

# Huawei Investment & Holding Co., Ltd. 2021 Sustainability Report



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





# Corporate Profile

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## Who is Huawei?

Founded in 1987, Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. We have 195,000 employees and we operate in over 170 countries and regions, serving more than three billion people around the world. We are committed to bringing digital to every person, home and organization for a fully connected, intelligent world.

(For more details, please check the Huawei 2021 Annual Report at <https://www.huawei.com/en/annual-report>)

## Report Profile

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Every year since 2008, Huawei Investment & Holding Co., Ltd. ("Huawei", "the company", or "we") has voluntarily released annual sustainability reports and disclosed our sustainability performance as we believe that doing so facilitates communication, awareness, and interaction with our stakeholders and makes Huawei more transparent.

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 2021 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, 2021 to December 31, 2021. 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 2021 Annual Report.

The report is prepared in accordance with the Global Reporting Initiative (GRI) Standards (Core option). Huawei engaged SGS, 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 2022. (The report for 2020 was published in July 2021.) You can view the 2021 Sustainability Report at [www.huawei.com/en/](http://www.huawei.com/en/), or by scanning the following QR code.



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— Liang Hua —  
Chairman of the Board



We firmly believe that open collaboration leads to shared success. We have embedded sustainability into all of our corporate strategies, transformation management, and business processes. Through nonstop innovation, we are working with our partners worldwide to cultivate digital talent, bridge the digital divide, and push the digital economy forward. ”

## Developing Digital Talent and Enhancing Digital Literacy for a More Sustainable World

Throughout human history, our ability to imagine a world beyond the status quo has been the driving force behind all development and progress. We made agricultural tools to carve out a permanent place for ourselves in the natural world, and developed machines to cast off the fetters of backbreaking manual work. We are now gathering oceans of data to drive progress towards a fully connected, intelligent world.

Our imagination drives advancement in technology, leading to an abundance of new applications that spur the need to learn and grow, which in turn reinvigorates our imagination.

Right now, digital technology is reshaping the world. They are playing a role in every aspect of our work and life. Next-generation digital technologies like 5G, AI, and cloud computing are converging rapidly, laying the groundwork for a booming digital economy. Green development is also gaining traction, promoting low-carbon lifestyles and production models. As digital and green technologies converge, they will create tremendous opportunities and drive social progress.

A greener intelligent world is fast approaching, but the road ahead is not smooth. The global digital skills gap is widening, which hinders innovation and socioeconomic growth. To bridge this gap, we need to cultivate more digital talent and enhance digital literacy.

### Developing digital talent for a stronger digital economy

Digital literacy is essential for advancing the digital economy. The United Nations has designated education as a basic right, and as the world grows more digital than ever, the ability to access and use technology is an inextricable element of that right. Recognizing this, countries around the world are actively exploring the best ways to cultivate digital talent and enhance digital literacy.

The EU has developed the 2030 Digital Compass plan, aiming to train 20 million ICT specialists and equip 80% of adults with basic digital skills by 2030. Japan has launched the Digital New Deal, which aims to provide every student in elementary and high schools across the country with a computer by 2024 to help them begin developing digital skills at an early age. And China has announced its 14th Five-Year Plan on Digital Economy Development, which will bolster digital education to improve nationwide digital literacy and skills so as to drive the digital economy forward.

Digital skills are key to coordinating efforts to develop the digital economy, and countries that are not able to make full use of their data will be on the back foot. According to the EU's Digital Economy and Society Index, more than 37% of workers in the EU lack basic digital skills. Germany, for example, is projected to have a deficit of 4.9 million digital workers by 2030. In China, eight out of every nine ICT jobs are currently unfilled. It currently has a shortage of 12 million ICT workers, including nine million in emerging fields like AI, cloud computing, and big data.

As a tech company, Huawei is willing to do its part to help bridge the digital gap in the ICT sector. We are working with our partners worldwide to develop a more robust digital talent ecosystem and share ICT knowledge and skills.

## A Message from the Chairman of the Board

In 2008, we launched a program called Seeds for the Future to support the cultivation of local digital talent in communities around the world. This initiative later branched out into other development programs, including technology competitions, dedicated scholarship programs, the Huawei ICT Academy, Huawei Developers Training, and the Huawei Cloud Developer Institute. So far, we have invested more than US\$150 million in these programs, helping more than 1.54 million people from over 150 countries boost their digital skillsets.

In 2021, we launched the Seeds for the Future 2.0 program, which is part of our ongoing efforts to help cultivate broader swaths of digital talent. We will invest US\$150 million in this program over the next five years, and we expect these efforts to benefit over three million more people. Moving forward, we hope more people and organizations will join our TECH4ALL initiative to support more inclusive development of digital talent around the world.

### Improving digital skills in remote areas

COVID-19 has had a profound impact on our world. And while many people benefit from digital connectivity in all aspects of work and life, the pandemic has widened the gap between the haves and have nots, further exacerbating the digital divide and digital poverty.

According to the GSMA's Mobile Economy Report 2022, only 6% of the world's population live in areas without mobile network coverage. Although the pandemic has increased the frequency of Internet use for many, the usage gap – people who have coverage but aren't using the Internet – remains. In 2021, the usage gap was 3.2 billion people, or 41% of the world's population. Needless to say, we still have a long way to go before secure and quality Internet connections are affordable and accessible to all.

For more than 30 years, we have committed ourselves to pushing the boundaries of ICT and promoting its global adoption. We have worked closely with carriers worldwide to build over 1,500 networks, connecting more than three billion people in more than 170 countries and regions. Huawei supports inclusive development and is working to drive broader digital inclusion through our targeted TECH4ALL program. We want to bring the benefits of digital technology to everyone.

As of the end of 2021, our TECH4ALL program has helped more than 110,000 people, including teachers and students from over 400 schools, as well as unemployed young people, learn new digital skills and improve their scientific and technological literacy. In addition to digital skills, making technology more accessible and available is an important part of these efforts. Each month, the accessibility functions on Huawei devices allow more than 4.4 million visually impaired users and over 800,000 hearing impaired users to use digital technology more seamlessly. And our RuralStar base station solutions have helped connect 60 million people in remote areas in more than 70 countries.

Huawei is committed to open collaboration. We are actively sharing the know-how, technical capabilities, and best practices that we have built up over the years with people around the world. Together with industry partners and educational institutions, we are creating an open talent ecosystem that thrives on shared success. This is part of our commitment to giving back to local communities and creating new economic opportunities.

In addition to promoting digital inclusion, we're also doing our best to protect the planet. We are actively innovating to conserve energy, reduce environmental impact, and build a greener, low-carbon, and fully connected world for future generations.

We embed sustainability into the entire lifecycle of our products. We will continue to invest heavily in areas like raw materials, production processes, algorithms, and cooling technologies that reduce the environmental impact of digital infrastructure. This will allow us to build more energy-efficient 5G networks, greener data centers, and eco-friendly electronics.

In the meantime, cyber security and privacy protection remain our top priorities. We will continue to communicate and collaborate with all stakeholders in a trustworthy, open, transparent, and responsible manner. Together, we can more effectively address shared challenges in security and trustworthiness through innovation, unified standards, and improved governance.

In 2021, we continued to advance our Software Engineering Capability Enhancement Transformation, incorporating it into our Integrated Product Development process to create more efficient and trustworthy R&D environments. By doing so, we hope to build trustworthy and quality products to ensure that both our processes and results are trustworthy, and that all necessary measures are taken to mitigate vulnerabilities and risks. Our ultimate purpose is to help customers build secure and resilient networks and create a greener, more secure, and more sustainable digital world.

A greener intelligent world is just around the corner. The digital transformation of industries, as well as green and low-carbon development, all rely on digital talent, so enhancing digital literacy is key. We firmly believe that open collaboration leads to shared success. We have embedded sustainability into all of our corporate strategies, transformation management, and business processes. Through nonstop innovation, we are working with our partners worldwide to cultivate digital talent, bridge the digital divide, and push the digital economy forward.

The road ahead is long and hard. But no matter how bumpy that road may be, we will stay the course. Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world.





— Tao Jingwen —

Board Member and Chairman  
of the CSD Committee



Technology has the power to change the world and make dreams that once seemed out of reach possible. As a tech company, we believe that technology is a force for good. We will continue to provide products and services with a human touch, push boundaries and keep innovating, and ultimately, bring digital to every person, home and organization for a fully connected, intelligent world.



## Technology with a Human Touch: Building a Better, Intelligent World

The digital economy is an engine of global economic growth in today's world. New digital technologies, such as 5G, cloud computing, big data, and artificial intelligence, are reshaping the way we work and live. We believe that all innovations and inventions share the same mission: to make the world a better place. It is this belief that drives us to continue advancing our four sustainability strategies: Digital Inclusion, Security and Trustworthiness, Environmental Protection, and a Healthy and Harmonious Ecosystem. Together with our partners, we are building a better, intelligent world.

### Technology for a more inclusive society

The beauty of technology lies in its potential to benefit all and ensure no one is left behind in the digital world. That is why Huawei launched the TECH4ALL initiative, through which we work with partners to drive digital inclusion in four key areas: education, environment, health, and development.

By the end of 2021, we have used digital technology to roll out our education programs, including DigiTruck and DigiSchool, in more than 400 schools, driving equality and quality in education. Over the past year, we have helped 32 protected areas in 25 countries protect biodiversity more efficiently. We have also developed numerous products and services that offer accessibility features for vulnerable groups such as the visually impaired, hearing impaired, and the elderly. Each month, more than 4.4 million visually impaired people and 800,000 hearing impaired people use the accessibility features on Huawei devices to benefit from an increasingly digital world.

As part of our commitment to bridging the digital divide in remote areas, we have deployed our RuralStar series solutions in more than 70 countries, connecting 60 million people worldwide. We also use ICT to enable industries to go digital, make production safer and more efficient, and create better working environments for employees. For example, 5G-powered smart factories allow steelworkers to work in air-conditioned rooms, smart coal mines enable miners to wear suits at work, and smart ports protect crane operators from serious neck issues.

### Technology for more secure, reliable communications

Digital technology can enrich communications and life and promote economic development. However, its growing adoption also brings challenges to cyber security and privacy protection, both of which remain a top priority at Huawei. We strive to develop secure and trustworthy products, solutions, and services that will allow every individual to enjoy a better life in the digital world.

Over the past three decades, we have helped connect more than three billion people around the world, while maintaining a proven track record in security. In 2021, Huawei opened its largest global Cyber Security and Privacy Protection Transparency Center in Dongguan, China. The center is designed to demonstrate solutions and share experience, facilitate communication and innovation, and support security testing and verification. It is open to our global stakeholders, in a bid to jointly create a reliable digital environment.

## A Message from the Chairman of the CSD Committee

Various non-market factors, such as the COVID-19 pandemic, conflicts, and natural disasters, are putting unprecedented pressure on the timely delivery and stable operations of communications networks. However, Huawei has stayed committed to what we do best. We believe that it is our responsibility to support stable network operations and ensure uninterrupted communications. Over the past year, we provided timely support for more than 180 major events and emergencies worldwide.

To address challenges throughout our supply chain, we have established backup supply networks at multiple points along multiple paths at multiple levels. We will stick to our strategy of maintaining a globalized, diversified supply chain, and work closely with our suppliers and partners to create a secure, reliable, competitive, and healthy value chain.

### Technology for a greener, cleaner environment

As green development continues to gain momentum across the globe, decarbonization and digitalization are becoming imperative. ICT will be key to both processes. Huawei's environmental efforts are driven by the company's green pledge of "Tech for a Better Planet", which focuses on three areas: reducing carbon emissions, promoting renewable energy, and contributing to a circular economy. Our goal is to use innovative technology to protect our planet.

In 2021, Huawei held its Supplier Carbon Emissions Reduction Conference to clarify its strategies and requirements on supply chain emissions reduction. With the support of Huawei, 98% of our top 100 suppliers and energy-intensive suppliers set carbon emissions reduction targets. In the same year, we used over 300 million kWh of electricity from renewable energy sources in our own operations, up 42.3% over 2020.

Huawei's digital power company focuses on five key domains: clean power generation, energy digitalization, transportation electrification, green ICT power infrastructure, and integrated smart energy. In total, our digital power solutions helped customers generate 482.9 billion kWh of green power and save 14.2 billion kWh of electricity. These efforts resulted in a total carbon offset of 230 million tons.

Huawei is also working to build a business model that integrates circular economy practices and a closed-loop value chain. This reduces our impact on the environment and our demand for natural resources. For example, the packaging of Huawei's P50 series smartphones uses 89% less plastic than the P40 series, with plastic accounting for less than 1% of the packaging. In addition, Huawei has joined the Digital with Purpose Movement launched by the Global Enabling Sustainability Initiative (GeSI), pledging to combat climate change and report on our progress.

### Technology for a better, more harmonious world

We believe that responsible companies should not solely

pursue business value, as such a model is simply not sustainable. Social value should be a key consideration whenever companies conduct business activities. As companies contribute social value, they will likely encounter new business opportunities. This will help create a virtuous cycle and drive progress towards the United Nations Sustainable Development Goals.

At Huawei, it is a company policy to care for our employees and always put their safety first. We fully support our employees working in difficult situations, including those in locations hit hard by the pandemic or suffering from conflict, and use digital technology to improve their working environments. In 2021, we invested more than CNY15 billion into employee benefits, reaching a record high.

Huawei emphasizes a culture of integrity and invests heavily to make it a reality. As such, every Huawei employee is required to adhere to the company's Business Conduct Guidelines (BCGs). We also prioritize supplier management and make sustainability a key part of our procurement strategy. In 2021, we assessed the sustainability performance of more than 1,600 major suppliers.

In terms of social responsibilities, Huawei is an active and productive member of every community in which it operates. We use digital technology to make a lasting, positive impact and give back to local communities. In March 2021, Huawei launched the HUAWEI Women Developers program, aiming to help women developers pursue innovation and contribute to an inclusive and diverse world. In July, Huawei announced the Seeds for the Future 2.0 program, in which we plan to invest US\$150 million over the next five years to cultivate digital talent. The program is expected to benefit over three million more people around the world. In August, Huawei announced that it would invest US\$100 million into the Spark Program in the Asia-Pacific region over the next three years, with the purpose of building a sustainable startup ecosystem in the region. This program is intended to help more startups seize the opportunities posed by digital transformation, achieve business success, and develop more innovative products and solutions for the world.

Technology has the power to change the world and make dreams that once seemed out of reach possible. As a tech company, we believe that technology is a force for good. We will continue to provide products and services with a human touch, push boundaries and keep innovating, and ultimately, bring digital to every person, home and organization for a fully connected, intelligent world.



01 / Corporate Profile

01 / Report Profile

02 / A Message from the Chairman of the Board

04 / A Message from the Chairman of the CSD Committee

# 01

## Sustainability Management

---

- 09 / 2021 Sustainability Honors and Awards
- 10 / Huawei's Sustainability Milestones in 2021
- 11 / Sustainability Strategy and Progress
- 13 / Sustainability Management System
- 17 / Stakeholder Engagement

# 02

## Digital Inclusion

---

- 24 / Driving Equity and Quality in Education
- 26 / Conserving Nature with Technology
- 29 / Enabling Inclusive Health and Well-being
- 31 / Driving Inclusive Digital Development

# 03

## Security and Trustworthiness

---

- 36 / Cyber Security and Privacy Protection
- 39 / Openness and Transparency
- 41 / Supporting Stable Communications
- 46 / Business Continuity

# CONTENTS

## 04

### Environmental Protection

---

51 / Reducing Carbon Emissions

69 / Promoting Renewable Energy

71 / Contributing to a Circular Economy

75 / Environmental Certifications

## 05

### Healthy and Harmonious Ecosystem

---

80 / Caring for Employees

87 / Business Ethics

91 / Supply Chain Responsibilities

95 / Community Responsibilities

## 06

### Appendices

---

105 / Sustainability Goals and Performance

106 / GRI Standards

112 / Acronyms and Abbreviations

115 / External Assurance Statement



# 1 Sustainability Management

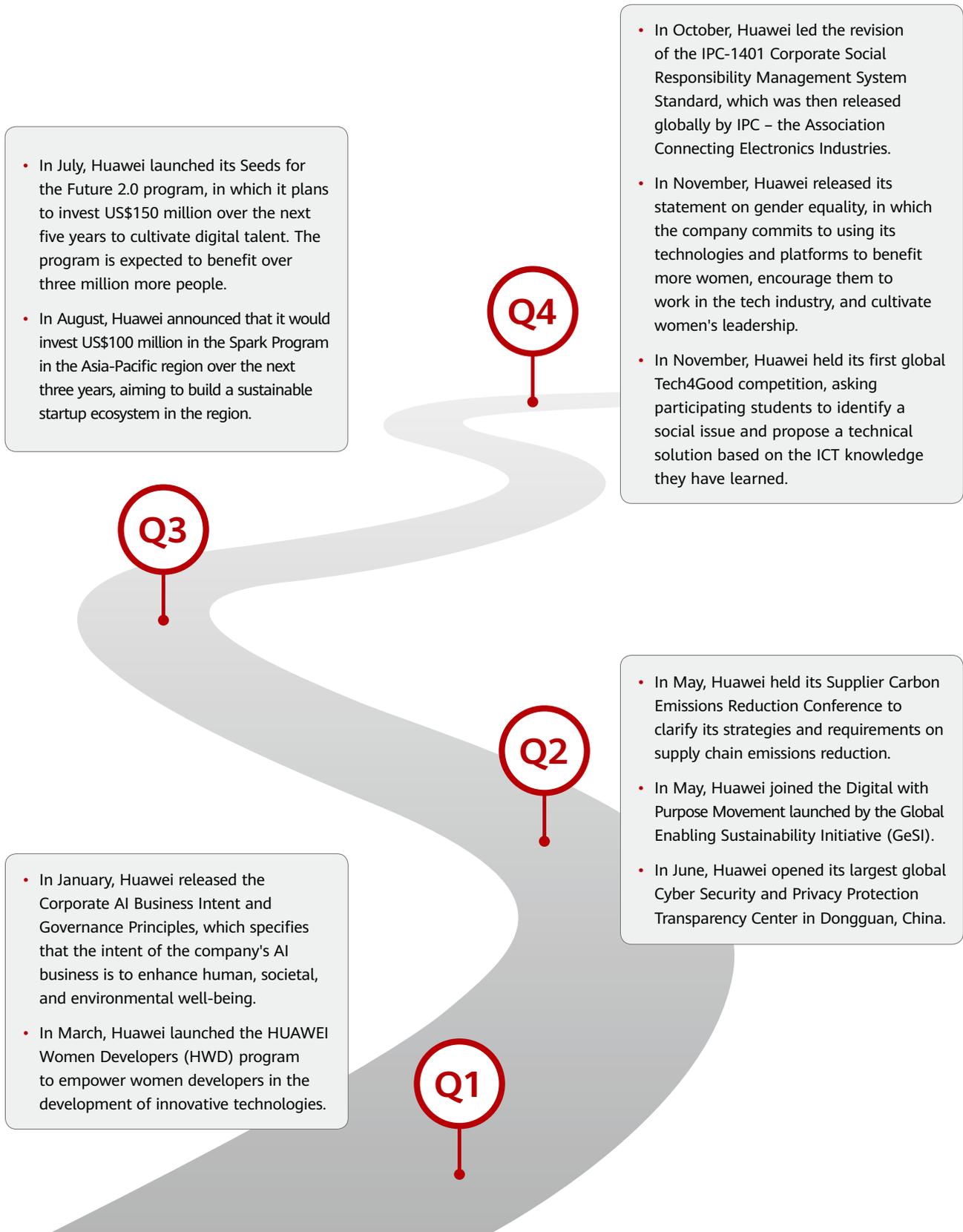
- ① 2021 Sustainability Honors and Awards
- ② Huawei's Sustainability Milestones in 2021
- ③ Sustainability Strategy and Progress
- ④ Sustainability Management System
- ⑤ Stakeholder Engagement



## 2021 Sustainability Honors and Awards

Honor/Award Name	Issued by
Huawei DigiTruck in Kenya: World Summit on the Information Society (WSIS) Prizes 2021 Champion Project	ITU
Nature Guardian: GSMA GLOMO for Outstanding Mobile Contribution to the UN SDGs	GSMA
Huawei RuralStar Pro: Best Mobile Innovation for Emerging Markets of GSMA GLOMO	GSMA
Best Practices for Achieving SDGs in 2021 (Protecting the Environment & Addressing Climate Change)	Global Compact Network China
Leadership Award on Climate Action	CDP
Climate A- List	CDP
FusionSolar Smart PV solution: Carbon Neutrality Actor – Climate Solver of the Year	WWF
27 Huawei subsidiaries recognized as a Top Employer	Top Employers Institute
Vodafone Health and Safety Award	Vodafone Group
Excellence in Supply Chain Development	Deutsche Telekom
Huawei India: Great Place to Work	Great Place to Work® Institute
Huawei Saudi Arabia: 2021 Sustainability Award in the Core Economic Area	King Khalid Foundation (KKF)
Huawei Bangladesh: Partner Recognition Award	bKash
Top 10 Green and Low-carbon Companies	Shenzhen Emissions Exchange Co., Ltd.
Huawei Malaysia: Cyber Security Innovation of the Year	CyberSecurity Malaysia (CSM)
Huawei UAE: Cybersecurity Company of the Year and Cybersecurity CEO of the Year	UAE Cyber Security Council (CSC)

# Huawei's Sustainability Milestones in 2021



# Sustainability Strategy and Progress

Huawei is committed to bringing digital to every person, home and organization for a fully connected, intelligent world. As a tech company, Huawei believes that technology is a force for good. As such, sustainability is a key part of our overall strategy. Under the guidance of our Corporate Sustainable Development (CSD) Committee, we have made ongoing efforts in our four sustainability strategies: digital inclusion, security and trustworthiness, environmental protection, and a healthy and harmonious ecosystem. These efforts will contribute to achieving the United Nations Sustainable Development Goals (UN SDGs).

Major progress in these four areas in 2021:

## Digital Inclusion

**Leaving no one behind in the digital world:** Huawei launched its TECH4ALL initiative to promote digital inclusion for all. The goal of the initiative is to bring digital technology to every person, home, and organization. We run projects with our partners and are making technology more inclusive by investing in technology, applications, and skills.

110,000+

people, including teachers and students from 400+ schools, as well as unemployed young people, have been able to access the Internet and improve their digital skills and scientific and technological literacy through TECH4ALL projects

32

protected areas in 25 countries have more efficiently protect biodiversity with the help of Huawei's TECH4ALL projects

4.4 million+

visually impaired users and 800,000+ hearing impaired users use the accessibility features on Huawei devices each month

60 million

people in remote areas across 70+ countries have been connected to the Internet through Huawei's RuralStar series solutions

## Security and Trustworthiness

**Taking responsibility to build trust:** Cyber security and privacy protection are a top priority at Huawei, and we continue to invest and remain transparent in both areas. We have worked to improve our software engineering capabilities and practices, build resilient networks, develop trustworthy and high-quality products, and support stable network operations and business continuity.

70+

cyber security certifications were awarded to Huawei, giving our customers internationally recognized security assurances

20,000+

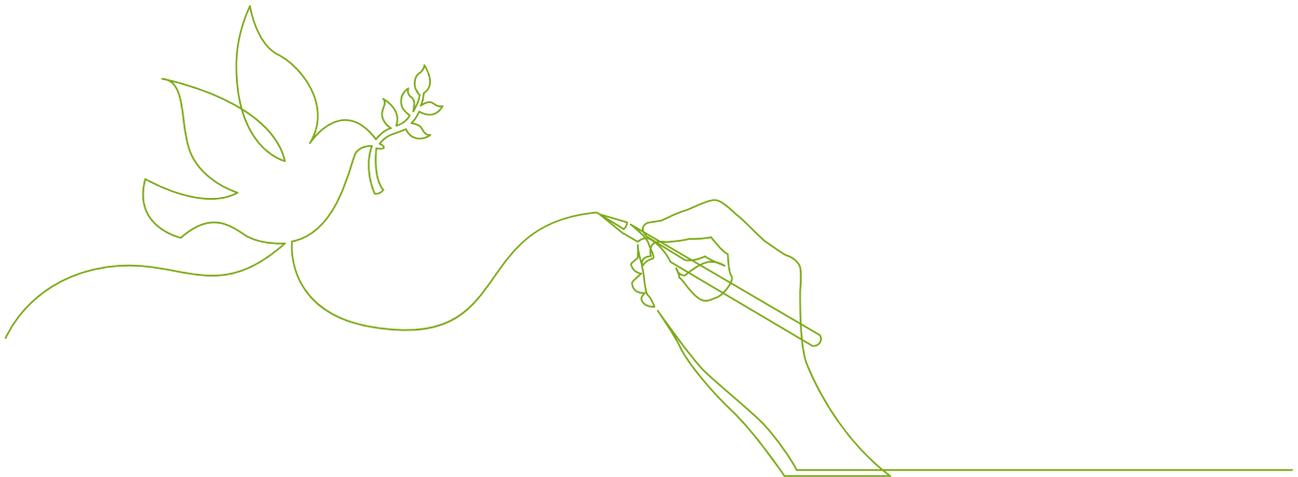
requests from data subjects were promptly and effectively handled by Huawei, respecting and protecting user privacy

35

Authorized Economic Operator (AEO) certificates were awarded to Huawei in 28 countries and regions across five continents, ensuring supply chain security

180+

major events and emergencies where Huawei supported stable communications



## Environmental Protection

**Contributing to a clean, efficient, low-carbon, and circular economy:** We are committed to minimizing our environmental impact in manufacturing, operations, and over the entire lifecycles of our products and services. Huawei's innovative products and solutions help industries reduce their energy consumption and emissions, and contribute to the circular economy. We actively work with all our industry partners to shrink our carbon footprint.

1.9x

increase in the average energy efficiency of Huawei's main products compared to the base year (2019)

300 million+ kWh

of electricity from renewable energy sources used in Huawei's own operations, up 42.3% over 2020

98%

of Huawei's top 100 suppliers and energy-intensive suppliers set carbon emissions reduction targets with the support of Huawei

89%

less plastic was used in the packaging of Huawei's P50 flagship phones compared to the P40 series, with plastic accounting for less than 1% of packaging

## Healthy and Harmonious Ecosystem

**Collaborating for the common good:** We operate with integrity and in compliance with all applicable laws and regulations, and continue to enhance sustainability risk management. We work to ensure that our employees can develop and realize their personal value. We conduct due diligence on our global supply chain to ensure its sustainability. We actively contribute to the communities we operate in. Our goal is to work with all industry partners to build a healthy and harmonious industry ecosystem.

