introduction and objectives of work

BUREAU VERITAS has been engaged by Huawei Investment & Holding Co., Ltd. (hereafter referred to as "Huawei") to conduct an independent assurance to Huawei 2019 Sustainability Report (hereafter referred to as "the Report"). This Assurance Statement applies to the related information included within the scope of work described below.

This information and its presentation in the report are the sole responsibility of the management of Huawei. Bureau Veritas was not involved in the drafting of the Report. Our sole responsibility was to provide independent assurance on its content.

Scope of work

- Data and information included in the report for the **report period from 2019.1.1 to 2019.12.31**;
- Appropriateness and robustness of underlying reporting systems and processes, used to collect, analyse and review the information reported;
- The assessment team visited Huawei headquarters (located in Longgang District, Shenzhen City, China) and relative functional departments, BV did not visit its other stakeholders.

Excluded from the scope of our work is any assurance of information relating to:

- Activities outside the defined assurance period;
- Positional statements (statements of beliefs, goals, future intention and future commitment);
- Much of the operating financial data in this Report is taken from Huawei Annual Reporting and accounts, which is separately audited by an external auditor and therefore excluded from the scope of the Bureau Veritas assurance.

Methodology

As part of its independent assurance, Bureau Veritas undertook the following activities:

- Interview with relevant personnel of Huawei;
- Review of documentary evidence provided by Huawei;
- Verification of sampled CSR performance data;
- Assessment of data and information systems for collection, aggregation, analysis and review.

Our work was conducted against Bureau Veritas' standard procedures and guidelines for external Assurance of Sustainability Reports, based on current best practice in independent assurance. For this assignment, we have used the verification rules and instructions IASE3000, AA1000 and GRI standards. The work was planned and carried out to provide reasonable, rather than absolute assurance and we believed it provided a reasonable basis for our conclusions.

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BUREAU VERITAS
Certification

Our findings

On the basis of our methodology and the activities described above, it is our opinion that:
The disclosed information included in the report are objective, reliable and free from material mistake or misstatement.

Objectivity

The information and data presented in the report is objective and reliable. Huawei uses information system to collect and aggregation sustainability data. Through on-site verification, the evidence provided by Huawei is reliable and the content of the report is objective.

Completeness

The report covers Huawei and all its entities that have control over finances and operations. The report focuses on "Digital Inclusion," "Security and Trustworthiness," "Environmental Protection," "Healthy and Harmonious Ecosystem." It also discloses the company's sustainable development management etc. which stakeholders concerned. The report is accordance with GRI standards "Core" option.

Materiality

According to GRI standards requirements, Huawei identifies relative key sustainability issues in a rational manner, and discloses the company's strategy, management actions and performance data. The content of the report is materiality.

Responsiveness

Focused on issues stakeholders concerned, the report discloses and responds particularly to key sustainability issues such as green products and services, cyber security and privacy protection, stable network operations, digital inclusion and sustainable supplier management and so on. So the report is responsive.

Statement of independence, impartiality and competence

Bureau Veritas is an independent professional services company that specialises in Quality, Health, Safety, Society responsibility and Environmental management with 192 years history in providing independent assurance services. No member of the assurance team has a business relationship with Huawei. We have conducted this verification independently, and there has been no conflict of interest.

Fanny Zou
Director of Great China Region
Bureau Veritas Certification
2020-06-03

Luguoqiang
Assurance Team Leader
Bureau Veritas Certification
2020-06-03

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