CNY15 billion+

invested in employee benefits

CNY142.7 billion

invested in R&D in 2021, equaling 22.4% of the company's total revenue

1,600+

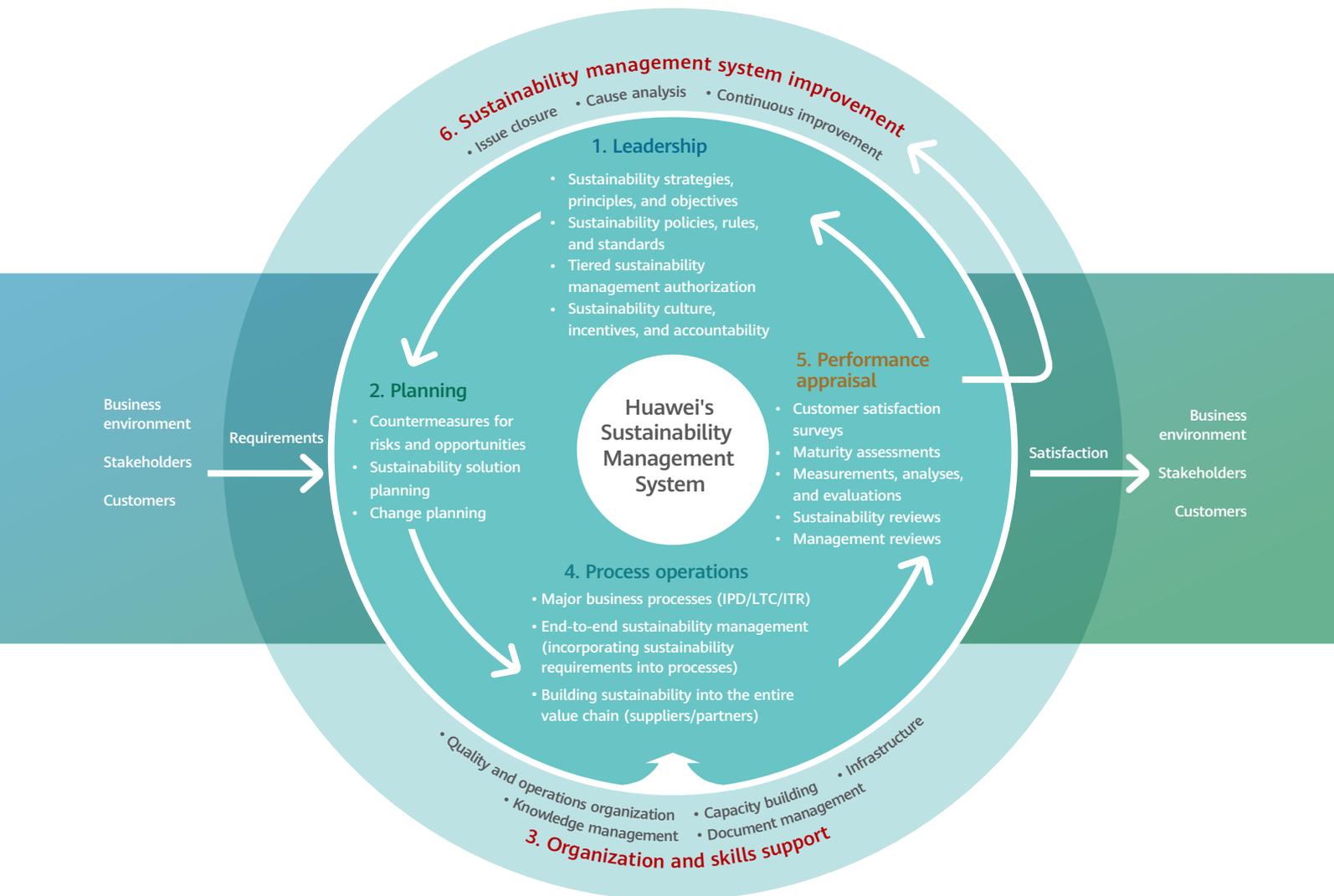
major suppliers received a sustainability performance assessment from Huawei

400+

social contribution programs run by Huawei worldwide

# Sustainability Management System

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



Framework of Huawei's Sustainability Management System

## CSD Committee

Huawei's Corporate Sustainable Development (CSD) Committee guides the company's business units in setting annual and mid- and long-term sustainability goals, as well as overseeing the attainment of these goals in accordance with our four sustainability strategies. The Committee consists of more than 10 senior executives from various departments, including human resources (HR), manufacturing, logistics services, 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 Department.

### Functions of the CSD Committee:

- Develops corporate-level sustainability strategies, guidelines, objectives, and policies; sets the course; and monitors their implementation.
- Coordinates the creation, implementation, and continuous improvement of the sustainability management system; decides on sustainability related matters; and ensures that Huawei's sustainability management complies with relevant laws and regulations, international standards, and customer requirements.
- Facilitates sustainability-related communication with key stakeholders such as customers, regulators, and industry organizations.
- Drives the resolution of sustainability issues across domains or processes and coordinates sustainability operations from end to end.
- Provides guidance on the development, operation, and improvement of our environment, occupational health and safety (EHS) management system, and handles major EHS issues.

The Committee meets each quarter and convenes special meetings as necessary to discuss sustainability issues. The major topics discussed at meetings in 2021 included: human rights, digital inclusion, environmental protection, responsible procurement, and safe production and operations. To support the efficient operations of the CSD Committee, we have appointed a working group, which is responsible for coordinating and completing everyday sustainability work and facilitating the achievement of strategic goals related to sustainability.

## Sustainability Risks and Opportunities

We believe that sustainability risk management is part of the company's business processes, rather than being independent of business operations. To help business units identify and manage sustainability risks, Huawei has created a sustainability risk management guide based on the Risk, Governance, and Control (RGC) methodology. The guide covers risk identification, risk assessment, target setting, risk control, risk monitoring, and risk governance.

We believe that improved sustainability will boost efficiency, increase customer satisfaction, lower operational risks, and drive greater business innovation. Proactively managing sustainability risks and opportunities will help our company become more competitive.



## Examples of sustainability risks and opportunities

Risks and Opportunities	Measures	Sustainability Strategy
<p>According to the UN, more than 600 million young people worldwide lack basic mathematics and literacy skills. Therefore, inclusive and equitable quality education is an imperative.</p>	<p>Through programs like DigiTruck and DigiSchool, Huawei is working with its partners to help provide everyone with equal access to quality education.</p>	<p>Digital Inclusion</p>
<p>According to a report released by the United Nations Environment Programme, climate change, biodiversity loss, and pollution are the three major environmental crises facing humanity.</p>	<p>Huawei has long pursued the green pledge of "Tech for a Better Planet" to actively address climate and environmental challenges. We use ICT to reduce carbon emissions, promote renewable energy, contribute to a circular economy, and protect nature.</p>	<p>Environmental Protection and Digital Inclusion</p>
<p>The beauty of technology lies in its potential to benefit all. Technology must be easily accessible to both the masses and the underprivileged.</p>	<p>Huawei cares about underprivileged groups. That's why we are using our innovative ICT solutions to help our partners provide more easily accessible healthcare resources and offering accessibility features designed for the elderly and those with disabilities in our own products.</p>	<p>Digital Inclusion</p>
<p>An estimated 37% of the world's population have never used the Internet, many of whom live in remote rural areas.</p>	<p>Through its TECH4ALL initiative, Huawei is committed to bridging the digital divide and working with partners to promote individual development for people in remote rural areas using our digital technologies.</p>	<p>Digital Inclusion</p>
<p>Governments around the world are paying greater attention to cyber security and privacy protection, and have adopted laws and regulations to strengthen the governance of cyberspace and protect personal data.</p>	<p>Cyber security and privacy protection are a top priority at Huawei. We strive to develop secure, trustworthy, and quality products, solutions, and services to help customers build more resilient networks.</p>	<p>Security and Trustworthiness</p>
<p>Cyber security and privacy are a common challenge, one that all stakeholders – including governments, industry and standards organizations, enterprises, technology suppliers, and consumers – have a shared responsibility to address.</p>	<p>In June 2021, we opened our largest global Cyber Security and Privacy Protection Transparency Center in Dongguan, China. We are committed to strengthening communication and collaboration with stakeholders, promoting common security standards, technological innovation, security governance, testing, and verification, and more. We look forward to collaborating with all stakeholders to build cyber security and privacy protection capabilities, share value, and embrace both challenges and opportunities.</p>	<p>Security and Trustworthiness</p>
<p>It is our mission and primary social responsibility to maintain stable network operations. Earthquakes, typhoons, epidemics, and other natural disasters and incidents can all impact Huawei's business operations in numerous ways, and thus impact the operations of networks we have deployed.</p>	<p>We have robust mechanisms for responding to natural disasters and incidents. We constantly improve our capabilities in this regard to ensure that people have continued access to stable ICT services anytime, anywhere.</p>	<p>Security and Trustworthiness</p>

Risks and Opportunities	Measures	Sustainability Strategy
<p>In today's highly globalized and highly specialized world, Huawei's operations rely heavily on third parties. This makes business continuity management (BCM) critical.</p>	<p>Through years of sustained investment, Huawei has established a BCM system for domains such as R&amp;D, procurement, manufacturing, logistics, and global technical services. This system covers our end-to-end processes, from suppliers to Huawei and on to our customers.</p>	<p>Security and Trustworthiness</p>
<p>Rising temperatures are causing various problems such as environmental degradation, natural disasters, extreme weather, and rising sea levels. The reduction of carbon emissions is now a consensus shared by all.</p>	<p>Huawei is working to reduce carbon emissions in every aspect of its operations, including products, operations, and supply chains, and is taking every responsible step to do so.</p>	<p>Environmental Protection</p>
<p>Fossil fuels have caused many environmental problems and sustainability challenges. Clean power enabled by technology is a sustainable alternative that will drive new economic growth the world over.</p>	<p>Huawei's digital power company is dedicated to integrating digital and power electronics technologies, developing clean power, and enabling energy digitalization to drive an energy revolution for a better, greener future.</p>	<p>Environmental Protection</p>
<p>As the world's population continues to grow and quality of life keeps improving, the pressure on the world's natural resources is increasing. To adapt to future needs, it is important for us to develop a resource-efficient economic model.</p>	<p>Huawei is committed to building a business model that incorporates circular economy practices and a closed-loop value chain so that all resources can be efficiently used, reused, and recycled, to maximize product value with limited resources.</p>	<p>Environmental Protection</p>
<p>Huawei's global business presence poses a challenge to ensuring the health and safety of our employees, due to the effects of epidemics, conflicts, and other potential emergencies.</p>	<p>At Huawei, it is a company policy to care for our employees and always put their safety first. As the COVID-19 pandemic evolved, Huawei switched to scientific pandemic-prevention methods and targeted control measures. These included rapid nucleic acid tests, vaccinations, and campus entry management. We have spared no effort to help transfer those working in high-risk regions, along with their families, to safer locations and provide all necessary supplies and financial assistance.</p>	<p>Healthy and Harmonious Ecosystem</p>
<p>We have worked for years to build a compliance management system that aligns with industry best practices. Despite these efforts, we may still experience impacts due to the complex legal environments of some of the countries and regions in which we operate. For example, there may be a lack of clarity or transparency in regards to local laws or ambiguity surrounding legal systems or law enforcement.</p>	<p>Huawei will continue to learn from industry best practices and take preventive measures to address risks. The certainty of legal compliance is our best safeguard against the uncertainty of the external environment.</p>	<p>Healthy and Harmonious Ecosystem</p>
<p>According to the findings of supplier audits, most of the identified issues are related to health and safety, so we must urge suppliers to further enhance EHS management.</p>	<p>Working under conditions that may put employee safety or health at risk is a CSR red line that Huawei draws for suppliers. We provide targeted training for suppliers in key industries or regions, and other key suppliers, conduct audits on them, and follow up on their corrective actions.</p>	<p>Healthy and Harmonious Ecosystem</p>
<p>In a digital economy, digital talent is the key to digitalization and economic growth.</p>	<p>In 2021, Huawei launched the Seeds for the Future 2.0 program. We will invest US\$150 million into this program over the next five years, and we expect over three million more people to benefit.</p>	<p>Healthy and Harmonious Ecosystem</p>

# Stakeholder Engagement

Stakeholder identification and engagement are critical to Huawei's sustainability management. Communicating and collaborating with stakeholders allows us to better understand their concerns and requirements. This information is a valuable input for our organizational decisions and helps us constantly improve our sustainability performance.

Huawei's primary stakeholders include customers and consumers, employees, suppliers and partners, governments, non-governmental organizations (NGOs), industry organizations, specialist agencies, the media, and local communities. In 2021, we identified the top concerns of our stakeholders and developed corresponding strategies to address them:

Stakeholders	Communication Channels and Frequency	Major Concerns	Huawei Strategy
Customers and consumers	<ul style="list-style-type: none"> <li>Customer satisfaction surveys: Annual</li> <li>Customer meetings: On-demand</li> <li>Huawei Fan Club for consumers: Periodic</li> <li>Customer audits, surveys, and joint projects: Periodic</li> </ul>	<ul style="list-style-type: none"> <li>Climate change/ carbon neutrality</li> <li>Circular economy and eco-design</li> <li>Human rights</li> <li>Supply chain due diligence management</li> </ul>	<ul style="list-style-type: none"> <li>Set medium- and long-term carbon emissions reduction targets for our own business and encourage our top 100 suppliers (by procurement spending) and energy-intensive suppliers to do the same.</li> <li>Build a business model that incorporates circular economy practices and a closed-loop value chain.</li> <li>Empower the CSD Committee to monitor and manage possible human rights abuses in Huawei's business activities and supply chains, and continuously improve the management of key areas that may have an impact on human rights.</li> <li>Integrate sustainability requirements into our end-to-end procurement process, from supplier admission and qualification to selection, performance evaluation, and portfolio management.</li> </ul>
Employees	<ul style="list-style-type: none"> <li>Employee surveys, (e.g., organizational climate surveys): Annual</li> <li>Manager Feedback Program (MFP): Annual</li> <li>Meetings with employee representatives: Periodic</li> <li>Reflection sessions: Periodic</li> <li>Hotlines and public email addresses for filing complaints, providing suggestions, reporting misconduct, and making an appeal: Periodic</li> <li>Open Days with managers and experts: Periodic</li> </ul>	<ul style="list-style-type: none"> <li>Health and safety at work</li> <li>Compensation, benefits, and incentives</li> <li>Learning and development</li> <li>Employee relations and experience working at Huawei</li> </ul>	<ul style="list-style-type: none"> <li>Make it a company policy to care for employees and always put their safety first. Create a safe and comfortable workplace for all.</li> <li>Reward dedicated employees based on how well they fulfill their responsibilities and offer top pay for top talent.</li> <li>Offer employees systematic training programs and two distinct career paths – the manager path and the expert path – to help them realize their personal value.</li> <li>Promote workforce diversity, create an inclusive and equitable workplace, and nurture a warm and harmonious organizational climate.</li> </ul>
Suppliers and partners	<ul style="list-style-type: none"> <li>Supplier sustainability audits: Periodic</li> <li>Supplier sustainability conferences: Annual</li> <li>Supplier training: Periodic</li> <li>Joint sustainability programs: Periodic</li> </ul>	<ul style="list-style-type: none"> <li>Fairness and equity</li> <li>Collaboration for shared success</li> <li>Social responsibilities</li> <li>Energy conservation and emissions reduction</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize our commitment to anti-bribery and anti-corruption above our business interests, and ensure fairness, integrity, and transparency in our operations.</li> <li>Remain committed to openness and collaboration for shared success and work with partners across different industries and domains to build up a healthy and harmonious ecosystem.</li> <li>Benchmark Huawei's operations against industry best practices, adopt internationally recognized standards, and integrate sustainability requirements into our procurement strategy.</li> <li>Encourage our top 100 suppliers and energy-intensive suppliers to set carbon emissions reduction targets for a green, competitive supply chain.</li> </ul>

Stakeholders	Communication Channels and Frequency	Major Concerns	Huawei Strategy
Governments	<ul style="list-style-type: none"> <li>Meetings on government policy: On-demand</li> <li>Governmental public consultations: On-demand</li> <li>Government and inter-government conferences: On-demand</li> <li>Governmental sustainability programs: On-demand</li> </ul>	<ul style="list-style-type: none"> <li>Combating climate change/carbon neutrality</li> <li>Economic development and employment</li> <li>Digital talent development</li> </ul>	<ul style="list-style-type: none"> <li>Follow our green pledge of "Tech for a Better Planet" to actively address climate and environmental challenges, with a focus on reducing carbon emissions, promoting renewable energy, and contributing to a circular economy.</li> <li>Continue to implement our "Glocalization" strategy, including efforts to hire locally, invest locally, procure locally, and establish local research facilities. This will help boost employment and support economic growth in the countries and regions where we operate.</li> <li>Invest US\$150 million in digital talent development over the next five years through the Seeds for the Future 2.0 program, which is expected to benefit over three million more people.</li> </ul>
NGOs, industry organizations, and specialist agencies	<ul style="list-style-type: none"> <li>Industry conferences, forums, and work groups: On-demand</li> <li>Standards conferences: On-demand</li> <li>Joint sustainability programs: On-demand</li> <li>Academic research programs: On-demand</li> </ul>	<ul style="list-style-type: none"> <li>Human rights</li> <li>Combating climate change/carbon neutrality</li> <li>Circular economy</li> </ul>	<ul style="list-style-type: none"> <li>Empower the CSD Committee to monitor and manage possible human rights abuses in Huawei's business activities and supply chains, and continuously improve the management of key areas that may have an impact on human rights.</li> <li>Follow our green pledge of "Tech for a Better Planet" to actively address climate and environmental challenges, with a focus on reducing carbon emissions, promoting renewable energy, and contributing to a circular economy.</li> <li>Build a business model that incorporates circular economy practices and a closed-loop value chain so that all resources can be efficiently used, reused, and recycled to maximize product value with limited resources.</li> </ul>
Media	<ul style="list-style-type: none"> <li>Press conferences: On-demand</li> <li>Exclusive interviews: On-demand</li> <li>Inviting the media to our conferences and events: On-demand</li> </ul>	<ul style="list-style-type: none"> <li>Combating climate change/carbon neutrality</li> <li>Digital inclusion</li> <li>Business continuity</li> </ul>	<ul style="list-style-type: none"> <li>Set medium- and long-term carbon emissions reduction targets for our own business and encourage our top 100 suppliers and energy-intensive suppliers to do the same.</li> <li>Roll out the digital inclusion initiative TECH4ALL across four domains: education, environment, health, and development.</li> <li>Stick to our strategy of maintaining a globalized, diversified supply chain without depending on any single supplier, country, or region, and develop sustained and stable supply capabilities over the long term.</li> </ul>
Communities	<ul style="list-style-type: none"> <li>Local employment and procurement: Periodic</li> <li>Participation in community projects: Periodic</li> <li>Running social contribution programs: Periodic</li> <li>Interaction through Huawei's websites and social media platforms: Periodic</li> </ul>	<ul style="list-style-type: none"> <li>Green consumption</li> <li>Information accessibility</li> <li>Gender equality</li> </ul>	<ul style="list-style-type: none"> <li>Facilitate green consumption by providing consumers with eco-friendly products.</li> <li>Integrate information accessibility features into Huawei's products and services and provide related hotlines and store services to ensure that no one is left behind in the digital world.</li> <li>Release a statement on gender equality, in which we commit to using our technologies and platforms to benefit more women, encourage them to work in the tech industry, and cultivate women's leadership.</li> </ul>

## 2021 Stakeholder Engagement

Huawei actively engages with global stakeholders by organizing and participating in a variety of sustainability programs. Through these programs, we are able to discuss and work together on our shared concerns (e.g. using tech for good, promoting gender equality, combating climate change, and enhancing trust in tech) as part of our effort to support the UN Sustainable Development Goals.

### Connected for Shared Prosperity Forum Co-hosted with GSMA

As part of the lead-up to Mobile World Congress Shanghai 2021, which ran from February 23 to 25, Huawei, GSMA, the Center for Environmental Economic Studies at Fudan University, and The Paper hosted the Connected for Shared Prosperity forum, with the support of UNESCO.

More than 1,000 guests from over 50 countries attended the forum either online or in person, and discussions were broadcast live in eight languages. Attendees agreed that digital technology is the foundation of sustainable development and will benefit more people in multiple aspects.



### HUAWEI Women Developers Summit for Greater Gender Equality and a More Diverse Ecosystem

At the HUAWEI Women Developers Summit held on April 28, 2021 in Guangzhou, China, several outstanding women in tech were invited to share their technical knowledge, work experience, and personal stories to encourage more women to work and play a unique role in the tech field.

The summit was hosted by HUAWEI Women Developers (HWD), Huawei's global women empowerment program designed to help women developers create world-changing apps and tools. HWD aims to provide women with the resources they need and encourage more women to join in technological innovation by offering them opportunities to learn, communicate, and express themselves. This is part of our efforts to contribute to a more diverse ecosystem.



### Huawei at EU Green Week

During EU Green Week 2021, Huawei and its European partners held five online and offline forums from May 31 to June 13, 2021 to explore how digital technology is key to creating a greener future. The events brought together attendees from various organizations, including the Directorate-General for Environment of European Commission; the Irish Department of Agriculture, Food and the Marine; German Parliament; GeSI; and the United Nations Environment Programme (UNEP). The attendees discussed ten trends in new energy development, the important role of ICT in achieving the European Green Deal targets, and the need for public and private partnerships and industry-wide collaboration to shape a sustainable and intelligent world.



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## Huawei's Tech & Sustainability Forum Exploring the Role of Technology in Sustainable Development

On July 8, 2021, Huawei held a "Tech & Sustainability: Everyone's Included" forum, co-hosted with the International Union for Conservation of Nature (IUCN). Representatives from Huawei, IUCN, the World Economic Forum, CDP, GeSI, and the Singapore Institute of International Affairs discussed the role of technology in driving sustainability and building a more inclusive, eco-friendly world.

At the forum, Huawei announced its Seeds for the Future 2.0 program, through which Huawei plans to invest US\$150 million in digital talent development over the next five years. This program is expected to benefit over three million more people. Huawei also released its Innovation: Blood, Sweat and Dreams documentary series produced together with the Economist Group, which pays tribute to technological innovators and conservationists.

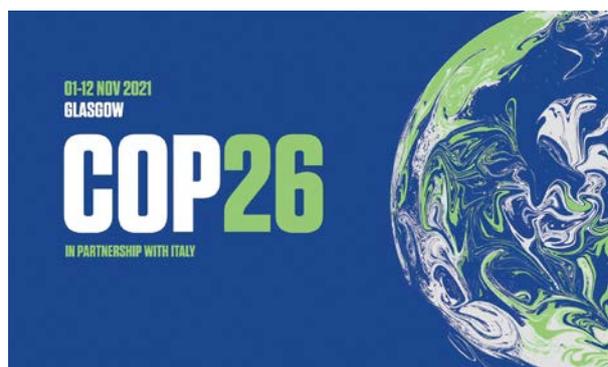


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## Huawei at COP26

From November 1 to 12, 2021, the 26th UN Climate Change Conference of the Parties (COP26) was held in Glasgow. The COP26 summit brought various parties together, including governments, institutions, and tech companies, to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change (UNFCCC).

Dr. Fang Liangzhou, Vice President and Chief Marketing Officer of Huawei Digital Power, spoke at the November 3 session "System Change and Climate Innovation in the Technology Industry" hosted by the UNFCCC Global Innovation Hub. Fang delivered a keynote address online entitled "Building a Low-carbon Smart Society", where he described how Huawei Digital Power integrates digital and power electronics technologies to help industries save energy and reduce emissions in both power generation and consumption. Fang also called for joint efforts to build a low-carbon smart society together, so as to combat climate change and accelerate progress towards carbon neutrality.

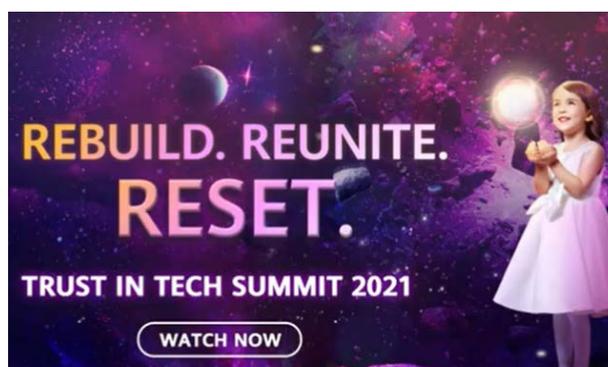


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## Huawei's TrustInTech Summit

On December 2, 2021, Huawei held the online TrustInTech Summit 2021 themed "Global Collaboration for Shared Value". Leaders from across the globe attended the event, including Neil Bush, Chairman of the George H.W. Bush Foundation for US-China Relations; Pascal Lamy, Former WTO Director General; 2018 Economics Nobel Prize winner William Nordhaus; ASEAN Deputy Secretary General H.E. Satvinder Singh; NASA Solar System Ambassador Derrick Pitts; and Hou Jinlong, Senior Vice President of Huawei and President of Huawei Digital Power.

Attendees acknowledged that humanity has entered an era in which interests, fates, and futures are all intertwined, and called for coordinated efforts to address common challenges.



## Huawei's Membership in Sustainability Organizations



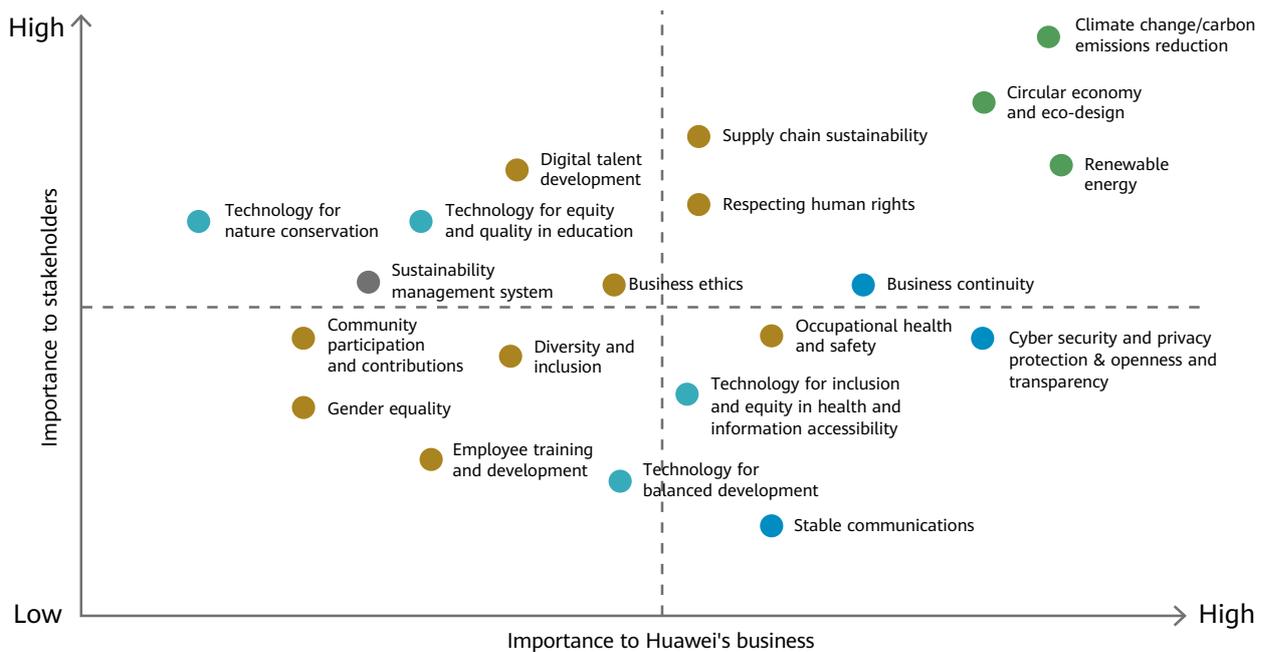
## Focusing on Material Issues

Managing material issues helps us identify the major issues that affect our business operations and that concern our stakeholders. It is a key input for improving our sustainability performance.

In 2021, after a comprehensive analysis and re-prioritization of our material issues, we adjusted the materiality matrix to include more issues that reflect stakeholder concerns, including "digital talent development", "information accessibility", and "gender equality". The new matrix also makes "supply chain sustainability" and "renewable energy" a higher priority.

### Examples of how we identify material issues include:

- Stakeholder surveys
- Customer inquiries, audits, communications, and joint projects
- Industry insights, communications, and benchmarking
- Media engagements
- Internal risk assessments and strategic alignment

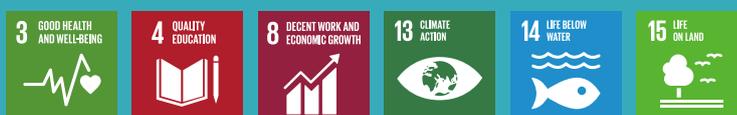


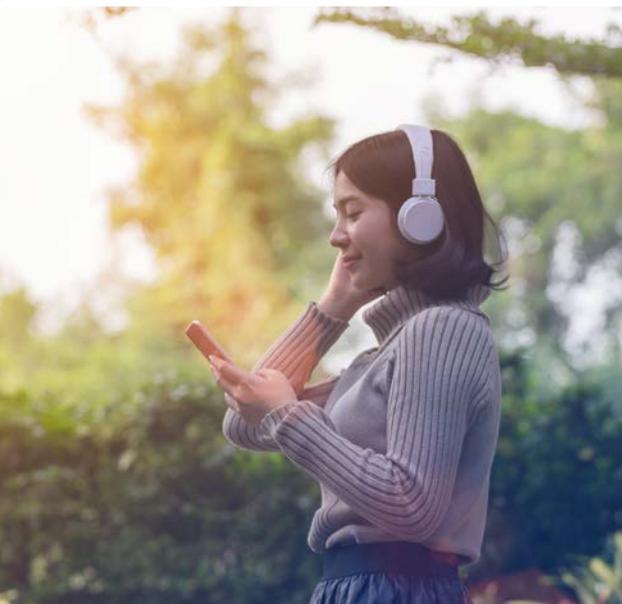
- Chapter 1 Sustainability Management
- Chapter 2 Digital Inclusion
- Chapter 3 Security and Trustworthiness
- Chapter 4 Environmental Protection
- Chapter 5 Healthy and Harmonious Ecosystem



# 2 Digital Inclusion

- ③ Driving Equity and Quality in Education
- ③ Conserving Nature with Technology
- ③ Enabling Inclusive Health and Well-being
- ③ Driving Inclusive Digital Development





As the digital economy continues to develop rapidly, digital technologies like big data, IoT, and AI have been interwoven into every aspect of our lives. Digital inclusion has become a new requirement in this new age. To promote digital inclusion, Huawei launched the TECH4ALL initiative, as we believe that no one should be left behind in the digital world. In 2021, Huawei worked with more than 40 partners, including UNESCO, the International Union for Conservation of Nature (IUCN), the non-profit organization Close the Gap, and Rainforest Connection (RFCx). We made substantial progress in the areas of education, environment, health, and development, contributing to achieving the UN SDGs.

# Driving Equity and Quality in Education

UNESCO believes that education is a human right for all throughout life and that access must be matched by quality. Huawei is working with its partners, including UNESCO and Close the Gap, and using innovative ICT solutions to enable everyone to have equal access to high-quality education, which contributes to the SDG 4 (Quality Education). We aim to harness the power of technology and increase network coverage and connections to help make high-quality educational resources more accessible. We want to empower more people with digital skills to improve the quality of education and career development. We also support the development of technology courses to improve the scientific and technological literacy of teachers and students in remote areas. By the end of 2021, Huawei's education programs had benefited more than 110,000 people, including teachers and students from over 400 schools, as well as unemployed young people.

## DigiTruck: Improving the Digital Skills of People in Remote Areas

In Kenya, less than 50% of people use the Internet. This is because over 75% of Kenyans live in remote areas and many people do not realize the economic value of digital skills. In fact, some Kenyans have never used a smartphone or gone online.

To empower people in remote rural areas with digital skills, Huawei launched the DigiTruck project in 2019, in partnership with UNESCO, Close the Gap, GSMA, Computers For Schools Kenya (CFSK), and the Kenyan carrier Safaricom. DigiTruck is a mobile digital classroom that has been converted from a shipping container. The entire truck is solar-powered, so classes can be held in remote areas lacking adequate power supplies. Inside the truck, a digital space with smart devices like laptops, LED screens, VR goggles, smartphones, and routers, has been set up. Thanks to the wireless broadband available on the truck, students can access the Internet, learn digital skills, and try the VR devices and other innovative educational tools.

By the end of 2021, DigiTruck had provided more than 38,000 hours of training to over 2,100 young people in Kenya.



DigiTruck in Kenya empowering people in remote rural areas with digital skills

In France, 14 million people experience at least one form of digital divide – whether it be Internet access, computer literacy, or difficulty using devices. As a result, many lack the digital skills that employers need, limiting individual opportunities.

In July 2021, Huawei partnered with a local training institute to provide training in digital skills for unemployed young people and the elderly through the DigiTruck mobile classroom. By the end of 2021, the project had provided more than 700 hours of training to over 1,500 people in nine French cities.



DigiTruck in France providing digital skills courses

## DigiSchool: Enabling Scientific and Digital Literacy in K12 Schools

As Progress in International Reading Literacy Study points out, 78% of grade four children in South Africa lack basic English reading comprehension skills during the literacy foundation phase from grades one to three. To address this challenge, Huawei launched the DigiSchool project in partnership with the local carrier Rain and the educational non-profit organization Click Foundation. The project aims to help all children in South Africa read fluently and comprehend what they are reading by the end of grade three.

By the end of 2021, the project had connected over 90 schools and reached more than 50,000 students.



DigiSchool in South Africa helping primary school children improve their English reading comprehension skills



With digital education, we're not only addressing the literacy crisis, but also equipping young learners with the digital skills required for future success.



— Nicola Harris, Chief Executive Officer of Click Foundation

In 2021, Huawei also launched the DigiSchool project in China to improve the scientific and technological literacy of rural students and teachers. Building on its cutting-edge ICT innovations and knowledge, Huawei developed a series of STEAM courses, opening the door of the technology world to teachers and students in remote rural areas. By the end of 2021, we had delivered the first phase of the project in rural schools in midwestern China, benefiting more than 400 teachers and students.



DigiSchool offering STEAM courses to inspire the creativity of primary school children

In 2020, Huawei joined China's Green Pepper program. This initiative provides online vocational training for young teachers in rural areas who have been in the job for between one and three years. It is hoped that this will encourage more teachers to join and remain in rural schools, as well as improve teaching quality. Huawei's WeLink application plays an essential role in this program, acting as a digital connector to offer an open, intelligent, and collaborative learning platform for teachers. Since its launch in 2020, the program has benefited more than 35,000 teachers.

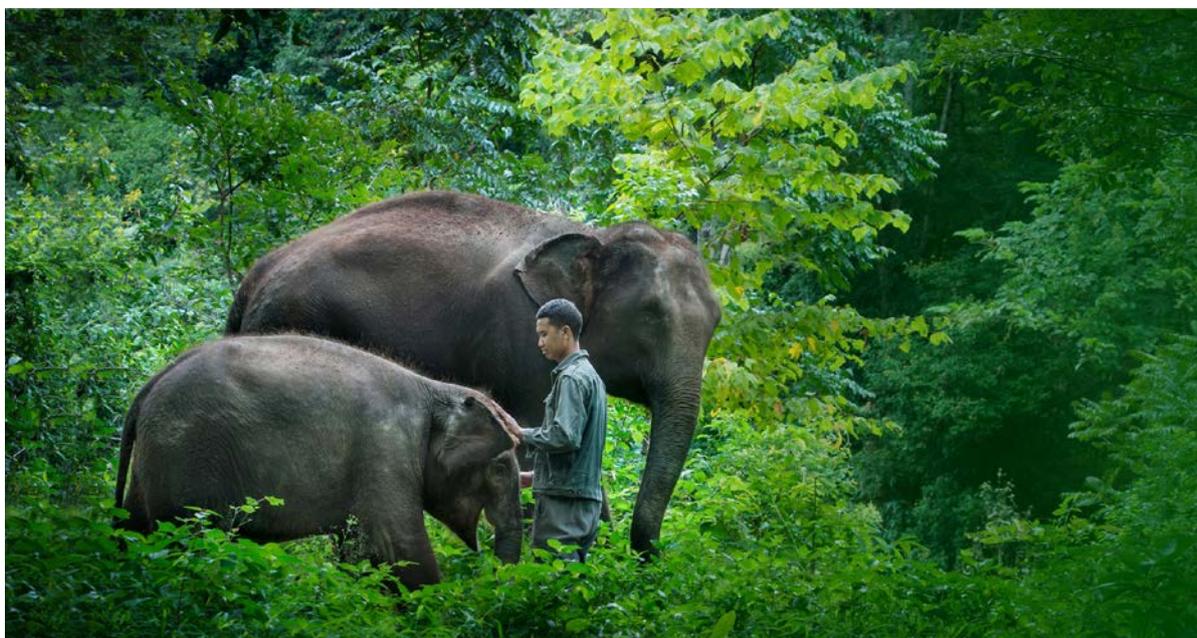


Huawei joined China's Green Pepper program

# Conserving Nature with Technology

According to a report released by the United Nations Environment Programme, climate change, biodiversity loss and pollution are the three main environmental crises facing humanity. The 2021 UN Biodiversity Conference (COP15) and the 2021 UN Climate Change Conference (COP26) highlighted the global consensus that we need to work together to address biodiversity loss and climate change. To this end, Huawei is working with environmental protection organizations and partners on projects that aim to explore the use of ICT to protect forests, wetlands, oceans, and nature as a whole.

## All-optical Smart City Network: Allowing Elephants and People to Live in Harmony



A rescuer giving wild training to rescued elephants

Through wildlife protection efforts, the number of wild Asian elephants has increased in the tropical rainforest of Xishuangbanna, China. As a result, their habitats overlap with the living spaces of local communities. Preventing conflicts between elephants and people is a top priority of local conservation efforts.

China Mobile Yunnan and Huawei jointly built an innovative network that helped Xishuangbanna build China's first Asian elephant protection, monitoring, and warning system. It consists of a warning broadcast system that pushes warnings of elephant movements to locals on a mobile app if an elephant is detected. Monitoring devices are deployed in places where elephants frequently

roam. The system has so far collected 1.43 million images and sent more than 6,000 warnings, greatly reducing unplanned human-elephant encounters.



There have been zero incidents of human injury or other conflicts in the areas covered since the system was deployed. ”

— Tan Xuji, Director of the Asian Elephant Monitoring Center of the Scientific Research Institute of Xishuangbanna National Nature Reserve of Yunnan Province

## Protecting Against Invasive Species with AI



River managers and volunteers in Norway installing an underwater AI monitoring system

# 91%

of wild salmon can be identified using Huawei's Ascend AI technology, reducing manual workloads and protecting biodiversity more efficiently

Salmon is a pillar of the Norwegian economy, and wild salmon, also known as the Atlantic salmon, is the basis for the healthy development of salmon farming in the country. But large invasions of humpback salmon and escaped farmed salmon are threatening the survival of wild salmon. These invasive species affect the reproduction of wild salmon and also spread disease, threatening the health of native fish species. The population of Norwegian wild salmon has decreased by half, and it has been listed as a near-threatened species by Norway.

In 2021, Huawei and Berlevag JFF, an association of hunters and anglers in Norway, collected images of river bottoms captured by underwater cameras. They were then able to identify native and invasive fish species in the rivers in real time with the help of Huawei's Ascend AI technology. The technology can identify 91% of wild salmon, reducing manual workloads and protecting biodiversity more efficiently. The project team provided the first comprehensive and dynamic 24/7 report on fish information to local river conservation associations, providing an accurate source of data for river governance efforts. AI represents a ray of hope in the struggle to protect against invasive salmon and conserve the biodiversity of rivers in Norway.

## Nature Guardian: Protecting Oases in Italy

The WWF has designated 100 protected oases in Italy. Two of these are Orbetello Lagoon and Burano Lake in Grosseto. Combined, they are home to almost 300 species of birds. The third site is the Astroni crater in Naples, which houses three lakes; a pristine Mediterranean forest; 130 species of birds; and large amphibian, reptile, and insect populations.

The main threats to these three hotspots of biodiversity are poaching, illegal logging, and unauthorized recreational activities such as motocross and fireworks displays, which can decimate habitats and start forest fires. For WWF rangers, patrolling these areas on foot, or even on wheels, is time-consuming and labor-intensive. Responding to incidents in real time is incredibly difficult.

To help protect these ecosystems, Huawei partnered with WWF Italy, the University of Pavia, and RFCx to deploy 10 networked Nature Guardians and 45 offline AudioMoth devices in the three sites. The Guardians can monitor environmental sounds from each site in real time, and transmit audio data to the cloud over a

wireless network. AI analytics can identify sounds that may constitute environmental threats such as chainsaws, gunshots, or motorbike engines. The AudioMoth devices identify different animal species from their vocalizations, monitor animal distribution and populations, and determine factors that disturb them, including the effects of climate change.

Since its deployment in August 2021, the Guardian system has collected and analyzed an enormous volume of acoustic data. A total of 15 alerts of potentially illegal activities across the three sites have enabled WWF rangers to investigate incidents in real time. At the site in Naples, one alert allowed local police and WWF rangers to seize equipment being used to illegally trap animals.



The Director of Astroni Crater Nature Reserve installing an offline AudioMoth device to protect local ecosystems

# Enabling Inclusive Health and Well-being

Huawei hopes that everyone at any age, including those living with a disability, can equally and easily benefit from technological advances. That's why Huawei has created a wide range of products and services that offer information accessibility functions and helped healthcare workers provide underprivileged groups with tailored, easily accessible services.

## TrackAI: Diagnosing and Treating Visual Impairments in Young Children

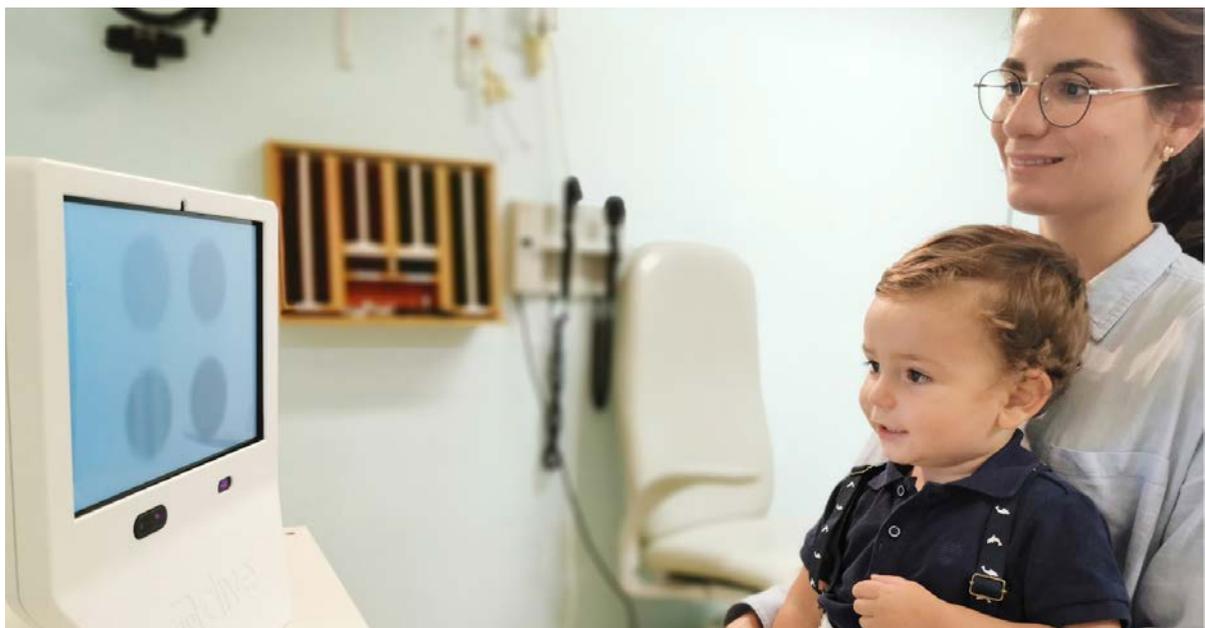
Diagnosing health issues in young children can be very difficult because they are unable to communicate effectively. And nowhere is this more evident than in babies born with a visual impairment. Congenital eye conditions and low vision can go unnoticed in very young children, because they get used to it when they are still babies. A combination of these factors can make eye diseases incredibly difficult to diagnose early on in a person's life. However, most visual impairments can be prevented or cured if caught early enough.

So how can we tell whether a baby can see properly? With current tools, only highly experienced ophthalmologists can assess the visual functions in very young children. To tackle the shortage of ophthalmologists and the difficulty of diagnosing eye diseases in young children, the Spanish startup DIVE Medical and Huawei jointly launched the TrackAI project. Through this project, children with a visual impairment can be quickly identified with an easy-to-use detection device. The device uses an eye tracker to monitor a child's gaze, while Huawei's AI determines whether the child is suffering from any visual impairments.

Since the project was launched three years ago, more than 4,500 children from five countries have received visual examinations.

4,500+

children from five countries  
have received visual examinations  
using TrackAI



A toddler receiving a visual examination using TrackAI

## Information Accessibility: Creating More Possibilities

The beauty of technology lies in its potential to benefit all. Technology must not only cater to the needs of the majority, but also be easily accessible to those in need.

HarmonyOS has been built from the ground up with accessibility as a key priority. This system offers a diverse array of accessibility features like screen reader labels and accessibility focus and gestures. HarmonyOS also offers an accessibility framework and APIs that allow third-party developers to create a greater number of accessibility features. We believe that accessibility is not just for people with disabilities. Anyone can experience impaired physical function, for example, when bedridden from illness or when eyesight deteriorates with age.

### Visibility enhancements

Zhongwei, who is now a piano tuner, has been visually impaired since birth. In 2015, he bought his first Huawei phone, a P8max. Since then, Zhongwei has become very familiar with the accessibility features on Huawei phones, and they now provide him with important support in his daily life. He particularly likes using the AI Life app, which can control and manage all of his household appliances and smart devices. With the ScreenReader feature, Zhongwei can turn on his air conditioner and easily adjust the temperature and direction of the airflow on the AI Life app. When friends visit, he can help them connect to his Wi-Fi network. Zhongwei is effusive in his praise for the Huawei AI Life app: "This is beyond what I could have imagined just a few years ago. In the past, every device came with a dedicated remote control. There was no voice command option. I sometimes needed help when using them."

### Hearing the beauty of classical Chinese poetry

Guoguo, who is hearing-impaired, hopes to use technology to help remove the communication barriers facing deaf people. For this reason, she became the project leader for an intelligent sign language translation program called Yiyu. Jointly developed by Huawei and a local partner, the software translates speech into text and sign language in real time, helping hearing-impaired people access information more easily. While testing the application, developers noticed that children in special education schools struggled to understand classical Chinese poetry because of a lack of sign language vocabulary and grammar. To solve this problem, the project team developed poetry courses with sign language translations, allowing children to experience the beauty of traditional Chinese literature through vivid illustrations and signing by Yiyu's virtual interpreters. These courses have been delivered in schools for the deaf in several cities in China, and will be offered free of charge in more such schools in the future.

### Helping elderly people enjoy a digital lifestyle

Huawei has developed learning materials and teaching practices specifically for elderly people, helping them become familiar with smart devices.

- Huawei developed the Mobile Phone Instructions for Parents, a guide that helps elderly people understand which functions are used in specific scenarios. It is now in its ninth edition. Users can get the print version free of charge at over 1,600 Huawei authorized service centers in China.
- Huawei developed the Bringing You a Digital Lifestyle series, which includes seven courses on basic mobile phone use, safe mobile phone use, healthcare, smart travel, and entertainment. Users can sign up and attend these courses in more than 4,000 experience stores in China, or visit the stores anytime they want to inquire about how to use their phones. During the 2021 Double Ninth Festival alone, more than 3,000 sessions were delivered.
- Huawei's device stores work closely with local communities, local authorities, activity centers for senior citizens, nursing homes, welfare centers, and apartment building managers to hold "Huawei Classes in Communities" events. Seniors can learn at the store nearest to them and solve any issues they face with using their mobile phones. Zhang Yimin, a lecturer at a Huawei device experience store in Jilin, gave 14 training sessions in the local community during his spare time in 2021. In fact, there are many lecturers like Zhang at Huawei. They are active in local communities and help elderly people better enjoy the convenience and fun of smart devices.



A Huawei lecturer delivering the Bringing You a Digital Lifestyle courses in a local community

# Driving Inclusive Digital Development

An estimated 37% of the world's population have never used the Internet, many of whom live in remote rural areas. Through its TECH4ALL initiative, Huawei is committed to bridging the digital divide and working with partners to promote individual development for people in remote rural areas using our digital technologies. We also empower traditional industries to go digital and help them offer safer working environments for their employees.

## AirPON: Connecting the Unconnected



With high-speed broadband services, doctors in Thai villages can consult with specialists in large cities through telemedicine devices

# 600,000

households now have access to high-speed broadband services and 19,652 villages are connected to the Internet thanks to the USO NET project

In the mountains of Chiang Mai, Thailand, a mountain road 60 kilometers long provides the main access route connecting local villages to the nearest city. However, flooding occurs whenever it rains due to the steep terrain and lack of drainage, and the road has earned the local nickname "Water Road". This rugged mountain road and the lack of access are a great inconvenience to residents.

To improve this situation, the National Broadcasting and Telecommunications Commission (NBTC) of Thailand used Huawei's AirPON solution to implement the USO NET project in the mountainous areas in Chiang Mai. During a field visit, the project team found that the residents living in these areas were not just far from the city, but also scattered across many small villages. A traditional FTTH solution would be too costly, and it was difficult to find a suitable place to accommodate all the required facilities. In contrast, Huawei's cost-effective AirPON solution can repurpose existing poles and cables, with equipment rooms installed up on poles, making communications services available and affordable to local residents.

By the end of 2021, the USO NET project had provided Internet access to 19,652 villages, including 3,920 border villages, and about 600,000 households now have access to high-speed broadband services. Through this project, we also provided targeted digital skills training to local people to further bridge the digital divide between urban and rural areas.

## Gigabit Optical Network: Helping Boost China's Rural Economy

Guangxi is China's largest producer of dragon fruit. In Guangxi's Long'an, traditional farming methods meant hard labor for local people, as they have to perform both fertilization and irrigation by hand. Moreover, young people from rural areas are reluctant to work in agriculture. Mechanization and intelligence, both relying on high-speed broadband networks, are the future of farming.

Huawei helped China Telecom build a ubiquitous gigabit optical network across the urban and rural areas of Guangxi that are covered by fiber. Thanks to the high bandwidth, low latency, and highly reliable connectivity, Jinfu Farm was able to transform its farming methods from labor-intensive to digitally led.

- The integrated fertilization and irrigation management system automatically irrigates up to 367 hectares of land, freeing up fruit farmers from having to water trees by barrel under the blistering sun.
- Sensors regularly monitor soil conditions, allowing precise fertilization that in turn cuts fertilizer costs by about CNY15,000 per hectare per year.

- The automatic temperature control system sprays and cools the trees in summer. In winter, heaters keep them within the optimum range, greatly increasing annual yields.
- The visual tracking system monitors the growth of the fruit. With more than 40 GB of data generated every day, the gigabit optical network quickly migrates the data to the cloud. Consumers can scan QR codes to see the place of production.

In 2021, local communities generated additional revenue of more than CNY15 million from dragon fruit, benefiting more than 40,000 low-income farmers.

Advances in network and agricultural technology are making a huge difference to local communities. They are making agricultural production easier and the rural economy more dynamic, improving the quality of life for local people.



Advances in network and agricultural technologies are increasing the yields of dragon fruit and the incomes of farmers, making a huge difference to villages in Guangxi

## FTTM-powered Ultra-remote-control: Safer and More Efficient Port Operations

Ports underpin the global economy and serve as a barometer of economic activity. However, working at container ports is incredibly labor-intensive. Crane operators need to work at a height of 40 meters, without access to food or water for hours. They have to spend entire shifts with their heads tilted downwards at the floor below, which has caused many serious neck issues. In addition, manual work is extremely inefficient.

Huawei's ultra-remote-control solution powered by Fiber to the Machine (FTTM) allows port workers to intelligently load and offload cargo from the comfort of a command center a hundred kilometers away. This solution has three key features:

- Low latency and large bandwidth: The solution ensures no video delay or freezing and provides real-time visibility of equipment status at ports.
- Secure and reliable: It provides dual-link fiber connectivity and full-link redundancy protection, enabling zero service interruptions. The solution's two-way link-level encryption improves both reliability and security.
- Easy to operate and maintain: The solution supports plug-and-play and the service can be automatically provisioned. All equipment is centrally managed and easy to operate and maintain, and equipment status is visible and manageable.

Huawei's FTTM-powered ultra-remote-control solution is enabling workers at the Port of Shanghai to conduct remote operations from the comfort of a command center 100 kilometers away from the port, and has demonstrably improved work safety and boosted productivity.



Huawei's FTTM-powered ultra-remote-control solution improves work safety and productivity at the Port of Shanghai



# 3 Security and Trustworthiness

- ① Cyber Security and Privacy Protection
- ② Openness and Transparency
- ③ Supporting Stable Communications
- ④ Business Continuity





We live in a highly interconnected world, where the physical and digital realms are converging and network boundaries are increasingly blurred. Cyber security and privacy protection are ever more important. Over the past year, a succession of critical vulnerabilities, supply chain attacks, and advanced persistent threats (APTs) emerged. Cyber security threats have become ubiquitous, arising in products, services, operations, internal IT systems, supply chains, code, and personnel. Governments around the world are paying greater attention to cyber security and privacy protection, and have adopted laws and regulations to strengthen the governance of cyberspace and protect personal data. With the rising role and importance of data in all parts of our lives, data protection and compliant data use are becoming a basic requirement.

As digital transformation accelerates across industries, the application of new technologies – such as cloud computing, artificial intelligence (AI), 5G, and big data – brings risks as well as opportunities. We need to consider how to meet the increasingly strict compliance requirements of regulators, and how to provide secure and trustworthy products and services that fulfill our commitments to customers. We also need to embrace a defense-in-depth approach to provide better security, ensure business continuity, and improve efficiency and customer experience while protecting user privacy. We also need to give people access to stable ICT services during major incidents like natural disasters and pandemics. These are the challenges and opportunities of the digital economy.

# Cyber Security and Privacy Protection

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Over the past three decades, we have built more than 1,500 networks with carriers and helped millions of enterprises with digital transformation. During this time, we have connected over three billion people around the world and maintained a solid track record in security. With digital transformation picking up pace, we are acutely aware that cyber security will become a cornerstone of the future digital world. Business success will not be achieved without security, trustworthiness, and privacy protection. We continue to place cyber security and privacy protection as a top priority. We are committed to confronting cyber security and privacy challenges and opportunities through management transformation, technological innovation, and open collaboration. We want to foster a better life for all in the future digital world by offering secure and trustworthy products, solutions, and services where personal data is lawfully used and always protected.

We continuously optimize our end-to-end cyber security and privacy protection assurance system, making sure that each domain is constantly refined and up-to-date:

## **Deepening trustworthiness transformation to enhance software engineering capabilities and cyber resilience, and building secure, trustworthy, and quality products and solutions**

In 2021, we improved our internal off-the-shelf components of trustworthy technologies and product design platforms, and implemented the clean code mechanism to continuously improve code quality and reduce vulnerabilities. We also enhanced threat analysis and trustworthy design, bringing improvements to the security and resilience capabilities of products and solutions. We incorporated the software engineering capability enhancements into the Integrated Product Development Lifecycle (IPD 12.0).

In terms of organizational changes, we strengthened the integration and continuous development of common security capabilities. We set up a corporate-level vulnerability management center based on the Product Security Incident Response Team (PSIRT) to enhance common vulnerability management capabilities. We also integrated the Trustworthiness Enabling Department and IT Equipment Department at the product line level to help implement software engineering capabilities through IT systems.

## **Consolidating privacy governance to respect and protect user privacy**

We comply with privacy protection laws and regulations in the countries and regions in which we operate. In 2016, we established a unified privacy governance framework in

accordance with the General Data Protection Regulation (GDPR). With successive personal data protection laws – such as China's Personal Information Protection Law – being enacted and cross-border data transfer requirements being imposed in different regions and countries, we have continuously improved our governance architecture and technical capabilities, and incorporated privacy protection and cross-border data transfer requirements into R&D, services, operations, and other aspects. Based on the governance architecture and processes, we developed a series of IT tools and platforms to improve compliance effectiveness and management maturity, and provided transparent and clear compliance processes and results. We handled over 20,000 data subject requests in a timely and effective manner, protecting the rights of data subjects. We conducted 30 internal and external audits in different countries across business domains, and multiple subsidiaries have obtained internationally recognized privacy protection certifications.

## **Helping customers manage security risks through technological innovation**

We continue to research, explore, and implement cutting-edge fundamental technologies such as cryptography, AI trustworthiness, confidential computing, and differential privacy. Furthermore, we accelerate the application of security technology solutions to products, and continue to introduce vulnerability mitigation, advanced threat detection, data protection, and other technologies into ICT products, improving security and resilience.

Take 5G base stations as an example. We deploy a wide range of functions – including software integrity checks in the boot state, runtime software integrity measurement, and one-click security configuration checks – providing security verification, hardening, and detection capabilities. We also build intrinsic security for 5G to enable a more efficient integrated security protection system. In this way, we have significantly enhanced cyber resilience.

Additionally, we introduced application behavior detection and other functions under device-cloud synergy to mobile phones, further enhancing privacy protection capabilities. We released AI situational awareness technology, which improves the attack detection and audit capabilities of AI models and protects AI model assets.

## **Ensuring privacy and security for HarmonyOS users**

HarmonyOS is a next-generation operating system that can run on a wide range of smart devices. It enables different smart devices to speak the same language, facilitating



better connection and collaboration, and bringing a simple, smooth, continuous, secure, and reliable interaction experience in all scenarios.

At the outset, we emphasized the fundamental importance of consumer privacy and security, implementing a system security architecture and ecosystem management and control framework to address these issues. With HarmonyOS, we have built a security architecture for the Super Device. It implements hierarchical device security management, trusted device connections, distributed access control, and a security collaboration platform to protect the security of consumers.

We have built a HarmonyOS application management and control framework to ensure that applications are protected throughout the lifecycle, including the development, commissioning, release, installation, and running phases. In this way, we protect users from malicious applications and ensure their privacy and security.

### Continuously enhancing secure and trustworthy service operations

We continue to invest in the development of IT-based capabilities for trustworthy operations and digitally ensure transparent and traceable network operations. We set up an operations trustworthiness lab to strengthen interconnection with global standards organizations and cutting-edge research and we continued to develop capabilities to address emerging cyber security challenges. Our data security management system for carrier service support passed the external System and Organization Controls 2 (SOC 2) audit, demonstrating the effective lifecycle management of such data. At the same time, we continued with the Network Safety Day campaign to increase cyber security awareness and risk control, working with our customers to enhance cyber resilience.

### Steadily boosting awareness and professional capabilities among all employees

We encourage employees' continued participation in external professional cyber security and privacy protection certification programs. To date, more than 1,200 employees have obtained industry-recognized certifications, such as Certified Information Systems Security Professional (CISSP), Certified Information Privacy Professional (CIPP) from the International Association of Privacy Professionals (IAPP), and Certificate of Cloud Security Knowledge (CCSK). We have established a Cyber Security & Privacy Protection Knowledge Center and released more than 200 Massive Open Online Courses (MOOCs), facilitating rapid sharing and transfer of knowledge within the organization.

To continuously improve cyber security and privacy protection awareness among all employees, we held the Cyber Security Awareness Month campaign, engaging about 150,000 employees online and offline through different activities. Such activities included messages from top-level management,

expert lectures, knowledge quizzes, a Capture the Flag competition, a cyber security technology conference, and a verification conference.

### Continuously strengthening cyber security risk management and capability-building of the supply chain

We have established a comprehensive ISO 28000-compliant supply chain security management system to identify and control security risks in the end-to-end process from incoming materials to manufacturing and delivery to customers. We have developed industry-leading materials security and trustworthiness specifications, security sourcing test standards, and supplier security and trustworthiness maturity standards. Suppliers must pass the security system certification and test before they are admitted.

In 2021, we conducted cyber security risk assessments on more than 4,000 suppliers worldwide, and recorded, tracked, and rectified the issues identified. We signed data processing or protection agreements with more than 5,000 suppliers and implemented privacy protection management requirements for suppliers to ensure compliance. We also optimized the security baselines and verification processes for manufacturing and supply availability, and implemented them in the production and delivery processes of new products.

Given the great importance we attach to supply chain security requirements around the world, we have now obtained 35 Authorized Economic Operator (AEO) certificates in 28 countries and regions across five continents. We continue to build a thriving security ecosystem together with our partners, and 25 of our logistics service providers around the world have obtained Transported Asset Protection Association (TAPA) certificates. We continue to optimize our supply chain tracking system, which is capable of tracing software and hardware from incoming materials to customer delivery within hours, supporting rapid rectification and risk mitigation.

### Increasing investment in third-party independent verification

We continue working with industry-recognized certification bodies to test our cyber security capabilities against international standards and best practices, providing customers with internationally recognized security assurance. In 2021, we obtained more than 70 cyber security certificates. For example, our 5G base station was the first to pass the NESAS/SCAS 2.0 evaluation in the industry, HarmonyOS obtained high-level Common Criteria certification, the Intelligent Automotive Solution Business Unit (IAS BU) obtained DEKRA ISO/SAE 21434 certification for cyber security engineering of road vehicles, and our digital power products obtained the IEC 62443 certificate.

## HUAWEI CLOUD WeLink: A Secure Digital Workplace

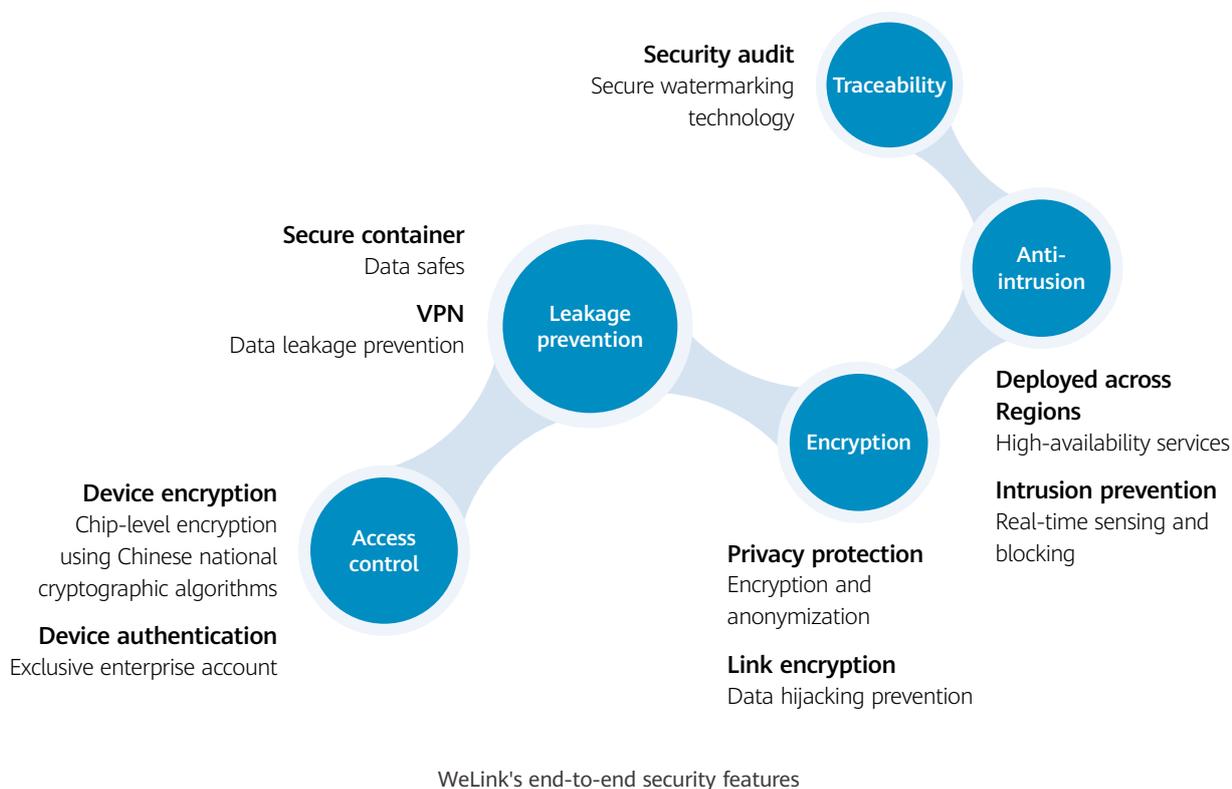
With the advances in Internet technologies, the decentralized or distributed office model is gaining traction. More people are working remotely or from home. While we enjoy the benefits of more flexible work styles enabled by technology, we must also be aware of our increased exposure to security threats, such as cyber attacks and data leaks, caused by distributed and mobile offices. Security is the highest priority for digital workplaces.

HUAWEI CLOUD WeLink comes with enhanced software and hardware security features, allowing enterprise users to protect their data from end to end. The solution offers the following features:

- Security fencing that strictly controls device access
- Security tunnels that protect data transmission and application access to ensure security
- Protected messaging and file transmission that ensures data flows in an enterprise securely
- Data shields that ensure enterprise data flows within defined boundaries
- Screenshot security that prevents data leakage
- Call encryption that ensures each call is encrypted with a unique key and can only be accessed by parties to the call

Empowered by these cutting-edge security techniques, WeLink features access control, leakage prevention, encryption, anti-intrusion, and traceability.

WeLink's security capabilities are renowned in the industry. By the end of 2021, WeLink had received more than 50 security certifications in and outside China, including cloud service security system certification, Android Green Alliance purity level (highest), ISO 27001 security system certifications, level-3 information security evaluation by China's Ministry of Public Security, and Service Organization Controls audits (SOC 1, SOC 2, and SOC 3). Building on its security capabilities, WeLink helps enterprises provide a digital workplace that is secure, efficient, and intelligent.





# Openness and Transparency

Cyber security and privacy are a common challenge, one that all stakeholders – including governments, industry and standards organizations, enterprises, technology suppliers, and consumers – have a shared responsibility to address. We reiterate our commitment to communicating and collaborating with all stakeholders in an open, transparent, and responsible manner, so that we can jointly improve cyber security and privacy capabilities and address the challenges through technological innovation, knowledge sharing, standards development, verification, and other measures. We strive to continually improve cyber security and personal privacy, enabling everyone to enjoy all of the benefits brought by technological advances. In 2021, we made the following key achievements in external cooperation:



Huawei UAE Chief Security Officer reporting to the chairman of the CSC at UAE Cyber Security Week





Huawei's largest global Cyber Security and Privacy Protection Transparency Center opened in Dongguan, China, providing a communication and collaboration platform for global stakeholders

In June 2021, Huawei opened its largest global Cyber Security and Privacy Protection Transparency Center in Dongguan, China, providing a communication and collaboration platform for global stakeholders. The opening ceremony was addressed by representatives from GSMA, SUSE, the British Standards Institution, and regulators from the UAE and Indonesia. Along with the opening of the new center, Huawei released the Huawei Product Security Baseline. This marked the first time the company made its product security baseline framework and management practices available to the entire industry. These actions are part of the company's broader efforts to engage with customers, suppliers, standards organizations, and other stakeholders to jointly strengthen cyber security across the industry.

A common understanding shared by the speakers at the opening event is that industries worldwide are taking cyber security more seriously, with more laws, regulations, and technical standards being introduced. However, the industry still lacks a coordinated approach, especially when it comes to cyber security governance, technical capabilities, and collaboration.

To address these issues, Huawei opened a new global Cyber Security and Privacy Protection Transparency Center in Dongguan. Based on Huawei's expertise in governance and technologies, the center is designed to demonstrate solutions and share experience, facilitate communication and joint innovation, and support security testing and verification. It will be open to global stakeholders, including Huawei customers and independent third-party testing organizations.

Huawei's aim with this center is to strengthen communication and collaboration with stakeholders to promote common security standards, technological innovation, security governance, testing, and verification, and more. We look forward to collaborating with all stakeholders to build cyber security and privacy protection capabilities, share value, and embrace both challenges and opportunities to foster a better life for all in the future digital world.

# Supporting Stable Communications

ICT infrastructure provides information and communications network services, so it is imperative that stable operations are maintained at all times. As a network equipment and solution provider, Huawei must support the stable operations of customer networks and services during all types of emergencies, including wars and epidemics, and natural disasters like earthquakes, floods, and tsunamis. This is one of Huawei's primary responsibilities.

In 2021, the world was still affected by the COVID-19 pandemic, which posed a huge challenge to network stability. More than 5,000 Huawei engineers worked side by side with our customers, providing technical support services 24/7. Together, we supported the stable communications of more than three billion people and provided timely responses to more than 180 major events and emergencies worldwide.

## Earthquake Relief in China's Yunnan and Qinghai Provinces

On the night of May 21, 2021, a 6.4-magnitude earthquake hit Yangbi Yi Autonomous County in China's Yunnan Province, followed by intensive aftershocks affecting 12 counties across the Dali Prefecture. The next morning, a 7.4-magnitude earthquake struck Maduo County in the Golog Tibetan Autonomous Prefecture in Qinghai Province, followed by 1,872 aftershocks over two days.

In the immediate aftermath of these two disasters, Huawei initiated an emergency assurance plan. The Yunnan and Qinghai representative offices quickly established a network assurance team with the support

of the network assurance team of Huawei's China Region. The project team was immediately dispatched to the affected areas, where they worked with local carriers and government workers on emergency repairs to restore communications as fast as possible and support stable network operations. In Yangbi, the Huawei team worked alongside customer engineers for 28 hours and restored all 32 sites affected by the earthquake. In Golog, 11 China Telecom base stations and 19 China Unicom ones were disrupted by the earthquake. Huawei and the customers restored all of them within five hours after the earthquake, providing strong communications support for local emergency relief efforts.



Earthquake emergency support in Golog, Qinghai

## Emergency Support During a Heavy Rainstorm in Henan, China

From 8 a.m. on July 20 to 6 a.m. on July 21, 2021, a heavy rainstorm struck the central and northern parts of the Henan Province, China, setting new records for rainfall in a single day. The rainstorm caused severe damage to the city of Zhengzhou and surrounding areas. There were large-scale disruptions to power supplies, network equipment rooms were flooded, and optical cables and infrastructure were severely damaged. As a result, a large number of mobile network base stations were no longer functioning. Communication networks in affected areas were disrupted, which made it impossible to make phone calls or access the Internet. Communication disruption also made flood control command more difficult. Restoring communications services was a key priority.

Our network assurance teams in the China Region gathered immediately, initiated our emergency assurance plan, and began to repair networks and provide onsite support. Working with local carriers around the clock for 16 days, we repaired tens of thousands of mobile sites and core equipment rooms, and quickly restored

communications services in all affected areas.

During this process, Huawei was aware of many possible EHS risks, including manhole covers on some road sections bursting open or collapsing, electric shocks during emergency repairs, waterlogged buildings collapsing, and the transmission of infectious diseases. We set up an EHS team, specified key safety processes, and provided training to ensure the health and safety of our network assurance teams.

During the disaster relief process, Huawei's professional emergency response plan and efficient organization-wide collaboration helped minimize losses and allowed people in affected areas to quickly get back on track. Our efforts to fulfill our social responsibility won praise from local communities.



Huawei engineers transporting emergency repair equipment in the rain

Network Recovery and Disaster Relief Following a Flood in Oman



Huawei donating supplies to affected local residents

On October 3, 2021, Tropical Cyclone Shaheen slammed into Oman, followed by heavy rainfall, flash floods, and widespread waterlogging. Some telecom equipment was severely damaged, causing significant difficulties for local residents.

On the morning of the same day, Huawei Oman set up a joint work group with the customer. The network assurance team also set out to repair the telecom infrastructure in the affected areas. About 70% of local communications services were restored within 12 hours and 90% within 48 hours. On October 5, the network assurance team purchased supplies for disaster

relief from supermarkets and worked with the local government overnight to deliver supplies to the rescue stations in four severely affected areas, helping local people through the difficult time.

Huawei's quick response and timely support for disaster relief were appreciated by local customers, the government, and the community. This is part of our commitment to becoming an active, productive member of local communities.

## Emergency Response to Typhoon Rai in the Philippines

On the afternoon of December 16, 2021, super typhoon Rai slammed into the Siargao Island in southern Philippines. Sustained winds of up to 195 km/h hit the area until the early hours of December 19. The typhoon swept across the Visayas region, northern and northeastern islands in Mindanao, and SLZ Palawan. More than 332,000 people were evacuated from the hardest-hit villages. Transportation and communications on some islands were disrupted, as were water and power supplies. Basic supplies and communications on these islands were severely impacted.

After the disaster struck, Huawei immediately set up

an emergency response workgroup and dispatched 30 teams to Visayas and 23 to Mindanao for emergency repairs, with more than 50 engineers providing remote support. Huawei teams restored communications in all the affected islands. This involved more than 140 backbone microwave hops and over 110 sites.

*Huawei's quick response and strong support were commended by the customer, demonstrating its commitment to fulfilling its responsibilities to local communities.*



Huawei providing timely support to restore a communications tower damaged by the typhoon

## Communications Support in the Malaysian Floods



The Huawei maintenance team restoring a damaged network

On December 19, 2021, Malaysia was hit by one of the worst floods to hit the region in 50 years. Heavy rain wrought havoc across seven states, including Selangor, Terengganu, and Pahang. One of the worst hit cities was Klang in Selangor, where waterlogging and disruption of transportation, electricity and communications left many people displaced.

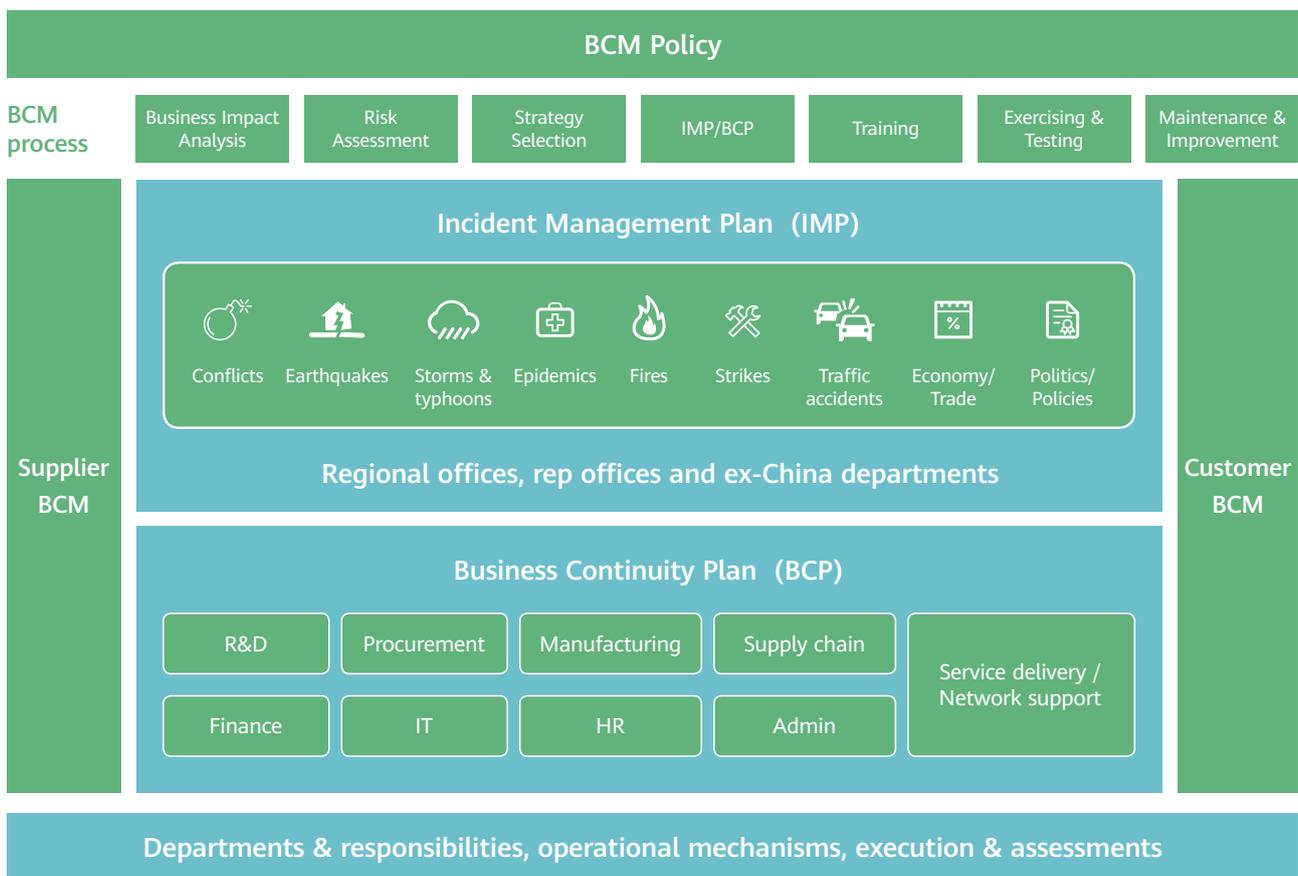
Upon request for disaster relief, Huawei's Malaysia Rep Office immediately activated an emergency assurance plan and set up an assurance team. The maintenance team of each account department assisted carrier customers in locating and mapping affected sites within 30 minutes. The spare parts team immediately moved boards and spare parts to be used in the repair and maintenance to high places and ensured their integrity. This was key to the subsequent quick repairs.

To ensure the fast recovery of services at key sites, maintenance and supply chain personnel of the representative office waded into the warehouse to get boards, taking 44 of them to the sites. Our team immediately purchased generators for customers to put up emergency sites. The 15-member technical team of the representative office was divided into seven groups, which went to the sites in shifts. They restored services at all key sites in four days, giving people in affected areas access to critical communications services and facilitating the broader disaster relief efforts.

**Huawei rose to the occasion at critical junctures to support stable communications for the local people, winning acclaim from customers.**

# Business Continuity

In today's highly globalized and highly specialized world, Huawei's operations rely heavily on third parties. This makes business continuity management (BCM) critical. Through years of sustained investment, Huawei has established a BCM system for domains such as R&D, procurement, manufacturing, logistics, and global technical services. This system covers our 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 drive BCM and emergency response upskilling across organizations, allowing them to manage risks that arise during daily work. We have built up management organizations, processes, and IT platforms; embedded key BCM elements into our product design; prepared business continuity plans and emergency management plans; and organized BCM training and drills for employees.



Huawei Business Continuity Management System



## Key Initiatives for BCM in R&D and Procurement

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

## Key Initiatives for BCM in Manufacturing and Spare Parts Supply

- **Manufacturing and supply resource backups:** Huawei considers in-house manufacturing and outsourcing capabilities to be of equal importance. We have established long-term strategic partnerships with multiple electronics manufacturing service (EMS) suppliers. Board

manufacturing and supply capabilities are shared between Huawei and EMS suppliers and between multiple EMS suppliers to ensure we always have a backup. We have also established supply centers in Shenzhen, Europe, Latin America, and Dubai, which serve as integrated equipment backups for each other.

- **Spare part reserves to support full-lifecycle operations:** Huawei reserves spare parts according to market demand and historical usage before a product reaches its end of life (EOL). After a product reaches its EOL, we reserve enough spare parts to cover the full lifecycle of all remaining products. This prevents any impact on the operational continuity of live customer networks.

Over the past decade, we have weathered many crises, from natural, political, economic, and trade-related conflicts to armed conflicts in some regions. Despite the lasting effects of COVID-19, Huawei continued to ensure supply continuity and timely delivery to our customers. This shows that Huawei's BCM system – as part of our overall management system – is functioning as intended. Huawei is a global company that works in the network infrastructure, IT infrastructure, cloud services, and smart device domains. We have worked with over 10,000 suppliers and partners, and fostered sound, long-term partnerships with them.

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



# 4 Environmental Protection

- ④ Reducing Carbon Emissions
- ④ Promoting Renewable Energy
- ④ Contributing to a Circular Economy
- ④ Environmental Certifications





Given the pressing issue of climate change, nations are increasingly looking towards green development. It is now more important than ever to shift to green, low-carbon work and lifestyles that enable sustainable development. Many organizations, companies, families, and individuals around the world are moving towards green development, and ICT solutions, like 5G, cloud, and AI, are playing a critical role in this process.

## Huawei's Action Plan in Environmental Protection

Huawei believes that technology plays a key role in addressing environmental challenges and protecting nature, and that digitalization and decarbonization are the two drivers of green development. Since Huawei proposed its green pledge of "Tech for a Better Planet" in 2019, we have been actively tackling climate and environmental challenges. We focus on using ICT solutions to reduce carbon emissions, promote renewable energy, and contribute to a circular economy, so as to protect our planet.



### Reducing carbon emissions

We use managerial and technical measures to reduce the carbon footprint of our products. We also engage with our upstream and downstream partners to reduce their environmental impacts and work together to build a greener supply chain. Our innovative ICT solutions can help other industries reduce their carbon emissions, and we take every responsible step that we can to cut carbon emissions.



### Promoting renewable energy

We use technologies like photovoltaics and AI to improve the utilization of renewable energy, drive the transition to renewable energy, and provide green power for the intelligent world.



### Contributing to a circular economy

We are moving to a less resource-intensive and more sustainable mode of development. Our actions include selecting more eco-friendly materials, reducing the use of raw materials and single-use plastics, making products more durable and easier to disassemble, and improving our product recycling program.

While actively pursuing green development during our own operations, Huawei has also envisioned green development trends for key industries by 2030. Through these efforts, we hope to work with our industry partners to create greater business value for our customers, continuously use our innovative digital technologies to help other industries conserve energy and reduce emissions, and ultimately, contribute to global sustainable development.





# Reducing Carbon Emissions

In 2021, Huawei updated its environmental protection related policies, aiming to reduce carbon emissions across the entire value chain. Below are key points of the policies.

Huawei is committed to green manufacturing. We aim to minimize environmental impact and extract the maximum value from resources while ensuring that products deliver the desired functions with high quality and at low cost. Huawei is also building green and eco-friendly campuses. The actions we take include using as much clean energy as possible, minimizing resource consumption, reducing the waste we produce, and efficiently using and recycling resources as much as technology and budgets allow.

Huawei has integrated green development into product planning, design, R&D, manufacturing, delivery, and services. We use technological innovation to get more value from less resources; provide customers with leading, eco-friendly products and solutions; and enable energy conservation and emissions reduction across other industries.



In line with customer requirements and industry best practices, Huawei has incorporated environmental requirements into our supply chain management processes. Environmental factors are considered during sourcing of materials, manufacturing, transportation, and delivery to ensure that suppliers comply with all applicable environmental laws and regulations. We are also offering appropriate incentives to encourage suppliers to make ongoing improvements. Our ultimate goal is to build a competitive, green supply chain.

Based on these policies, Huawei continues to innovate and deliver more energy-efficient products, roll out energy-saving projects on its campuses, use as much clean and renewable energy as possible, and encourage and train suppliers to set energy saving and emissions reduction targets to build a green value chain.

## Green Products: Enabling Industrial Energy Savings and Emissions Reductions

We take action at the very source to reduce the carbon footprints of our products throughout their lifecycles and help customers save energy and cut emissions. We also use our innovative ICT solutions to enable digitalization and decarbonization in other industries and scenarios like energy, transport, and campuses. Through our ongoing efforts, the average energy efficiency of our main products in 2021 was 1.9 times higher than we had in 2019.

### » Green and Low-carbon Data Center Construction and Operations

Data is a key asset within our booming digital economy. Data centers are responsible for storing, computing, and switching data. They are at the heart of the digital economy and will play a key role in reducing power usage and increasing energy efficiency. Huawei's innovative technologies, such as cluster computing, full liquid cooling, all-flash storage, and intelligent management, can enable green and low-carbon data center construction and operations.

## Prefabricated Modular Design and Full Liquid Cooling to Reduce the Carbon Emissions of AI Computing Centers Throughout Their Lifecycles

As we enter an intelligent world, demand for computing power will rise, which in turn will increase demand for data center power density. It takes about one or two years to build a conventional data center, meaning new data centers often struggle to keep up with modern AI infrastructure and ever-growing customer demand. In addition, the current approach to constructing and operating data centers is resource intensive and extremely inefficient.

To overcome these challenges, Huawei's innovative AI computing center solution uses a steel prefabricated design, which marks a big step towards green and low-carbon data center construction and operations.

- This solution uses much less concrete than a conventional concrete building, offsetting carbon emissions in the construction phase by more than 90% <sup>1</sup>.
- The solution's Atlas 900 AI cluster uses full liquid cooling, bringing the PUE of the data center down to 1.1, much lower than when air-cooled clusters are used.
- This computing center delivers 1.6 times as much AI computing power per node as industry counterparts. Its high level of integration means less equipment is required, reducing the space needed in equipment rooms by nearly 40%. This also means that fewer support facilities are needed in the computing center, equaling a smaller footprint.
- The network at the computing center uses intelligent lossless technology that features zero packet losses, which increases computing efficiency and cuts power consumption per unit of computing power by 47%.



The Wuhan AI Computing Center uses Huawei's AI computing center solution to offset carbon emissions by more than 90% during construction and saves nearly 700,000 kWh of electricity per 100 PFLOPS during operations, equal to offsetting carbon emissions by 333 tons <sup>2</sup>

<sup>1</sup> Calculated according to National Standard for Building Carbon Emission Calculation GB/T51366-2019

<sup>2</sup> By International Energy Agency emission factors



## All-flash Storage for Green and Energy-efficient Data Centers



Storage systems are critical to data centers, but the amount of electricity they use accounts for 16% to 30% of the total amount used by data centers. Based on our study of storage power-saving technologies, we have found that 50% of the power consumed by a traditional hard disk drive (HDD) comes from the hard disk unit, which consumes 200 kWh of electricity per PB each day. A typical big data center has a capacity of 100 PB, meaning its annual power consumption can reach 7.3 million kWh.

Therefore, we believe that advanced media are essential to reduce power usage in storage systems. Flash storage drives can read and write over 100 times faster than HDDs, and have a capacity 5–10 times larger than HDDs. With its strong data reduction capabilities, a flash storage drive can provide 17 times the capacity of an HDD using the same amount of energy. That means

if an HDD is replaced with a flash storage drive, 981 kWh less electricity will be used every year, equivalent to offsetting carbon emissions by 466 kg\*.

Huawei's all-flash data center solution uses upgraded architecture, media, algorithms, and networks for flash storage. It delivers industry-leading performance and advanced data reduction technologies and decouples storage from computing, greatly reducing server resource waste. The solution increases data center storage performance fivefold, reduces the number of storage racks required by 84%, and cuts power usage by 78%.

Huawei's all-flash data center solution has been deployed in multiple industries including banking and healthcare, helping our customers build green and low-carbon data centers.

\* By International Energy Agency emission factors

## » Higher Energy Efficiency for Green and Intelligent Connectivity

Connectivity is one of Huawei's core businesses. Huawei offers solutions for every part of network construction, including all-optical connectivity, simplified 5G sites, and site power facilities. These innovative technologies help make networks more energy efficient and drive the shift to green and intelligent connectivity.

### FTTR for Home Solution: Bringing Green Connectivity to Every Home

Our homes are rapidly becoming multi-functional centers for life. They are places where we live, study and work, and can even serve as modern cinemas. Home broadband networks are key to achieving this. Most home users now use traditional optical modems, network cables, and Wi-Fi routers for networking. However, this method is often plagued by poor network performance and user experience, and high power consumption.

To address these challenges, Huawei has released its FTTR for Home solution based on fiber networking. The solution replaces traditional network cables with optical fiber for Wi-Fi networking by deploying one primary FTTR gateway and several secondary FTTR gateways. In each room, a Huawei OptiXstar home gateway connects separately to the Internet to provide Wi-Fi 6 wireless access. This prevents signal attenuation caused by thick walls and eliminates blind spots in homes. The solution also slashes power consumption and contributes to green all-optical networks.

The solution delivers the following benefits:

- It uses optical fiber for networking, which reduces the amount of space needed for cabling by about 15%. Optical fiber is also corrosion-resistant, has a service

life of over 30 years, and can transmit signals even without a power supply.

- Optical fiber has large capacity, eliminating the need to replace cables when network bandwidth is upgraded. This significantly reduces the use of mineral resources compared with copper cables.
- The primary gateway used in the FTTR solution serves as both a broadband access gateway and a Wi-Fi router. This two-in-one design can cut power usage by 50%. The panel-shaped secondary gateways are compact and easy to install and they use 30% less power than conventional routers, with a single gateway using just 1 kWh of electricity every five days.

Huawei's FTTR for Home solution has helped 83 provincial-level carriers in China deliver better user experience and enabled more than 300,000 users to build greener home networks. In 2021 alone, the solution helped reduce electricity usage by over 45.6 million kWh, equivalent to offsetting carbon emissions by 21,660 tons\*.



A Huawei OptiXstar home gateway used in the FTTR for Home solution

\* By International Energy Agency emission factors



## Green 5G for a Low-Carbon Future

In 2030, the amount of data used per person per month will increase to 600 GB. In the long term, multi-band and multi-mode mobile networks will have to work together to meet users' increasing network demands. At the same time, carriers are shifting to green and low-carbon network construction. Great numbers of wireless sites are scattered across wide areas, and making these sites greener is a top priority for carriers when they are working to reduce their carbon footprints. Huawei has developed multi-antenna, ultra-wideband, and high-efficiency antennas, helping carriers build green 5G networks that deliver both high performance and high energy efficiency. Huawei's solutions deliver the following benefits:

- Multi-antenna AAUs and MetaAAUs, which use a new architecture that doubles the number of antenna arrays and reduces power consumption by 30%.
- Ultra-wideband RRUs with each module supporting up to three frequency bands while using 28% less power.
- High-efficiency antennas, which use Huawei's signal direct injection feeding (SDIF) technology that integrates internal components to reduce energy usage. This can help carriers reduce the transmit power of a base station by 20%, which translates into lower power consumption.

China Mobile Tianjin, for example, has been plagued by the increasing complexity of its sites as they have evolved from 2G to 3G and 4G. With Huawei's simplified 5G sites, they have managed to replace equipment rooms with cabinets, increasing site energy efficiency to 90%. In some cases, cabinets were even replaced with poles, increasing site energy efficiency up to 97%. These measures have helped the carrier deploy more 5G sites without increasing energy consumption.

After upgrading 3,000 of its 5G sites to green ones, the carrier saw its annual carbon emissions drop by 35,000 tons.

## » ICT Enables Green Development of Industries

Huawei is delving deep into industries like transport, energy, and buildings to better understand their requirements for carbon reduction and energy-saving. In doing so, we have explored how to use ICT solutions like AI, IoT, big data, cloud, and 5G to empower these industries to go green and low-carbon.

## Bringing Digital to New Energy Vehicles for Faster Electrification

According to the International Energy Agency (IEA), the share of emissions in the transport sector will increase to 27% of the global emissions by 2030. Full electrification of the transport sector will be an important step in reducing carbon emissions.

The electric vehicle industry is developing rapidly, but charging, range, and safety remain the three major concerns that put consumers off from going electric. Huawei's full-stack power domain solution DriveONE improves charging and range experiences, helping promote broader adoption of new energy vehicles and accelerating the electrification process.

- For charging, Huawei's full-stack high-voltage platform solution for power domains delivers 200 kilometers worth of power with just a 10-minute charge.
- For range, the solution's intelligent oil cooling and AI-driven efficiency optimization technologies increase ePowertrain efficiency by 3%. The solution uses multiple converged algorithms to improve the available capacity of batteries. These features combined boost range by 8.5% without additional batteries.
- For battery safety, the solution uses AI to provide early warnings about battery thermal runaway 24 hours before it occurs, making vehicles safer.

## Huawei CloudCampus: Building an Intelligent Campus with Better Visualization and Power Saving



Huawei's CloudCampus 3.0 solution helps Xi'an Jiaotong University reduce electricity use by 4.27 million kWh every year, equivalent to offsetting 1,959 tons of CO<sub>2</sub> emissions

Energy consumption from campus buildings mainly occurs from elevators as well as lighting, air conditioning, and fire monitoring systems. These systems need to be effectively controlled to enable intelligent energy-saving without undermining the environment.

Huawei's CloudCampus 3.0 solution connects these energy-intensive systems to a network through an IoT edge gateway. The solution works with Huawei's AI-empowered intelligent campus management platform to visualize campus management. This has helped users build smart, secure, and energy-efficient campuses.

The AI-empowered intelligent campus management platform displays the past and present power consumption of each building and each piece of equipment in real time, with sensors showing the real-time temperature of each room. A heat map of wireless access points (APs) shows the distribution of students and staff across campuses.

The solution supports remote control for electrical equipment. For example, with big data analytics, elevators that are less frequently used can be shut down during holidays, and lighting and air conditioning systems can be shut down when buildings are empty.

The solution also supports intelligent energy efficiency management, on-demand use, and precise power-on and power-off of equipment. Such an intelligent approach can drive greater power savings, helping campuses cut energy consumption by about 5% to 6%.

For example, Xi'an Jiaotong University has deployed this solution and built more than 700 new smart classrooms across its four campuses. They use the solution to intelligently manage lighting systems, projectors, teaching devices, and air conditioners. This translates into higher O&M efficiency and smaller carbon footprints. The solution is expected to help the university reduce electricity use by 4.27 million kWh every year, equivalent to offsetting 1,959 tons of CO<sub>2</sub> emissions\*.

\* By International Energy Agency emission factors



## Green Operations: Constantly Innovating in Energy Conservation and Emissions Reduction and Reducing Resource Consumption

Huawei prioritizes low consumption, low pollution, and high efficiency in its own operations, striving to build resource-efficient and eco-friendly company campuses. We use as much renewable and clean energy as possible at the source, apply technical and managerial measures to save energy during our operations, properly dispose of hazardous waste, and comply with environmental requirements. These efforts have enabled us to save energy, improve resource utilization, reduce waste, cut costs, and achieve more efficient, sustainable, and low-carbon operations while ensuring business continuity.

### » Lower Energy Consumption, Greener Campuses

To reduce energy consumption on our campuses, we have developed stringent requirements regarding the sourcing of bulk equipment for Huawei's own facilities and the site selection and decoration of leased facilities, aiming to reduce energy consumption in subsequent operations. Selecting energy-efficient equipment right at the start helps cut the overall cost of construction, O&M, and management. During site selection for leased facilities, we analyze the overall costs of decoration and later operations. This process helps us simplify operations at an optimal cost throughout the campus lifecycle.



A rooftop PV power plant at the Huawei Dongguan Southern Factory

### Huawei's GHG emissions in 2021\*

GHG	Scope 1	Scope 2	Scope 3
Emissions (t-CO <sub>2</sub> e)	55,141	2,596,855	4,638,800
% of total emissions	0.76%	35.62%	63.63%

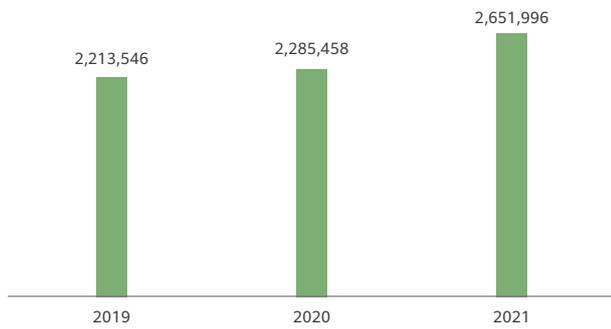
Scope 1 covers direct GHG emissions from sources owned or controlled by Huawei

Scope 2 covers indirect GHG emissions from the generation of purchased electricity or heat

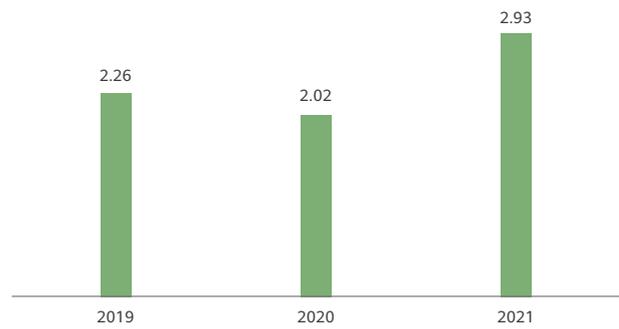
Scope 3 covers all other indirect GHG emissions occurring within Huawei's value chain. In 2021, Huawei applied for a certification of its Scope 3 emissions for the first time, covering purchased goods and services, fuel and energy related activities, upstream transportation and distribution, waste generated in operations, business travel, employee commuting, etc. Moving forward, we plan to include more types of emissions sources under Scope 3 into the certification when reliable and complete data are available.

\* Huawei compiles an inventory of and verifies GHG emissions sources within its organizational boundaries using the Operational Control Approach according to the scope, category and calculation methods defined in the ISO14064-1:2018, GHG Protocol, and IPCC Guidelines for National Greenhouse Gas Inventories.

Unit: tons



Unit: tons/million RMB of revenue



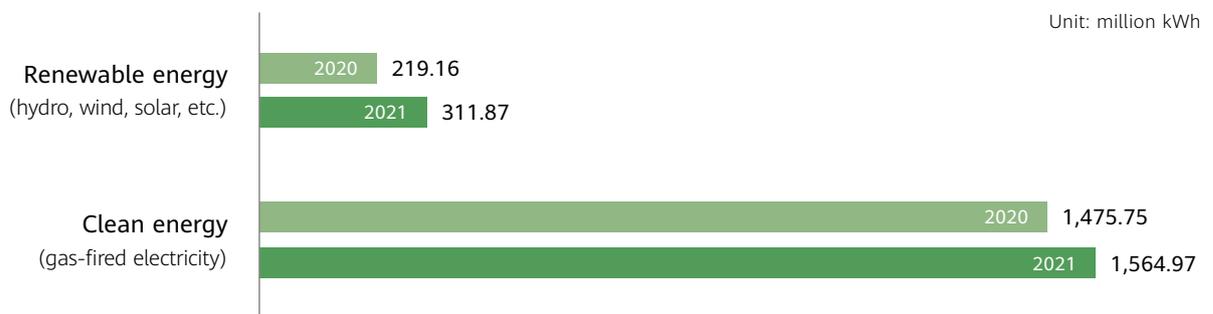
Total GHG emissions 2019–2021 (Scope 1 & Scope 2)

GHG emission intensity 2019–2021 (Scope 1 & Scope 2)\*

### Huawei's total energy consumption (2019–2021):

Energy Type	Unit	2019	2020	2021
Natural gas	million m <sup>3</sup>	13.13	15.36	9.92
Gasoline	tons	650	608	800
Diesel	tons	106	107.7	402
Electricity	million kWh	3,231.25	3,601.70	4,228.95
Steam	tons	22,613	22,694	28,861

### Electricity generated from renewable and clean energy used by Huawei in China:



\* GHG emission intensity = Total GHG emissions / Sales revenue. The increase in Huawei's GHG emission intensity in 2021 was mainly due to the company's decline in sales revenue. Given the continuous growth and uniqueness of Huawei Cloud (operations-oriented), its performance regarding environmental protection is measured and disclosed separately. Therefore, Huawei Cloud is not covered by Huawei's GHG emissions intensity targets or progress, and related statistics have been adjusted accordingly.



## Examples of energy-saving and emissions reduction projects on Huawei campuses in 2021

No.	City	Project	Measures	Power Savings & Emissions Reduction*
1	Chengdu	Energy-efficient lighting	Optimizing the lighting control strategy so that lights can automatically turn on and off to avoid waste	Power savings: 170,000 kWh/year CO <sub>2</sub> offset: 146 tons
2	Dongguan	Upgrading to LED lighting and air-conditioning systems with variable speed drives (VSDs)	Upgrading to LED lighting and VSDs that enable air-conditioning systems to operate more efficiently at part load	Power savings: 1.01 million kWh/year CO <sub>2</sub> offset: 812 tons
3	Dongguan	Upgrading production and manufacturing equipment	Making high-voltage and high-current equipment more energy efficient, applying thermal cycling, standardizing aging times, and adopting centralized and intelligent scheduling to reduce energy consumption	Power savings: 12.92 million kWh/year CO <sub>2</sub> offset: 10,390 tons
4	Hangzhou	Upgrading the servers of monitoring systems and saving energy in labs	Optimizing the Enterprise Building Integrator (EBI) system in the labs and quickly shutting down idle equipment to avoid unnecessary power consumption	Power savings: 2.83 million kWh/year CO <sub>2</sub> offset: 2,242 tons
5	Nanjing	Upgrading to smart lighting and optimizing air-conditioning systems in conference rooms	Using smart lighting technology to automatically switch lights on and off based on human presence, and optimizing air-conditioning systems to avoid unnecessary power consumption	Power savings: 1.33 million kWh/year CO <sub>2</sub> offset: 1,053 tons
6	Shenzhen	Modernizing power supply and distribution systems and optimizing the operations of air-conditioning systems	Staggering the startup of electricity-intensive equipment to avoid peak demand and reduce required capacity, and optimizing the operations of air-conditioning systems	Power savings: 7.6 million kWh/year CO <sub>2</sub> offset: 6,112 tons
7	Wuhan	Extending free cooling time and using smart lighting in conference rooms	Connecting built-in cooling towers and hybrid dry/wet cooling systems to reduce the operating frequency of cooling towers and extend free cooling time; upgrading to smart lighting in conference rooms	Power savings: 550,000 kWh/year CO <sub>2</sub> offset: 472 tons
8	Xi'an	PV power generation	PV plant on the Xi'an campus up and running	Total generation of PV power: 4.747 million kWh CO <sub>2</sub> offset: 4,723 tons

\* Calculated according to China's regional grid baseline emission factors

# 810,000 tons

Huawei Cloud's data center in Gui'an has integrated green and digital technologies into its design, which is expected to save 1.01 billion kWh of electricity per year, equivalent to offsetting more than 810,000 tons of carbon emissions

Data centers are at the heart of digital economies. To reduce energy consumption and GHG emissions, Huawei Cloud's data center in Gui'an has green and intelligent technologies incorporated into its design. Its power usage effectiveness (PUE) is 1.12, one of the best figures in the industry. The measures Huawei took include:

- Employing direct ventilation for natural cooling. Cold air from outdoors is filtered and supplied to equipment rooms, and then discharged from the rooftop following a heat exchange through the hot aisle.
- Developing a medium-temperature chilled water

system in the facility area and office area of the data center. Part of the heat is naturally cooled by waterfalls and lakes, and part of it is used to heat a swimming pool and office area in winter with heat recovery technology. This helps fully reuse waste heat and cut carbon emissions.

- Introducing liquid cooling technology to increase power density and cooling efficiency and significantly reduce PUE.
- Applying AI to service scheduling, peak shaving, and valley filling to balance loads among servers and increase resource utilization.
- Replacing copper components in the power supply with power semiconductors to reduce power loss.

When operating at full capacity, the data center is expected to save 1.01 billion kWh of electricity per year, equivalent to offsetting more than 810,000 tons of carbon emissions\*.



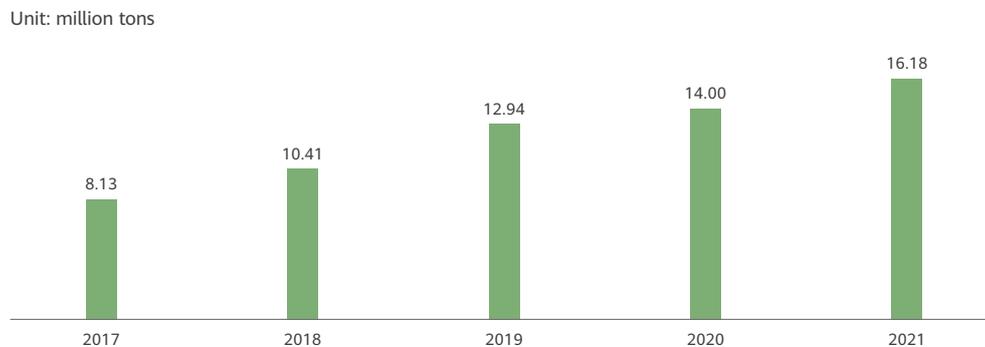
Huawei Cloud's green data center in Gui'an: Naturally cooled through direct ventilation and by waterfalls and lakes, with an industry-leading PUE of 1.12

\* By grid emission factors in Southern China



» Conserving and Reusing Natural Resources

In 2021, Huawei used 16.18 million tons of water in China, up 15.6% year-on-year. This increase was largely attributable to the construction of new facilities in Wuhan, Suzhou, Dongguan, Shanghai, and other locations. The majority of the water we consumed was used for watering our grounds, in our canteens, and for air-conditioning.



Huawei's water usage in China (2017–2021)

To better manage waste in our company facilities and minimize our impact on the environment, we hire certified waste disposal companies to classify and dispose of our waste as required and reduce the waste that goes to landfill. 86% of our solid waste is incinerated to produce electricity.

Waste Classification	Example	Disposal	
Solid waste	Non-recyclable waste	Domestic waste	Designated suppliers regularly sort and remove the waste. Healthcare waste, such as masks, is transported to designated incineration areas for harmless disposal.
	Canteen waste	Leftovers and waste cooking oil and fats	Harmless disposal by designated certified suppliers
	Recyclable waste	Packaging boxes and metal parts	Designated suppliers regularly sort and remove waste. Special processes apply for scrapped equipment and parts.
	Hazardous waste	Chemical containers	Centrally stored in a designated area and then processed by companies certified to carry out this kind of work
	Construction waste (generated by construction companies)	Waste from refurbishments	Construction companies stack construction waste in a designated area, and later transport it to the municipal solid waste landfill.
Wastewater	Canteen wastewater	Oily wastewater from canteens	After oil is removed through an oil separation tank, wastewater is discharged into the septic tank and then discharged into the municipal sewers if it meets the required standards.
	Other domestic wastewater	Wastewater from bathrooms, office pantries, and sanitation	Discharged directly into the septic tank and then discharged into the municipal sewers if it meets the required standards.
	Industrial wastewater	Wastewater generated from the production process	Disposed of by an industrial wastewater treatment facility and discharged once it meets the required standards. 60% of wastewater is recycled for production.

Waste Classification	Example	Disposal
Waste gases	Kitchen waste gases	Cooking fumes from hobs
	Industrial waste gases	Waste gases generated from the production process

The gases are first purified by fume hood, and then by electrostatic purifiers. Once they meet the discharge standard, they are discharged at a steady rate.

The gases are centrally disposed of by the industrial waste gas treatment facility on the roof of the building in which the waste gases are produced and discharged once they meet the required standards.

## Raising Employee Awareness of Energy Conservation and Using Less Resources

As part of our efforts to improve employee awareness of energy conservation and environmental protection, we have launched numerous green campaigns on our campuses over the past year, including our Environmental Protection Week themed "Tech for a Better Planet". This event included a ceremony for signing a commitment to protecting the environment, an online quiz, and an old-for-new electronics recycling drive. We encouraged every Huawei employee to do their part to protect biodiversity and the planet by doing things like turning off unneeded lights, saving water and paper, traveling green, and living a low-carbon life.

Huawei has a campus asset management system for

maximizing asset reuse, allowing us to save resources. For example, our Shenzhen campus has a shared reuse warehouse. In 2021, we identified about 64,000 reusable items in this warehouse, 37,000 of which had already been reused. This practice allows us to use fewer resources by making the most of existing items.

We have a policy stating that retired office laptops that meet certain conditions can be repurposed for the personal use of our employees, who simply need to submit an application. This extends the service life of these laptops and reduces electronic waste. In 2021, we repurposed more than 30,000 office laptops for personal use.



Huawei Environmental Protection Week: Tech for a Better Planet



## Decarbonization and Digitalization Empowering a Green Supply Chain

Huawei's supply chain activities span material sourcing, manufacturing, transportation, and delivery, and carbon emissions can occur every step of the way. To better manage its carbon footprint, Huawei has developed a carbon-accounting framework based on material flows. Based on our experience in the digital transformation of the supply chain, we have proposed building a green, digital, and win-win supply chain. We believe that a green, low-carbon supply chain will bring us closer to our green pledge of "Tech for a Better Planet".



Huawei's Green Supply Chain Management System

### » Green Procurement

Green procurement is a key way for Huawei to cut carbon emissions in collaboration with its partners. Based on our procurement processes, Huawei has established a carbon emissions estimation mechanism for different categories of raw materials and works to achieve green procurement by focusing on three areas: procurement fulfillment, procurement process management, and energy saving and emissions reduction of suppliers.

Huawei works to facilitate suppliers' carbon reduction efforts. Based on an analysis of the delivery routes of Huawei's suppliers, the company has taken a number of measures regarding the inbound and outbound nodes of its manufacturing partners, covering more than 140 electronics manufacturing services (EMS) providers and joint design manufacturers (JDMs). These include accurately planning delivery routes, optimizing goods-receiving processes, and reducing the number of vehicles needed and the total mileage coverage. In 2021, the proportion of raw materials

delivered directly to factories increased, which helped reduce transportation mileage and the footprint of raw material warehouses. These changes resulted in a reduction of 34.5 tons in carbon emissions.

Huawei has incorporated environmental requirements into our "quality-first" procurement strategy and processes. Environmental factors are considered during supplier qualification, selection, audits, performance management, and the sourcing of materials to ensure that suppliers comply with all applicable environmental laws and regulations. We also offer incentives to encourage suppliers to make ongoing improvements.

In 2021, we encouraged our top 100 suppliers (by procurement spending) and energy-intensive suppliers to calculate their carbon emissions, set carbon emissions reduction targets, develop plans, and implement programs. By the end of 2021, all the top 100 suppliers and energy-intensive suppliers had calculated their carbon emissions, and 98% of them had set targets for reducing emissions and

had already started implementing related programs. We are following up on the remaining 2% to ensure they set targets and implement programs as soon as possible.

To help suppliers reduce carbon emissions and go green more quickly, Huawei takes multiple measures such as releasing

case studies on exemplary supplier emissions reduction efforts, inviting industry experts and specialist organizations to train and audit our suppliers on energy-saving management, and helping our suppliers identify opportunities for saving energy and reducing emissions.

## The Huawei Supplier Carbon Emissions Reduction Conference

In May 2021, Huawei held its Supplier Carbon Emissions Reduction Conference themed Green and Low-carbon Development for Shared Success. More than 1,000 representatives from over 400 major suppliers attended the conference. Representatives from the Shenzhen Municipal Ecological Environment Bureau, industry experts, Huawei procurement managers and experts, and supplier representatives gave keynote speeches, discussing global progress towards reducing carbon emissions, China's path to carbon peak and carbon neutrality, industry standards, and companies' best practices in conserving energy and reducing emissions.

During the event, Huawei explained its

strategies and requirements for saving energy and reducing carbon emissions throughout supply chains. We encouraged suppliers to meet the challenges of climate change head on, seize new opportunities, pursue low-carbon development, and respond to our call to reduce carbon emissions. Huawei also shared its expectations for suppliers to set challenging carbon emissions reduction targets to achieve carbon peak and carbon neutrality more rapidly.



Huawei's 2021 Supplier Carbon Emissions Reduction Conference, where we shared strategies and requirements for reducing carbon emissions throughout the supply chain



## Empowering Suppliers Through Expert Training and Support in Energy Management

In most electronics and electrical plants, industrial electricity accounts for more than 95% of the carbon emissions produced in their own operations. Therefore, saving electricity is the primary way to reduce carbon emissions in these plants. One of Huawei's suppliers uses multiple energy sources in their plant, which include electricity, natural gas, oil, and diesel. However, electricity still accounts for 97.6% of their total carbon emissions and 95.3% of their annual energy bill.

In 2021, we invited industry-leading energy management experts to provide training in energy management for the supplier to help diagnose challenges with energy conservation, help improve its energy management capabilities, identify opportunities for energy conservation, and take both managerial and technological measures to conserve energy and reduce consumption. The plant then identified 11 areas in which energy conservation programs could be implemented, covering management, processes and production lines, lighting, compressed air, HVAC, and renewable energy. These measures were expected to save over 13 million kWh of electricity, reduce CO<sub>2</sub> emissions by 10,182 tons, and cut the plant's energy bill by CNY9.08 million per year. That means the investment involved in swapping equipment could be recouped in just 33 months.

A major hurdle here was that the plant would struggle to invest in so many energy conservation programs at once. Considering this, the energy management experts

designed a four-stage investment plan, and identified the three energy-saving measures that were of the highest priority, required the least investment, and would deliver immediate results. According to this plan, the factory was only required to spend a one-off payment of CNY7,020 on the three prioritized measures in the first stage, which were expected to help it save 14,498 kWh of electricity and reduce CO<sub>2</sub> emissions by 11.71 tons. A combination of energy-saving measures was expected to bring the plant an additional CNY800,000 in revenue per year, giving the supplier confidence to proceed.



An energy management expert invited by Huawei identifying opportunities for energy conservation in a supplier's plant

Since 2011, Huawei has participated in the Green Choice initiative, which was launched by the Institute of Public and Environmental Affairs (IPE). To encourage suppliers to better manage themselves, promptly fix any problems, and maintain environmental compliance, we continue to use the IPE's Blue Map environmental data search during supplier audits and supplier self-checks. In 2021, we carried out regular checks on the environmental records of 900 key suppliers and helped more than 10 suppliers rectify problems.

## » Green Manufacturing

Huawei's manufacturing department is tasked with producing high-quality products. The company is constantly striving to save more energy and further reduce carbon emissions by adopting a simplified architecture and optimizing manufacturing work instructions (MWIs) and workshop energy consumption without compromising product quality.

MWIs are key to driving efficient manufacturing and material flows across a supply chain, and the accuracy of MWIs directly affects power consumption and carbon emissions. We use AI algorithms to optimize MWIs and achieve balanced manufacturing. Through correlation analysis, we have found that for every 1% improvement in balanced manufacturing, energy consumption is reduced by about 1.2%. In 2021, our

R&D and manufacturing departments worked together and saved energy use through more balanced manufacturing and reduced production fluctuation. The energy saved was equivalent to cutting carbon emissions by 23,900 tons.

In manufacturing workshops, we saved 18.65 million kWh of electricity and reduced carbon emissions by 15,000 tons\* in 2021 by taking the following measures:

- Centrally monitoring the energy consumption of manufacturing equipment
- Optimizing air conditioner operations
- Upgrading lighting facilities by, for example, replacing metal-halide lamps and fluorescent lamps with LED lamps
- Replacing electric heating systems with heat pumps
- Connecting air compressors to the grid

## Reducing Single-use Plastics in the Packaging of Incoming Materials

In 2021, as part of its efforts to protect the environment, Huawei's manufacturing department adopted a design-for-manufacturability (DFM) approach and designed plastic-free packaging by replacing single-use plastics such as polyethylene bags and foam used in packaging with standardized, recyclable materials. This plastic-free packaging is now adopted in the components of our optical network terminals (ONTs) and Wi-Fi 6 devices. The packaging of the incoming materials from suppliers uses partitions to prevent collisions and scratches, making it easy to take out parts without affecting their appearance. This design eliminates more than 130 million packaging removals that would normally be required in production lines. It reduces the pollution from single-use plastics while boosting productivity. In 2021 alone, the initiative reduced the use of single-use plastics by 260 tons, equivalent to 26 million medium-sized supermarket plastic bags. This was a reduction of about 600 tons of carbon emissions. Moving forward, we will promote plastic-free packaging design in more of our production lines.



\* By grid emission factors in Southern China



» Green Logistics

Huawei's global logistics network covers more than 170 countries, 300 logistics and warehousing nodes, 40,000 transportation routes, and various means of transportation, including sea, air, rail, road, and express delivery. This is a highly complex global network. In line with the ISO 14064 standard, Huawei has designed a carbon emissions accounting framework for its supply chain based on the methodologies set out in the GHG Protocol and IPCC Guidelines for National Greenhouse Gas Inventories, and measures its carbon emissions from global transport and warehousing.

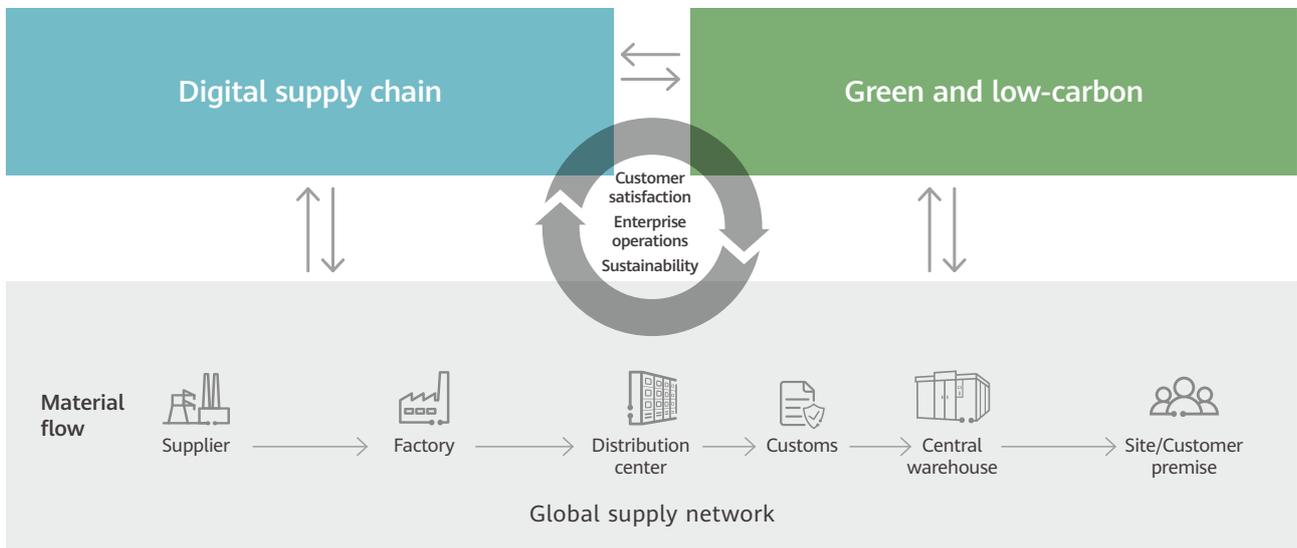
In 2021, the pandemic meant global logistics services were in short supply. Despite this, Huawei remained committed to green and low-carbon logistics management, and produced tangible results:

- Directly reduced carbon emissions by 456 tons by optimizing the pick-up routes for raw materials, implementing centralized transportation and distribution, and improving container loading and delivery routes to lower the proportion of air freight to countries outside China, as air freight is one of the most emissions-intensive modes of transport.
- Indirectly reduced carbon emissions by about 99 tons by optimizing our global transport and warehousing footprints.

- Saved 320,000 pieces of paper for goods receipts and payment reviews by piloting blockchain technology in four of our regional distribution centers (RDCs) in China.

Digital and green transformations are two sides of the same coin when it comes to supply chains. As enterprises digitalize their supply chains, they are likely to benefit from higher efficiency and lower costs. This, in turn, helps them achieve emissions reduction targets. Green and low-carbon development can guide enterprise operations in a way that further drives digitalization, creating a positive cycle, as shown in the figure below.

Over the past five years, Huawei has been moving towards a digital supply chain through its Integrated Supply Chain + (ISC+) transformation program, which involves digitizing all objects, processes, and rules. This has allowed Huawei to significantly improve operational efficiency, cut the amount of energy used during the manufacturing of physical goods, optimize routes to save mileage, and reduce resource consumption. These efforts have contributed to energy conservation, emissions reduction, and a circular economy. Meanwhile, paperless operations as part of the digital transformation process have helped Huawei and its partners save a huge amount of paper and reduce the need for cutting down trees.



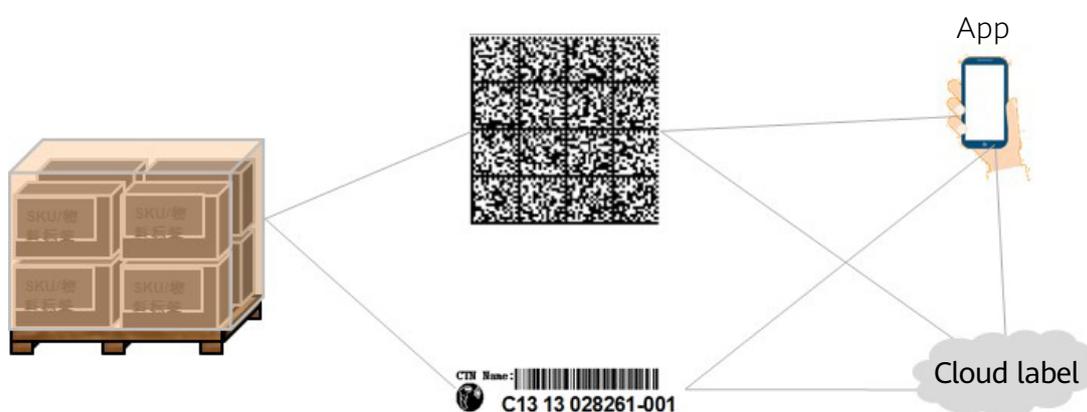
Digitalization for a green and low-carbon supply chain

## Saving Paper by Moving Paper Labels to the Cloud

Throughout Huawei's supply chain, we previously used 66 types of A5-sized paper labels and eight types of key paper documents for approval. According to annual shipment volumes, printing these labels and documents consumed more than 100 million sheets of paper.

To address this issue, we decided to significantly reduce paper usage or adopt paperless operations where possible across the supply chain. By systematically redesigning our labels and digitizing label information, we removed 50 out of the 66 types of paper labels and

the eight types of approval documents. Meanwhile, we categorized QR codes and barcodes as necessary labels when redesigning the labeling system. Label information can now be obtained by scanning the codes, and more information is stored in the dedicated data modules on Huawei Cloud, reducing the number of labels attached to physical objects. According to our estimates, this optimization alone can help us reduce the paper used in packaging by 99.95 million sheets, equivalent to offsetting 330 tons of carbon emissions per year.





## Promoting Renewable Energy

A digital economy is, first and foremost, a green economy. Green and low-carbon development has become a globally recognized goal and more countries and businesses are increasing investment and transitioning to renewable energy. Huawei wants to play an active role in the transition from fossil fuels to renewable energy. We use renewable energy in our operations wherever possible. Huawei's Chengdu Research Center is now fully powered with renewable energy. We've built PV plants on our campuses in Huawei Dongguan Southern Factory, Hangzhou Research Center, Nanjing Research Center, and Xi'an Research Center. In 2021, these plants generated more than 17.6 million kWh of green electricity in total. Our digital power company focuses on five domains: clean

# 230 million tons

By the end of 2021, Huawei's digital power solutions had helped customers generate 482.9 billion kWh of green power and save about 14.2 billion kWh of electricity, equivalent to offsetting 230 million tons of CO<sub>2</sub> emissions\*.

power generation, energy digitalization, transportation electrification, green ICT power infrastructure, and integrated smart energy to drive an energy revolution for a better, greener future.

### Herding Sheep Under Solar Panels: Smart PV Solution Helps Build a Renewable Energy Hub in Qinghai, China

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

Since the plant was connected to the grid, it has generated nearly 5 billion kWh of green electricity per year, and supplied green electricity to Henan province, more

than 1,500 kilometers away, via the Qingyu UHVDC (±800 kV) power transmission line, the world's first high voltage transmission line carrying 100% clean energy.

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



Renewable energy hub in Gonghe, Qinghai, built with the support of Huawei's smart PV solution: Herding sheep under solar panels and supplying green electricity to Henan province, more than 1,500 kilometers away, via a UHVDC line

\* By International Energy Agency emission factors

## Sunseap's 5 MWp OFPV System: A Blueprint for Promoting Renewable Energy

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

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



Sunseap's 5 MWp OFPV system serves as a blueprint for other countries with dense populations and limited land to roll out similar initiatives

## Huawei Digital Power Helps Build a Nearly Zero-carbon Exhibition Hall in China

Located in Shenzhen's Longgang District, the International Low Carbon City Convention and Exhibition Center has used Huawei's distributed smart PV solution, energy storage solution, and DigiPowerCloud system to become China's first nearly zero-carbon facility. It is equipped with a 1.1 MW PV system, a 2 MWh energy storage system,

and an integrated smart campus management system. Once it is up and running, the center is expected to achieve self-sufficiency, producing 1.27 million kWh of green electricity every year and offsetting about 603 tons in annual carbon emissions<sup>2</sup>. In addition, the center is safe, reliable, and easy to maintain.



A nearly zero-carbon exhibition hall in China powered by Huawei's digital power solutions

<sup>1</sup> By the EPA Greenhouse Gas Equivalencies Calculator

<sup>2</sup> By International Energy Agency emission factors



# Contributing to a Circular Economy

As the world's population continues to grow and quality of life keeps improving, pressure on the world's natural resources is increasing. To adapt to future needs, it is important for us to develop a resource-efficient economic model. Huawei is committed to building a business model that incorporates circular economy practices and a closed-loop value chain so that all resources can be efficiently used, reused, and recycled, and in turn maximize product value with limited resources.

## More Eco-friendly Materials

Huawei is committed to using more eco-friendly packaging materials to minimize our impact on the environment. We use recyclable paper and sustainability-certified paper as much as possible to protect forest resources. Our latest eco-friendly packaging materials have been certified as compostable by DIN CERTCO, meaning that they are biodegradable as part of industrial composting.

**Huawei Devices Use Biodegradable and Eco-friendly Packaging Materials**

The degradability of a product's packaging is often affected by the inks used. Our devices are packaged with 100% eco-friendly soy inks rather than petroleum-based inks. Compared with petroleum-based inks, soy inks use soybean oil that contains no volatile organic compounds, while still delivering quality prints.

## Greener Packaging

Huawei adopts a green packaging strategy known as "6R1D": Right Packaging, Reduce, Returnable, Reuse, Recovery, Recycle, and Degradable. We aim to design packaging that provides sufficient protection for our products and has minimal impact on the environment. We use eco-friendly packaging materials and recycle and reuse them as much as possible.



## Lighter User Manuals for Less Resource Consumption and Emissions

Lightweight user manuals use less paper and cut resource consumption and carbon emissions during transportation. The approach we take to creating lightweight user manuals is focused on balancing paper material reductions and user experience requirements. To achieve this, we have created a pre-installed Tips app for our devices where users can get more information about their devices.

In 2021, lightweight user manual designs were widely adopted for all Huawei devices, including mobile phones, tablets, and PCs. This yielded remarkable results – 468 tons of paper was saved, equivalent to a carbon offset of 13,288 tons.

	2019	2020	2021
Products covered	Mobile phones	Mobile phones, tablets, PCs, wearables, and headphones	Mobile phones, tablets, PCs, wearables, headphones, speakers, and smart screens
User manual page reduction	27%	87%	5%
Paper saved (tons)	89	426	468
Carbon offset (tons)	2,537	12,080	13,288

## Less Plastic, Greener Consumption

The United Nations Environment Programme estimates that about eight million tons of plastic end up in the ocean every year, and 60% to 90% of the litter that accumulates on shorelines, the surface, and the sea floor is plastic.

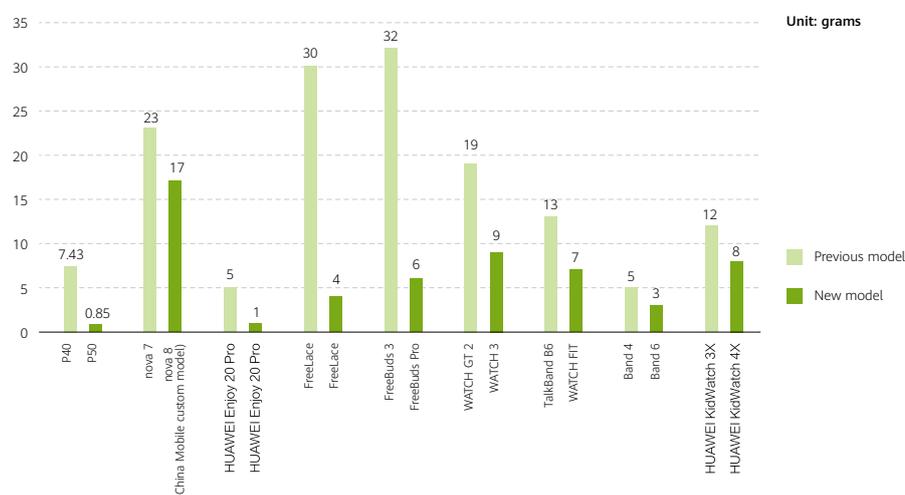
To reduce plastic waste, Huawei keeps improving its product packaging and reducing the amount of plastic used in packaging materials. For example, the surface of a packing box is usually covered with a layer of plastic film to protect the text and printed graphics. Our packaging designers developed water-based inks to replace the plastic film, which has been applied to the packaging of the HUAWEI Enjoy 20 Pro and nova 7 SE (5G) models, and will be used in the packaging of more products in

the future. This optimization alone is expected to reduce the use of disposable packaging plastics by approximately 46.3 tons for every 10 million phones.

We are also reducing the plastic used inside gift boxes. For example, the amount of plastic used inside the gift boxes of P50 series phones decreased by 89% compared with the P40 series. Plastic now makes up less than 1% of the packaging of a P50 phone, an industry-leading figure.

We have applied these plastic reduction measures to headphones, watches, bands, and many other products to provide eco-friendly products to our consumers and drive green consumption.

Comparison of plastic packaging over two generations of various Huawei products





## More Durable Products

Huawei follows a quality-first strategy and aims to succeed with high quality. We implement an ISO 9000-based total quality management system that covers every employee, every process, and every link of the value chain to achieve this. All employees are encouraged to pursue high quality. We are working to improve the quality of both our processes and results, and provide customers and consumers with quality durable products and convenient and affordable repair services. These practices have helped slash product costs over their lifecycle, and reduce our consumption of natural resources.

### Durable Huawei NetEngine Routers: Low Return Repair Rates

Huawei's high-end NetEngine routers have highly sophisticated, large-capacity line cards that contain more than 20,000 components and nearly 100,000 solder joints. We have built high-end router manufacturing lines and an end-to-end quality assurance system to ensure the quality of such products. As a result, we have achieved a 1.56 defect parts per million (PPM) opportunities for board solder points, significantly lower than the Six Sigma benchmark of 3.4. Huawei's board return repair rate is only one third of the industry average. All of these efforts have extended the service life of our products.



Huawei's high-end NetEngine routers

### Extending Device Service Life with Software and Hardware Updates

An international study found that the average smartphone purchase cycle for consumers in China was 28 months. Huawei has been exploring how to bring new life to used phones, recoup their full value, and reduce e-waste. We are working to extend the service life of used products as much as possible and make them more durable through software and hardware updates. These efforts include:

- Upgrading over 100 phone models (including the



By the end of 2021, HarmonyOS had been deployed on more than 220 million Huawei devices, making it the world's fastest-growing mobile device operating system

Mate 9 series released in 2016, Mate 40 series, Mate 30 series, P40 series, HUAWEI Mate X2, nova 8 series, and MatePad Pro series) to HarmonyOS 2. HarmonyOS 2 is born fast and stays fast. With HarmonyOS 2, operation responses on old device models are as smooth as always.

- Implementing a global flat-rate battery replacement program that covers more than 110 different phone models and is supported in over 2,000 offline stores and online marketplaces. Every month, this program provides over 250,000 consumers with our convenient, cost-effective battery replacement services.
- Launching a mainboard replacement program in 2021 for phone models sold in the Chinese mainland that allows customers to buy original Huawei mainboards at up to 70% discount, even for out-of-warranty mainboard damages. We have also established a system for reusing screens that are out of warranty in many countries, recycling as many resources as possible.
- Rolling out a Huawei smartphone memory upgrade plan in 2021 through which consumers can obtain chips with a larger memory capacity for their old devices.

## Less Waste

One of the most effective ways to reduce the environmental impact of electronic products is to reuse e-waste and recoup its value. In close collaboration with leading recycling service providers, Huawei categorizes its e-waste so that it can be efficiently recycled and reclaimed. Through our global recycling system, we work with scrap service providers to recycle the raw materials of e-waste in more than 170 countries worldwide. In 2021, we disposed of 11,826 tons of ICT e-waste, only 0.78% of which was landfilled, and processed 8,643 tons of smart device e-waste, none of which was landfilled.

### Adding Tamper-evident Labels to the Smallest Packing Units of Optical Modules to Facilitate Recycling

When optical modules are returned from our regional warehouses to HQ warehouses, many of the smallest packing units have to be sent back to their original supplier for repair despite the units themselves remaining intact. This is because their original packaging is unidentifiable after the shipping box is opened. The cost of sending modules back for repair is very high, so many modules are scrapped instead, resulting in CNY20 million in material costs each year.

To address this problem, we set up a dedicated optimization team to add tamper-evident labels to the smallest packing units during shipment. This makes the original packaging of the unused products still identifiable even after the shipping box is opened, so their quality is controllable and reliable, requiring no further inspection before recycling. This greatly improves reuse efficiency and reduces e-waste.



### Certified Second-hand Phones on Huawei Vmall

In 2021, Huawei launched a second-hand phone service on Vmall for recycling, refurbishing, and resale, together with industry-leading recyclers and service providers. We have put in place related processes and standards, and have integrated the circular economy concept into every link of the process, from sourcing the second-hand phones to sales channels. All Huawei-certified second-hand mobile phones must pass stringent tests to ensure that they are equipped with 100% original Huawei components (including original brand-new batteries) and

come with HarmonyOS 2 pre-installed. Huawei also gives a one-year official warranty for each certified second-hand device.

Moving forward, we will expand this program to cover tablets and PCs, providing consumers with more quality second-hand devices. By selling quality second-hand phones, we have greatly extended the service life of our products and reduced resource consumption.



# Environmental Certifications

In 2021, Huawei obtained multiple national and international environmental certifications, including:

## ISO 50001 Certified Energy Management System

The ISO 50001 certified energy management system focuses on improving energy efficiency and reducing energy consumption by standardizing various energy management systems and measures, and identifying and utilizing the right energy-saving technologies and methods, as well as best energy management practices.

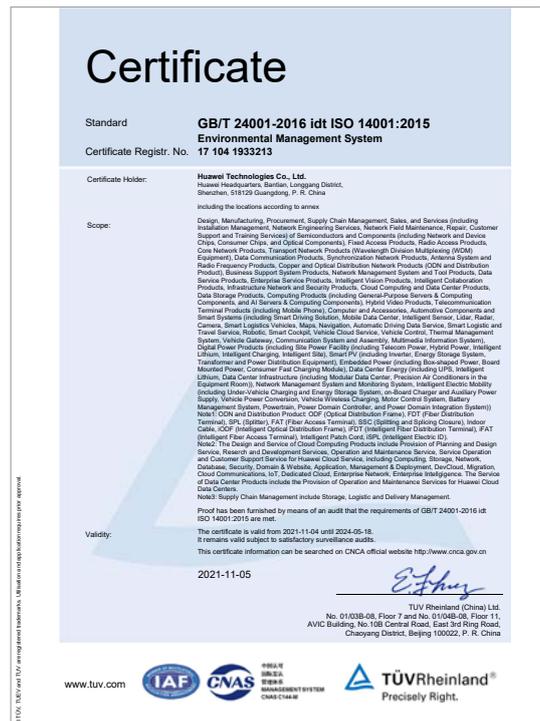
In 2021, Huawei Technologies Co., Ltd. passed the annual ISO 50001 surveillance audit.



## ISO 14001 Certified Environmental Management System

ISO 14001 environmental management certification indicates that an organization has reached the international standard in environmental management and can effectively control various pollutants in its processes, products, and activities.

In 2021, Huawei Technologies Co., Ltd. passed the ISO 14001 renewal audit, which covers the design, manufacturing, procurement, supply chain management, sales, and services in ICT, devices, cloud computing, and other related business scopes.



## ISO 14064 Greenhouse Gas Verification Statement

The ISO 14064 Greenhouse Gas Verification Program provides clear standards for companies to monitor, quantify, report, and verify greenhouse gas emissions in accordance with international standards. This program helps identify key emitters, assess emissions reduction targets, and develop emissions reduction plans.

In 2021, Huawei Technologies Co., Ltd. obtained ISO 14064 certification again, with the verification covering Huawei's R&D centers, manufacturing facilities, office buildings, data centers, canteens, and leased premises. The company began to include greenhouse gas emissions from raw material procurement, employee commuting, and waste disposal under "Scope 3: Other Indirect GHG Emissions" into its verification.



## Eco-friendly Certification by CEC for Network Firewalls

China Environmental United Certification Center (CEC) is a comprehensive certification and service agency that certifies leading green, energy-saving, and low-carbon products in China, as accredited by China's Certification and Accreditation Administration Committee.

In 2021, 72 of Huawei's HiSecEngine firewall products received Eco-friendly Product Certification, making them the first firewall products to receive this certification from CEC.





### CQC Certification for Energy-efficient Products

The China Quality Certification Center (CQC) assesses energy efficiency in products based on national standards and technical requirements. This is a voluntary certification program designed to encourage more responsible consumption and the use of energy-efficient and eco-friendly products.

In 2021, 30 of Huawei's CloudEngine top of rack (TOR) switches received CQC certification for their high energy efficiency, which meets the CQC 3140-2019 Technical Specifications for Energy Savings Certification of Ethernet Switches. This means they can significantly cut energy consumption while delivering high performance.



### Smart Green Medal

The Smart Green Medal is granted by SGS's senior expert team after assessing products in multiple areas against the certification standards, including materials, durability, energy saving, security, and user experience, as well as the related organization's production and operations.

In 2021, Huawei Mate 40 series, Mate X2, P50, nova 9, nova 9 Pro, and FreeBuds 4 earned the Smart Green Medal (Level 1 Certification) from SGS, which is its highest level for rating green products.





# 5 Healthy and Harmonious Ecosystem

- ① Caring for Employees
- ② Business Ethics
- ③ Supply Chain Responsibilities
- ④ Community Responsibilities





As a digital and intelligent world is approaching, Huawei strives to create even greater value for our customers, build better platforms for our partners, provide our employees with more opportunities, and promote more balanced growth for local communities. We are working hard to ensure that the fruits of our innovation are benefiting all people, all homes, and all organizations. We are committed to doing our part to promote sustainable and inclusive economic growth.



# Caring for Employees

Employees are our most valuable asset. They are the mainstay of Huawei's sustainable development. Our commitment to improving the living and working environments for our employees does not hinge on our business performance. We always strive to offer them better dining, more leisure opportunities, and a more comfortable space. We aim to bring in outstanding global talent while also unleashing the potential of our existing teams. Our incentive policies focus on how well employees fulfill their responsibilities, and we offer top pay for top talent. We encourage our employees to dive headfirst into uncertain domains and nurture an open organizational climate. We provide employees with systematic training and empowerment, and encourage managers and experts to engage more with new employees to help them broaden their horizons. We assign the brightest minds to develop even brighter ones.

## Employee Health and Safety

It is a company policy to care for our employees and always put their safety first. We are working to create a safe and comfortable workplace, and we encourage subcontractors to do the same. Our EHS management systems cover all business domains across the company, and our scientific management approaches help us meet and exceed all applicable legal and regulatory requirements. Multiple Huawei subsidiaries like Huawei Technologies have obtained ISO 45001 certification.

### Strengthening Intrinsic Safety Management to Prevent EHS Incidents in R&D Labs

In recent years, R&D labs have been engaging in more diverse and complex services and scenarios, which has created greater challenges to operational safety. To tackle these new challenges, we have taken a number of measures to guarantee the health and safety of our over 100,000 R&D employees and ensure there are zero EHS incidents in our R&D labs. These measures include strict risk controls, process monitoring, red lines that cannot be crossed, and consulting with external experts to identify blind spots.

- **Intrinsic safety design:** As early as the lab planning and design phase, we work to eliminate any risks identified through site selection, building layout, materials replacement, and process improvement to ensure safe operations.
- **New admission mechanism:** We have established a mechanism for introducing new equipment, new materials, new components, and new models based on whether they have met EHS requirements. This mechanism allows us to identify high-risk projects and scenarios and develop countermeasures in advance.
- **Early warning mechanism:** We have improved the hierarchical management system for potential risks by implementing an early warning mechanism that differentiates between different risks by their severity and resolving risks when they are identified.
- **Blind test mechanism:** Key labs are subject to random

inspections without prior notice to assess their on-site emergency response plans, and to identify employees' safety awareness and capability gaps. Improvement plans are then created and their execution is carefully monitored.

- **Consulting with outside consultants:** We bring in third-party consultants to evaluate the maturity of our EHS management system and help identify our weaknesses and blind spots compared with industry best practices. This has helped improve our management efficiency.
- **Capability improvement and EHS qualifications:** We are continuously improving employees' safety awareness and safety protection skills through EHS management courses targeting different positions and risk scenarios. We require all relevant employees and business directors to obtain EHS qualifications before assuming their roles in R&D labs.
- **Digital management platform:** We are constantly improving our unified digital management platform to support centralized management of our global R&D labs and improve management efficiency.
- **Culture of safety:** We have also conducted various initiatives such as an EHS Safety Month, interpretation sessions on production safety laws, and safety awareness programs to enhance EHS leadership and develop a culture of safety.



Managers taking an EHS qualification exam



Third-party consultants assessing the maturity of our EHS management system



### Joint Innovation with Customers for Better EHS Management

Over the last year as the pandemic continued, Huawei worked with customers to find innovative ways to ensure construction safety in delivery projects. By extensively using intelligent tools such as smart helmets, VR training, and AI-powered intelligent inspections and approvals, we have further improved digital operations, reduced EHS risks, and led the way in industry innovation.

- **Remote EHS management:** Due to the pandemic, Huawei remotely managed EHS globally to reduce the risk of infection during business trips and day-to-day work. Digital tools now allow us to centrally manage onsite operation safety, and our AI-powered intelligent approval system has made EHS inspections and approvals much more efficient.
- **Smart helmets:** We are promoting digital tools like the smart helmets used at some of our customers' sites in Africa. These helmets free up operators' hands

and allow them to quickly find remote support when needed. This helps boost operation efficiency, virtualize EHS management, and mitigate risks more quickly.

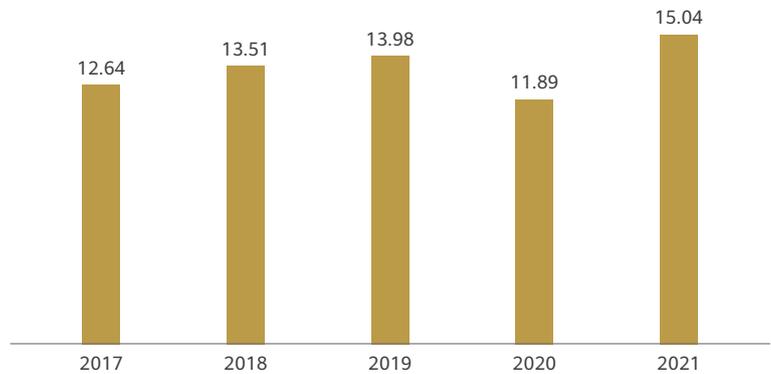
- **VR training:** Our VR-based EHS training courses allow operators to better understand operation safety regulations, give them an immersive experience in identifying operation risks and performing emergency response drills, and improve their safety awareness.

At its annual supplier conference held online in November 2021, Vodafone Group presented Huawei with their "Health and Safety Award" in recognition of our efforts and contributions to occupational health and safety management.



"Health and Safety Award" from Vodafone Group

Huawei has a robust employee health and safety management system and we strive to ensure the health and safety of our employees. We provide comprehensive social and commercial insurance for our employees and operate a global emergency response system 24/7 to protect our employees and provide timely emergency support. We offer health checks, health counseling, health and safety training, and healthy lifestyle guidance to employees. We are also stepping up efforts to provide more health assurance resources for employees. In 2021, we invested more than CNY15 billion into these employee benefits.



Spending on employee benefits (CNY billion, 2017–2021)

## Protecting Employee Safety Through Targeted Pandemic Prevention and Control Measures

In 2021 as the pandemic continued, Huawei adopted more scientific pandemic prevention and targeted control measures to ensure the health and safety of its employees worldwide. These measures include:

- Rapid nucleic acid tests: Mobilized resources and set up fast channels to provide rapid nucleic acid testing for employees.
- Vaccination: Obtained vaccines (including boosters) from multiple channels to ensure that employees could be fully vaccinated as soon as possible.
- Campus entry management: Limited campus entry using an entry pass system to ensure employee safety on campus.
- Disinfection: Fully disinfected company workplaces and living environments using new anti-pandemic tools.

- Communication and training: Communicated pandemic prevention strategies and plans through multiple means (e.g., text, video, cloud classes, and WeLink meetings), and provided targeted training for employees working in different scenarios to strengthen protection requirements.
- Healthcare: Organized activities to help ensure the health of employees, such as health week events, psychological counseling, and cloud-based sports competitions. We also helped employees on overseas assignments return home safely as this became especially difficult during the pandemic.

During the pandemic, Huawei employees have remained dedicated to maintaining the company's operations and creating value for society.



Scientific prevention and targeted control measures to ensure the health and safety of employees



## Healthy Work-Life Balance at Huawei

Huawei has long been an advocate of a healthy work-life balance. One of our annual corporate events is the "3 + 1" Activity Week, where employees are encouraged to take up a new hobby, make a new friend, start a new sport, and read a new book. We are constantly working to create a warm and harmonious organizational climate, where employees are encouraged to take care of themselves and others.

### Fitness at Huawei

In 2021, we held the second Huawei Fitness Festival in 10 cities, including Beijing, Shenzhen, and Shanghai, to encourage employees to exercise and inspire employee passion. On the night of the event, vibrant lighting illuminated the night skies of our campuses and thousands of Huawei employees participated in a lively workout program.



Huawei Fitness Festival in 2021

### "3 + 1" Activity Week

Our annual "3 + 1" Activity Week kicked off in March 2021. During this week, employees were encouraged to show off their hobbies, from botany, painting, and cooking to fitness, music, and dance.



Hobbies shared by employees during the 2021 "3 + 1" Activity Week

### Reading at Huawei

Huawei has set up libraries on many of our campuses to create an environment that encourages employees to learn and grow. Each library has a unique collection of books covering a wide range of topics. Our full-time librarians and online lending services make it easier for employees to access these resources. We also organize online and offline book clubs, so that employees can read, share, solve problems, and grow together.



Libraries and book clubs on Huawei's campuses

## Employee Training and Development

Huawei offers two distinct career paths for employees: the manager path and the expert path. Employees can choose either path or switch between them to find the right job. Huawei also provides systematic training programs for employees at different stages of their careers. For new employees, there are programs for New Employee Orientation (NEO), mentorship, and position-specific training. These programs help new employees get to know the company better, learn the skills they need, adapt to their new roles, and quickly grow. As they work their way up, employees are offered places in programs that help them hone their expertise and management skills. We believe that the brightest minds can develop even brighter ones. All of our training program lecturers are managers and experts in their own fields. We believe in learning through practice and

# 47 hours

Average time Huawei employees spent in training sessions

practicing what we learn. This philosophy drives our training and practice sessions to enable individual growth.

In 2021, we offered a wide arrange of new resources to employees through our iLearning platform. Employees across the company spent an average of 47 hours in training sessions in 2021 and a total of 15,964 Huawei employees served as part-time trainers and lecturers, contributing to employee upskilling.

### Improving NEO to Help New Employees Grow Faster

Huawei's NEO is an important program designed to shape and pass on the company's culture and core values. NEO helps new employees integrate into the company and grow quickly.

2021 saw the start of new innovations to improve existing courses.

- **A new three-phase training program that facilitates employee integration:** Before assuming their roles, new employees learn about our corporate culture and the knowledge and skills required for their positions on a dedicated study platform. After NEO, new employees are also given access to a designated learning community that helps them learn position-essential skills so that they can better integrate into their teams.

- **Sharing real-world challenges to drive interest:** Huawei strongly encourages bright minds to utilize their expertise to solve real-world business challenges. Over the past two years, we have identified pressing challenges in various business domains, and we have dedicated NEO courses on sharing these challenges with new employees. This is part of Huawei's broader strategy of engaging bright minds from around the world to tackle real-world challenges.
- **A dedicated learning platform for global hires:** A new learning platform has been launched to facilitate the onboarding of new employees outside China. This platform currently offers 57 English courses, including courses on corporate culture and common workplace skills. In 2021, over 4,000 newly onboarded employees used this platform.

### iLearning Morning Express: One Carefully Selected Course for Employees to Study Every Day

iLearning is Huawei's digital learning platform. In 2021, iLearning began its transition from a learning management platform to a learning experience system, to provide easy-to-use services that precisely reach the right target audiences. iLearning aims to become an open learning platform that supports more scenarios and helps employees worldwide learn the skills they need anytime and anywhere.

By the end of 2021, iLearning had provided more than 30,000 courses and quizzes, growing employee knowledge and skillsets. The only problem is that employees may have trouble choosing the right course,

with so many available for different subjects.

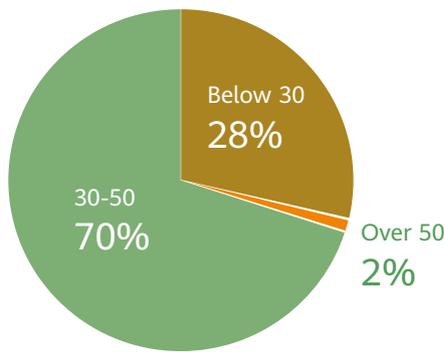
To solve this problem, the iLearning operations team launched the "iLearning Morning Express", which selects one course every day from more than 10,000 courses and extracts the key points from the course into a 10-minute audio clip. At 6 a.m. every work day, the iLearning Morning Express is pushed to Huawei employees worldwide, covering many different domains like business, management, technology, industry insight, and self-improvement. Throughout 2021, the iLearning Morning Express delivered 168 clips and recommended 132 courses to over 45,000 Huawei employees.



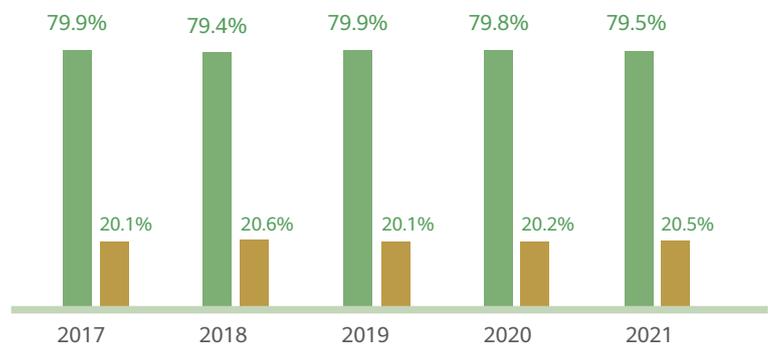
### A Diverse and Inclusive Workforce

Huawei employs over 195,000 employees, serving more than three billion people around the world. 107,000 of these employees work in R&D, accounting for 54.8% of our total workforce. Outside of Huawei's presence in China, 64% of our workforce is hired locally. In 2021, we made more than 4,000 local hires at our offices outside of China, which is part of our efforts to create new jobs and economic opportunities for the communities we serve.

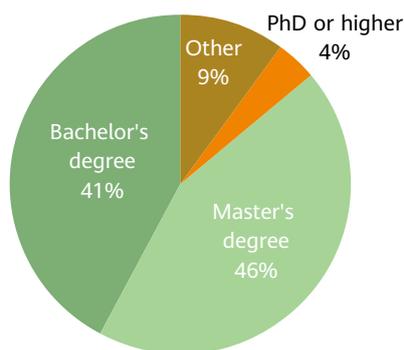
As a global company, Huawei values diversity in its workforce and we are committed to creating an inclusive workplace where all employees enjoy equal opportunities. We respect the lifestyles of all of our employees and aim to create an environment that makes it easy for anyone to practice their beliefs and customs. For example, we have opened prayer rooms on our campuses. And for nursing mothers, we provide lactation rooms. We also operate facilities like gyms, libraries, and cafes to provide quality services that meet the diverse needs of our employees.



Employee age (2021)



Male and female employees (2017-2021) ■ Male ■ Female



Level of education

Our Caring for Employees Policy lays out the principles and requirements we believe that a good employer must meet to ensure employee care. All Huawei subsidiaries have released their own corporate regulations based on these policies, as well as local laws and regulations. We have also put in place processes, systems, and baselines to create an open, inclusive workplace that encourages mutual respect and diversity. We are working to improve the representation of women in leadership roles and bridge the gender gap that characterizes the tech industry.

When it comes to employee recruitment, promotion, and compensation, we do not discriminate against anyone based on 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 in place to prevent the use of forced labor, covering each major phase of an employee's relationship with the company, including recruitment, employment, and exit. 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 they do not use forced or child labor.

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

## Attracting Top Minds and Unleashing the Potential of Existing Teams

We aim to bring in top minds from around the world while unleashing the potential of our existing teams. We have set up more than 80 labs around the world to dive deep into foundational technologies, and organized global competitions to attract top talent. Our employees come from 163 different countries and regions.

As our founder Ren Zhengfei once said, "We can absorb the energy of the universe over a cup of coffee." We are constantly working to nurture an open organizational climate and diverse culture that lets senior experts unleash their full potential and gives young employees opportunities to shine. We encourage our managers and experts to sit down more often with new employees to have a coffee, chat, and broaden their horizons. We continue creating value for customers to obtain reasonable returns. We offer top pay for top talent, innovate and make breakthroughs, and contribute to the communities in which we operate.

# 163

nationalities represented within  
Huawei's workforce

Huawei also offers challenging opportunities to outstanding employees. What sets employees apart within our organization is not their seniority, but the results they deliver. We link employees' personal grades and rewards to their contributions and capabilities, and give bold assignments and fast-track promotions to outstanding employees. As a result, top performers who make unique contributions and have a strong sense of mission and a can-do spirit are given the chance to grow quickly and take on greater responsibilities.



The Huawei Software Elite Challenge



## Business Ethics

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

- Our Chief Compliance Officer (CCO) manages the company's operational compliance, and reports to the Board of Directors (BOD). Every one of our company's business departments and subsidiaries has also established its own compliance team, taking responsibility for the management of their own operational compliance.
- We identify and assess risk according to applicable laws and regulations and business scenarios. We have formulated control measures that have been incorporated into our business activities and processes. This guarantees effective compliance management during operations. Huawei also continuously optimizes its management

system through root cause analysis and targeted corrective action.

- We attach great importance to compliance and strive to continuously enhance the compliance awareness of our employees. Through publicity, training, exams, disciplinary action, and other activities, we push employees to fully understand the company's and their own obligations to ensure compliance and incorporate this understanding into their behaviors.
- With an open mind, we proactively work with customers, partners, regulators, and other stakeholders on compliance, and communicate our compliance principles and practices to them to constantly enhance mutual understanding and trust.

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



Compliance management training in Huawei France

## Anti-Corruption and Anti-Bribery Compliance

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

- We are strengthening our anti-bribery and anti-corruption compliance system in four ways: a culture of compliance, governance and oversight, compliance risk assessments and prevention–discovery–response techniques, and continuous operations. We regularly conduct compliance audits to identify potential compliance risks across all business scenarios, and optimize and oversee the implementation of related policies and processes.
- Huawei works hard to create a culture of integrity and enhance its compliance capabilities. All employees are required to study, sign, and comply with the company's BCGs and anti-corruption policies. Our customized training addresses the different risk scenarios in different countries and regions where Huawei operates, and is available for different employee groups. For example, besides general training for all employees and targeted training for those in high-risk positions, enhanced training is

provided to specialists in the compliance team and to employees playing key roles in business processes. Training content is distributed in many ways, including video, forums, and dedicated online training channels. All partners of Huawei – whether they are directly providing services and fulfilling their contractual obligations to Huawei, or providing services and fulfilling their contractual obligations to Huawei customers or other third parties on behalf of Huawei – are also required to comply with all applicable laws and regulations, industry ethical standards, and Huawei's Anti-corruption Policy for Partners, Huawei Supplier Social Responsibility Code of Conduct, 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. When Huawei receives a complaint, we launch an investigation and protect the person lodging the complaint from any form of threat or retaliation by keeping their identity secret.
- We continually communicate with our stakeholders (e.g., industry peers, consultants, partners, and NGOs) about compliance, clarifying our position and views on anti-bribery and anti-corruption. This helps ensure that all stakeholders have a clear understanding of Huawei's compliance regulations and policies.

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



## Intellectual Property and Trade Secret Protection

Huawei is dedicated to its long-term investments into R&D and to continuously enriching its intellectual property (IP) portfolio. Huawei is one of the world's largest patent holders. By the end of 2021, Huawei held more than 110,000 active patents across more than 45,000 families. The company believes that respecting and protecting IP is the bedrock of innovation. As a follower, practitioner, and contributor of IP rules, as well as an innovator, Huawei invests heavily in IP protection and respects the IP of others. Huawei has reached cross-license agreements with major ICT companies around the world, and works tirelessly to improve the environment for protecting innovation and IP in the industry and across countries and regions.

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

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



**Every year, Huawei invests over 10% of its sales revenue into R&D.**

In 2021, our total R&D expenditure amounted to **CNY142.7 billion**, equaling **22.4%** of the company's total revenue.

Over the past decade, Huawei's total R&D investment surpassed **CNY845 billion**.

In 2021, **107,000** employees, representing **54.8%** of Huawei's total workforce, worked in R&D.



**Huawei has one of the largest patent portfolios in the world.**

By the end of 2021, Huawei held a total of **110,000+** active patents, across **45,000+** patent families.

In terms of the number of patents granted in 2021, Huawei ranked **No. 1** at both the China National Intellectual Property Administration and the European Patent Office, and **No. 5** at the United States Patent and Trademark Office.



**The patents held by Huawei are broadly recognized across the industry.**

Patent panorama reports published by independent third parties show that Huawei is an **industry leader** in the fields of **5G, Wi-Fi 6, and H.266**.

More vendors are signing agreements with Huawei to **use our patented technologies**, expanding from the communications industry to intelligent vehicles, smart homes, and IoT.

## Trade Compliance

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

We have also established an integrated trade compliance management organization within the company. This organization manages trade compliance across both group functions and field offices. In addition, we have established specialist teams in our global offices that monitor changes to local laws and regulations, integrate

trade compliance into the company's rules and processes, and manage and oversee trade compliance in each link of our business operations, ranging from procurement, R&D, and sales to supply and services.

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

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



Summer training for Huawei compliance officers

## Fair Competition and Trade

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

- Huawei has established dedicated compliance organizations, appointed compliance officers in each region where it operates, and put in place a range of supporting regulations and rules, including guidelines, implementation rules, manager and employee statements, partner commitment letters, as well as training materials on compliance with competition laws.
- Huawei has embedded competition compliance rules and regulations into its management systems and business processes. We customize policies for each country based on local competition laws. We update compliance objectives every year, and oversee the

achievement of these objectives. We also provide dedicated training for compliance officers to ensure that related rules and guidelines are fully implemented.

- Huawei takes numerous practical measures to ensure competition compliance, including constant business process optimization and long-term mechanisms for independent sales consultant management, due diligence on third-party suppliers, and the optimization of baselines for sales contract compliance with competition laws.

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



# Supply Chain Responsibilities

Huawei manages sustainability in line with industry best practices and globally recognized standards. 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 portfolio management. We regularly appraise suppliers' sustainability performance and facilitate their continuous improvement by working closely with customers, suppliers, industry organizations, and other stakeholders.

## Procurement CSR Management System

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

Huawei's CSR red lines in procurement include:

1. Use of child labor.
2. Use of prison labor (including using prisons as suppliers or subcontractors) or forced labor (including restricting personal freedom or detaining personal identity documents.)
3. Violence, physical punishment, sexual harassment, illegal body searches, cross-gender body searches, and other similar behavior.
4. Salary payments below the local minimum wage.
5. Negligence that leads to major fires or explosions.
6. Working conditions that seriously endanger personal health and safety or lead to fatal field incidents.
7. Illegal emissions of any hazardous or toxic wastes, including waste water, gas, and residue.
8. Negligence that leads to media crises or serious mass disturbances, such as collective labor disputes, mass brawls, mass poisoning, unnatural deaths, or other incidents causing casualties.
9. Unsafe and unhealthy working environments that lack

effective measures to prevent potential health and safety accidents, or diseases that may be caused due to exposure in workplaces (e.g., collective infections).

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

To achieve the goal of sustainable procurement, we regularly deliver CSR training to all procurement staff. This training covers supplier CSR agreements, red lines, processes, and audit practices related to CSR in procurement. CSR requirements are incorporated into the performance indicators of all teams in our procurement department.

## Supplier Risk Rating and Auditing

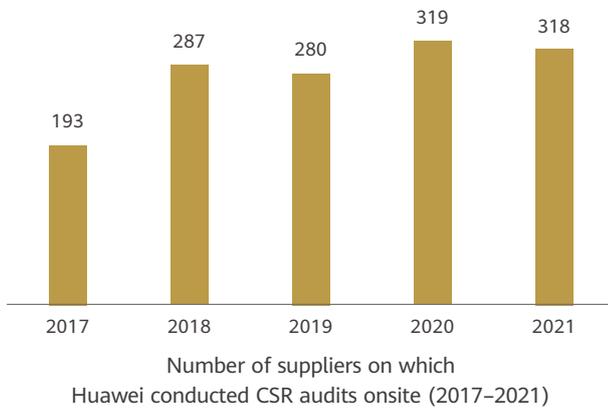
Huawei adopts a risk-based approach to supplier audits. Every year, we assess all major suppliers, which represent 90% or more of our procurement spending. We assign each supplier one of three risk ratings (high, medium, or low) after a comprehensive assessment of indicators such as procurement amount,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

We perform onsite assessments on all potential suppliers to examine their sustainability systems, their capacity to comply with applicable laws, regulations, and the Supplier CSR Agreement, and their actual level of compliance. No company that fails the assessment is eligible for consideration to become a Huawei supplier.

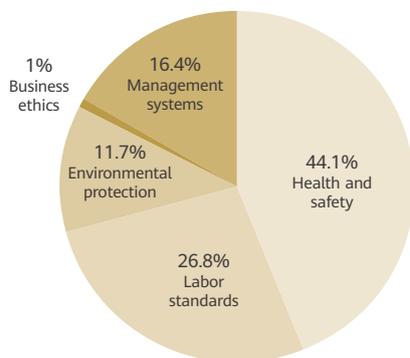
In 2021, we updated our Supplier CSR Audit Checklist by referencing industry best practices to better meet customer requirements. This updated checklist set higher requirements for carbon inventories and carbon emissions reduction, as well as the responsible management of minerals. We conduct supplier CSR audits using internationally recognized methods such as onsite inspections, employee interviews, management interviews, documentation reviews, and online searches. We use the Blue Map database developed by the Institute of Public and Environmental Affairs (IPE) to assess suppliers' compliance with environmental requirements. Prior to audits, we provide suppliers with coaching on CSR self-assessments.

During audits, we arrange for experts to work onsite with suppliers so that they can identify problems and provide recommendations for improvements.

In 2021, we assigned CSR risk ratings to more than 1,600 major suppliers and conducted onsite audits on 318 suppliers.



If we find an issue during an onsite audit, we help the supplier resolve the issue through the CRCPE methodology (check, root cause analysis, correct, prevent, and evaluate). This methodology helps suppliers identify common problems and develop targeted solutions.



Supplier CSR audit findings in 2021

## Supplier Performance Management

Every year, Huawei appraises suppliers' sustainability performance based on their sustainability achievements, onsite audit results, and improvements made, as part of their overall performance appraisals. During this process, we also consider how they manage the sustainability of their own suppliers. We encourage our suppliers to develop a CSR management system based on the IPC-1401 Corporate Social Responsibility Management System Standard. Suppliers are classified into

four grades (A, B, C, or D) based on their sustainability performance. In 2021, we appraised the sustainability performance of more than 1,600 major 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. Where suppliers are equally matched in other factors, those that perform better in sustainability are given priority for share of business or business opportunities. The reverse is true for low-performing suppliers. Depending on the situation, we may instruct suppliers with poor sustainability performance to resolve existing issues within a specified timeframe. Alternatively, we may reduce their share of business or offer them fewer business opportunities. We may even terminate our business relationships with those that display exceptionally poor sustainability performance.

## Supplier Capability Improvement

Huawei regularly provides sustainability training and coaching for our suppliers. We ask our suppliers to adopt industry best practices and embed sustainability requirements into their business strategies to reduce risk and boost efficiency. We encourage our suppliers to learn from each other and grow together through benchmarking. Based on our many years of experience, we have developed a cost-effective and efficient Learning by Benchmarking model for suppliers. This model includes the following steps:

1. Setting priorities: We ask suppliers about their CSR concerns, list the most common issues, and rank them in order of priority.
2. Identifying benchmarks: We identify which suppliers perform best and analyze their best practices.
3. Sharing and learning: We invite the benchmark suppliers to share their best practices and encourage all suppliers to learn industry standards and norms.
4. Implementation: We ask experts to develop templates and checklists and help suppliers assess their own performance and introduce best practices.

In 2021, we helped address supplier concerns through online meetings, including issues such as pandemic prevention and control, employee care, employee communication, fire prevention, hot work, and tier-2 supplier management. We shared ideas and case studies with suppliers, and drafted guidelines for their self-assessments. A total of 1,000 people from 200 suppliers participated in these meetings.



## Supplier CSR Training

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

Huawei encourages suppliers to develop their CSR strategies through SWOT analysis in line with the IPC-1401 Corporate Social Responsibility Management System Standard. We also encourage them to take the following measures to raise the bar for CSR management, in addition to complying with legal requirements: (1) embedding five levels of CSR obligations (laws and regulations, ethics, industry

standards and best practices, customer requirements, and strategic needs) into the existing ISO 14001/ISO 45001-based management system, (2) integrating CSR requirements into the operations of all functional departments, and (3) establishing a customer-oriented CSR management system for self-management.



Huawei's CSR training for suppliers

## Stakeholder Engagement and Cooperation

Stakeholder engagement and cooperation are essential to a sustainable value chain, and Huawei actively engages in due diligence across the global supply chain. Specifically, we communicate with other industry players, audit suppliers together with customers, help suppliers improve their capabilities, and promote industry standardization to jointly create a responsible supply chain.

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

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

In 2021, Huawei communicated with more than 70 customers specifically on CSR due diligence measures such as supply chain traceability, supplier whitelists, and complaint and appeal mechanisms.

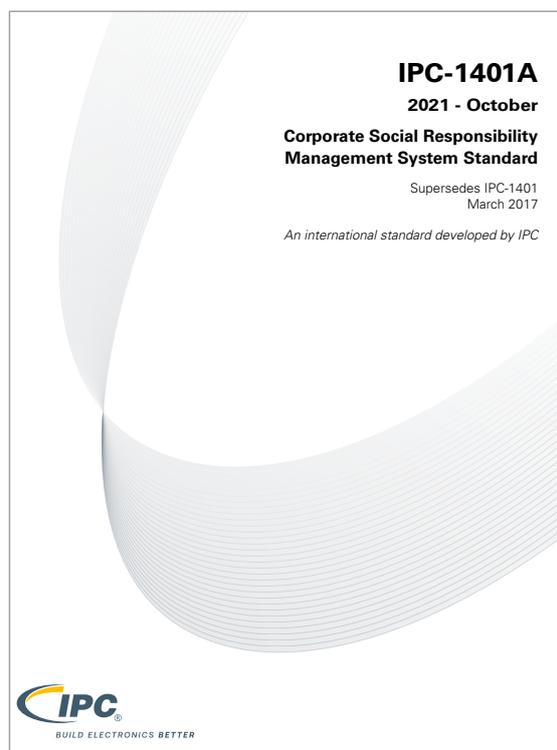
Huawei also recommended three suppliers for joint audits organized by the Joint Audit Cooperation (JAC), an association of telecom carriers. The JAC assigned experts from independent third-party audit organizations to assess these suppliers onsite. The average audit score of the three suppliers was 86, and the audit results were shared with the JAC.

## Actively Participating in Industry Exchanges and Collaboration to Accelerate Industry Standardization

Huawei actively collaborates with industry organizations, including the RBA, JAC, IPC – Association Connecting Electronics Industries, and China Electronics Standardization Association (CESA). This helps us align with industry trends, share best practices in CSR management, translate industry best practices into industry standards together with our partners, and drive continuous improvement across the whole industry.

In 2021, Huawei led the revision of the IPC-1401 Corporate Social Responsibility Management System Standard, which was then released by IPC globally. Since 2014, more than 20 industry organizations and 300 companies have sent more than 400 expert volunteers to participate in the formulation of the standard.

The standard defines CSR as responsible business conduct and responsible products and services. It requires the inclusion of CSR as a business requirement in corporate strategies and activities of functional departments by aligning with five levels of compliance obligations: laws and regulations, ethics, industry standards and best practices, customer requirements, and strategic needs. This standard will help enterprises establish differentiated competitiveness by pursuing innovation in CSR practices, adopt consistent standards, and quickly align with the CSR requirements of the entire supply chain, both upstream and downstream.



Huawei led the revision of the IPC-1401 Corporate Social Responsibility Management System Standard as part of its efforts to promote industry standardization

## Responsible Management of Minerals

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

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

In 2021, Huawei collected a list of 225 smelters in its supply chain survey. We have shared the results of our due diligence regarding responsible mineral management with more than 60 customers.



# Community Responsibilities

## US\$150 million

will be invested in the Seeds for the Future 2.0 program over the next five years, which will focus on digital talent cultivation and benefit over three million more people

Huawei is an active, productive member of the communities in which it operates. We fulfill our social responsibilities and give back to local communities by making a lasting, positive difference with digital technology. We work closely with governments, customers, enterprises, and non-profit organizations to launch social contribution programs. We work hard to develop skilled local workforces and protect the environment. We also make donations to help people in need.

### Seeds for the Future 2.0 Program: Cultivating Digital Talent for a Fully Connected, Intelligent World

In the digital economy, digital talent plays an important role in driving digital transformation and economic growth. Huawei is committed to cultivating digital talent in the countries and regions in which it operates. In July 2021, Huawei launched its Seeds for the Future 2.0 program. Through this updated program, Huawei plans to invest US\$150 million over the next five years to cultivate digital talent. This program is expected to benefit over three million more people. Since its launch in 2008, the Seeds for the Future program has attracted participants from 137 countries and regions, and benefited more than 12,000 students.

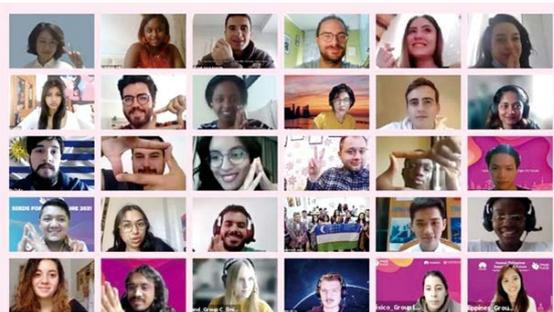
## Seeds for the Future Program's First Global Tech4Good Competition

Huawei's flagship CSR program Seeds for the Future aims to share ICT knowledge with young students by showing them how ICT is applied and how the ICT industry works. Due to the ongoing pandemic, we have moved the Seeds for the Future program online. In 2021, we held new events and introduced new activities, attracting more than 3,600 students from 118 countries. More than 1,300 stakeholders, including international organization representatives, local government officials, professors, and scholars, supported the program and attended related activities last year.

In 2021, we also hosted our first Global Tech4Good Competition. The competition aims to raise students' awareness of challenges to local sustainable development, encourage students to use the ICT skills they learn to explore solutions that are both technically and commercially viable, and help students turn their dreams into reality. The competition attracted students

from over 50 countries and more than 30,000 people watched the championship round. The team from Thailand got the first place. They developed a faster emergency treatment solution that can handle difficult road conditions. This team used 5G, AI, and cloud to design an optimal delivery route and real-time interaction solution. By reducing delays on the road, emergency patients can get to hospitals faster, increasing their likelihood of survival. The second and third place prizes were awarded to the Vietnamese team's sign language translator app and the Libyan team's solution for premature babies, respectively. The Audience Award went to the Brazilian team's easy water supply solution.

Students from winning teams received two months of tutoring to encourage them to chase their dreams and create a better future with their love and respect for life, the earth, and nature.



Participants of the Seeds for the Future program attending online training



The team from Thailand that won first Global Tech4Good Competition

## Seeds for the Future Bolivia: Assigning the Brightest Minds to Develop Even Brighter Ones

On March 31, 2021, Bolivia's Ministry of Education hosted the 2021 Seeds for the Future Program Opening Ceremony and the Second Talent Training Program Signing Ceremony, marking the launch of the fifth Seeds for the Future program in Bolivia. A total of 95 stakeholders attended the event, including Bolivia's Minister of Education and four Deputy Ministers of Education, officers from the Chinese Embassy in Bolivia, and representatives of Bolivian universities and the media. At the event, Huawei and the Bolivian Ministry of Education announced a strategic partnership in talent development.

Together, the two parties selected more than 20 Bolivian students to participate in the Seeds for the Future program. They also expanded the program to provide ICT training for Bolivian teachers. Through the government's online education platform, teachers can access Huawei-developed courses in Spanish free of charge, covering topics from 5G and cloud computing to IP networks and IT. These courses are intended to improve the ICT skills of teachers across the country and help them cultivate more digital talent to advance Bolivia's digital economy. By the end of 2021, about 4,000 teachers had been trained.

# 4,000

Bolivian teachers have participated in the ICT training program



Opening ceremony of Seeds for the Future Bolivia

## Cultivating Digital Talent Through ICT Training at Japanese High Schools

# 1,661

Japanese high school students (about 50% of whom were girls) have received ICT training as part of the Seeds for the Future program



Japanese high school students at an ICT training session

In 2021, Huawei launched the Seeds for the Future program in Japan to provide ICT training for high school students. This program aims to help the students better understand the ICT industry and cultivate potential digital talent.

The program invited professors and scholars from well-known Japanese universities to share basic ICT knowledge, applications, and success stories from around the world with high school students. Through this program, students have broadened their horizons and improved their understanding of the ICT industry by learning about how ICT has changed and accelerated social and industrial development. At the end of the program, the students participated in a competition on addressing social issues with creative ICT solutions and the winners were invited to visit Huawei's headquarters in China.

By the end of 2021, 1,661 high school students (about 50% of whom were girls) in 16 cities across five Japanese prefectures had participated in this program.



## Cultivating Digital Talent by Partnering with Universities and Sponsoring International Competitions

Huawei is a main partner of international competition organizations such as the International Collegiate Programming Contest (ICPC). By sponsoring global student competitions and training activities, Huawei aims to provide students with a platform that they can use for advanced training and to pursue innovation.

In 2021, Huawei organized multiple training camps and workshops together with its partners. As part of these programs, we invited more than 40 experts to give lectures on the industrial technologies involved in basic research in mathematics, physics, and chemistry. We have also supported international competitions by designing problems for participants, providing training platforms, and coaching students on problem-solving techniques. To date, Huawei has shared more than 18 cutting-edge subject areas for industrial application with students, and provided research and experimental platforms oriented to the future of information terminals, computing, and connectivity.

These competitions and platforms aim to help students from around the world learn and improve their own expertise and skills. For example, in the first phase of the ICPC Training Camp powered by Huawei, 576 students from around the world participated in online algorithm training that would better prepare them for their future study and development in the field.

Huawei hopes that these expert lectures, online learning activities, training programs, and competitions will enable students to better understand real-world technical challenges, and encourage them to explore challenging subject areas that advance science and technology and propel the industry forward.



Winners, including the top 30 contestants and nine coaches, receiving gifts from members of the organizing committee of the Communication Routing Challenge, hosted by Huawei and ICPC, that attracted nearly 8,000 participants from all over the world

## Providing One-stop Services to Help Developers Seize Opportunities



Participants of the HUAWEI Student Developers program

HUAWEI Developers is Huawei's open service platform for global developers. It provides developers with one-stop services from app development and operations to monetization and brand communication. This is part of Huawei's efforts to create an open innovation ecosystem with developers for shared success. More than 5.4 million developers from around the world have registered with HUAWEI Developers. HUAWEI Developers also has an online Developers Training platform that offers a series of online courses, and hosts a number of initiatives to support developers, including the DIGIX innovation contests, HUAWEI Developer Day and other onsite activities for developers, the Shining-Star Program, HUAWEI Developer Groups, HUAWEI Student Developers, and HUAWEI Developer Experts. More and more developers from around the world are directly or indirectly benefiting from the program.

In March 2021, HUAWEI Developers launched the HUAWEI Women Developers (HWD) program. This program aims to empower women developers, provide them with necessary resources, and inspire innovation from women in the tech industry. The HWD program

# 5.4 million+

developers from around the world have registered with HUAWEI Developers

has hosted several offline summits around the world where outstanding women from various tech sectors shared their technology, experiences, and stories. In the 2021 HUAWEI HMS App Innovation Contest, a new Tech Women's Award was added to motivate women developers to innovate. To encourage more women developers to work in the tech sector, the HWD program also donated exam vouchers worth one million Chinese yuan to 2,000 female students studying science, technology, engineering, and mathematics (STEM) from secondary and higher vocational schools. The exams are part of Huawei's 1+X mobile app development vocational skills certification program.



## Huawei ASEAN Academy: Cultivating More ICT Talent for a Digital ASEAN

Innovative ICT talent is urgently needed to advance the digital economy in ASEAN. Huawei is doing its part through its ASEAN Academy, which aims to create an ICT talent ecosystem upon which a stronger digital economy can be built.

In 2021, the Huawei ASEAN Academy organized various talent development programs such as the Seeds for the Future program, ASEAN Lectures, ICT skill training camps, and ICT skill certifications and competitions. These programs were run in collaboration with regional governments, ministries, ICT industry organizations, leading universities, and ICT ecosystem partners. They have so far attracted more than 100,000 people from ASEAN countries, including Malaysia, Indonesia, and Thailand. Through its partnership with 262 leading universities, the Huawei ICT Academy has provided training and certifications for more than 15,000 students. In 2021, Huawei and the ASEAN Foundation jointly held the first Digital Talent Summit, where the two parties released the 2022 Asia Pacific Digital Talent Insights report and signed a Memorandum of Understanding (MoU) for Seeds for the Future to develop a skilled digital workforce for the ASEAN.

Huawei will continue to invest in helping ASEAN countries develop more ICT talent in the future.

15,000+

students have participated in the training and certification programs provided by the Huawei ICT Academy in ASEAN in collaboration with 262 leading universities



Huawei ICT training in Indonesia

## Creating Value for Local Communities

Huawei works hard to do its part as a responsible corporate citizen. By working with partners such as international organizations, local governments, and regional organizations, we actively run social contribution programs in the countries and regions in which we operate. In 2021, Huawei ran more than 400 social contribution programs around the world to benefit and support local communities. Through our technological innovations and business activities, we promote local digital economies, cultivate digital talent in local communities, protect the environment, and help those in need.

# 400+

social contribution programs run by Huawei around the world

### The Huawei Spark Accelerator Program Supports Startups Worldwide

The Huawei Spark Accelerator program aims to use its global business and technology platforms to build an inclusive ecosystem for start-ups, incubate and support global startups, and promote social and economic prosperity in the countries and regions where we operate.

Since its launch in Singapore in August 2020, the Huawei Spark Accelerator program has attracted over 1,400 startups from more than 90 countries. The program has supported more than 60 startups, over half of which have seen significant growth in their business.

In August 2021, Huawei pledged to invest US\$100 million into this program over the next three years. As part of this investment, we plan to recruit 1,000 startups and shape 100 of them into scaleups, and cultivate 10,000 developers in Asia-Pacific countries such as Indonesia, the Philippines, Sri Lanka, and Vietnam.



2021 HUAWEI CLOUD Spark Founders Summit



## Launching a Campaign to Plant Poplar Trees in Gansu Province, China



Poplar trees planted to reduce soil erosion and absorb CO<sub>2</sub>

# 62,439

poplar trees have been donated by Huawei and its consumers, which are expected to absorb 13,470 tons of CO<sub>2</sub>, equivalent to pulling about 5,000 1.6L vehicles off the road for one year

Desertification is a major climate change issue that has impacted multiple parts of the world, and China is one of the countries that has been hit the hardest. To curb desertification caused by wind erosion and protect the environment, Huawei and the China Green Foundation launched a campaign to bring consumers together to plant poplar trees in Gansu Province, China.

In April 2021, 62,439 poplar seedlings were donated by Huawei and its consumers, which were subsequently planted in the desert in Jinta County, northern Gansu. This was the first grove of poplar seedlings planted in Jinta County in 2021.

Poplar trees can reduce soil erosion, improve soil quality, and help create an eco-friendly oasis. They can also absorb a large amount of CO<sub>2</sub>. Each poplar tree absorbs on average 215.68 kg of CO<sub>2</sub> over its lifecycle. That means one hectare of properly planted poplar trees (calculated based on 630 trees per hectare) can absorb 135,878.4 kg of CO<sub>2</sub> over the trees' lifecycles. The 62,439 poplar seedlings planted over 99.2 hectares of land serve as wind breaks, which will help prevent desertification over a 744-hectare area of sandstorm-prone land, equivalent in size to 1,042 football pitches. These trees are expected to absorb 13,470 tons of CO<sub>2</sub> over their lifecycles, equivalent to pulling about 5,000 1.6L vehicles off the road for one year.

This campaign is only one of the many environmental protection programs at Huawei. Huawei understands that every small effort can lead to a better natural environment. We will continue to work with governments, non-profit organizations, customers, consumers, and partners to help build a greener world.

## Promoting Gender Equality: Allowing More Women to Benefit from Digital Technology

According to the Global Gender Gap Report 2021 from the World Economic Forum, women continue to be severely underrepresented in three quarters of the world's "jobs of tomorrow" – a category which includes Cloud Computing, Data and AI, Engineering, and Product Development.

As a responsible member of the global tech community, Huawei advocates for gender equality and works to promote women's participation in the ICT industry and digital economy. In 2020, Huawei launched the Women in Tech program as part of our efforts to make "Tech for Her, Tech by Her, and Tech with Her" a reality. This program has become one of the company's most important CSR programs.

In 2021, we released our Statement on Gender Equality in which we outlined our efforts to empower women with our technology and platforms, help more women enter the technology industry, and cultivate women leadership. We encourage women employees to take up executive positions, and organize support groups and salons where they can share their experience.

During the pandemic, Huawei continued to support women around the world through dedicated activities such as scholarship programs, summits, training, and leadership improvement programs. We hope the skills and tools women obtain through these activities will encourage them to join the ICT industry.

In 2021, Huawei organized a series of programs all over the world themed Women in Tech.

In March, Huawei launched the global flagship program, HUAWEI Women Developers, to help women acquire the skills and resources they need to advance their careers as developers.

In April, Huawei held the 2021 HUAWEI Women Developers Summit in China, where ideas and tools were shared to support women developers in career development and product development. Women leaders from the ICT industry

were also invited to share their experiences and views.

In July 2021, Huawei and the Mexican Ministry of Foreign Affairs launched the 1,000 Talents for the Digital Development of Latin America and the Caribbean program. This program is designed to help more than 30 countries across Latin America and the Caribbean develop female digital talent, increase women's competitiveness in the job market, and improve women's participation in the digital economy. As part of this program, Huawei will provide more than US\$200,000 worth of scholarships, ICT training courses, and certification opportunities for 1,000 female students and ICT specialists selected by the Mexican Ministry of Foreign Affairs.



The Executive Director of the Mexican Agency for International Development Cooperation and Huawei Mexico CEO signing an MoU for the 1,000 Talents for the Digital Development of Latin America and the Caribbean program

In August, Huawei held the first Summer School for Female Leadership in the Digital Age in Lisbon, Portugal. A total of 1,225 students from 27 EU member states applied for this program, and the final 27 participants were able to take part in a week-long series of masterclasses, team projects, and cultural exchanges. They also received specialized training (e.g., coding courses), and listened to female entrepreneurs and executives from different industries share their experience.



Women representatives delivering keynotes at the summit



Participants of the Summer School for Female Leadership in the Digital Age



In September, Huawei and the Indonesian Women's Parliamentary Caucus (KPP-RI) organized a digital literacy workshop to improve women lawmakers' digital skills. The workshop – Women in Tech: Women Leadership in the Digital Era – attracted nearly 200 women lawmakers. The Speaker of the Indonesian Parliament, the Chief of the Indonesian National Police, and the Chairwoman of the KPP-RI delivered keynote speeches.



Members of the KPP-RI attending Huawei's digital literacy workshop

In November, Huawei worked with the Rebecca Foundation to provide coding and fintech training for hundreds of Ghanaian women. This program kicked off in the Northern Region of Ghana where local women were invited to participate and learn ICT skills that they could use in future employment. The program won praise for its positive impact, including from Rebecca Akufo-Addo, First Lady of Ghana and founder of the Rebecca Foundation.



Ghanaian women at Huawei's coding and fintech training

In November, Huawei launched its second annual TECH4HER scholarship program in Ireland. This program offered a total of EUR90,000 in scholarships to female students studying STEM at three local universities. Professor David FitzPatrick, President of Technological University Dublin, said that this scholarship would encourage more local women to study computer science, shine in the classroom and at work, and help them become future tech leaders.



Sarah Jane Delany (second from left), Professor of Inclusive Computer Science at Technological University Dublin, talking about TECH4HER and other Women in Tech initiatives as a member of the STEM education panel at Huawei 2021 Ireland Innovation Day

We know that every small effort will make a difference. Huawei is committed to promoting gender equality and enabling more women to benefit from digital technology.

For more information, please visit Huawei's Women in Tech website:

<https://www.huawei.com/en/sustainability/women>

## Respecting Human Rights

Huawei believes that connectivity is a basic right for every human being. We are committed to building better network connectivity and providing convenient and affordable information and communications services to billions of people around the world using our innovative technologies. Ubiquitous broadband and connectivity will create jobs, promote development, decrease poverty, and improve quality of life. In addition, connectivity will help us respond to global challenges, reduce the human impact on the environment, and provide essential communications services to support rescue and relief efforts during natural disasters.

Huawei adheres to all applicable international conventions and national laws and policies and respects all basic human rights as promoted by the Universal Declaration of Human Rights. We develop products and services in compliance with international standards and certifications. We strive to ensure that our business activities will not cause or contribute to any adverse impacts on human rights. Huawei has been a member of the United Nations Global Compact (UNGC) since 2004, and a member of the Responsible Business Alliance (RBA) since 2018. In addition, Huawei is committed to the United Nations Guiding Principles on Business and Human Rights and standards released by the International Labor Organization.

### Key Areas

Huawei's Corporate Sustainable Development Committee is responsible for overseeing any human rights risks that may exist within our business activities or supply chain, and strengthening our management of key areas that may have an impact on human rights.

- **Ensuring that technology is used to benefit humanity:** Technology should be used to enhance human, social, and environmental well-being. Huawei firmly opposes the misuse of technology that has an adverse impact on human rights. We carefully evaluate the long-term and potential impact of our new technologies on society based on widely recognized industry standards in the design, development, and use of our products, and work hard to ensure that our products and services are used in accordance with their intended commercial purpose. To address the unknown risks that may arise from the widespread use of new technologies, Huawei has expanded its existing processes and governance programs, and we are committed to working with our suppliers, partners, and customers to manage any potential adverse impact of technology development.
- **Protecting privacy:** Huawei attaches great importance to privacy protection, and we take our responsibilities seriously. We comply with all applicable privacy laws worldwide, including the EU's General Data Protection Regulation (GDPR). Huawei has embedded privacy protection requirements into our corporate governance and every phase of our personal data processing lifecycle. We follow the principles of privacy and security by design and by default and conduct privacy impact assessments before the release of any product or service, paying careful attention to sensitive personal data or sensitive

usage. Huawei also requires its suppliers to comply with requirements for personal data protection. In addition, Huawei requires all of its employees to receive privacy training to enhance their understanding of the domain, and we encourage our employees to participate in professional privacy certification programs. A total of 478 Huawei employees have been certified by the International Association of Privacy Professionals, placing Huawei among the top companies globally.

- **Safeguarding labor rights:** Huawei supports and protects the rights of its employees through detailed, equitable regulations that cover all stages of an employee's relationship with the company, including recruitment, employment, and exit. We are committed to providing equal opportunities for all employees. When it comes to employee recruitment, promotion, and compensation, we do not discriminate against anyone on the basis of race, religion, gender, sexual orientation, nationality, age, or disability. We prohibit the use of forced labor, whether overt or covert, and all use of child labor.
- **Maintaining a responsible supply chain:** Huawei has established a CSR management system in procurement in accordance with the OECD's Due Diligence Guidance for Responsible Business Conduct and IPC-1401 Corporate Social Responsibility Management System Standard. Our CSR agreements signed with suppliers are prepared according to internationally recognized industry standards such as the RBA Code of Conduct and the Joint Audit Cooperation (JAC) Supply Chain Sustainability Guidelines. During this process, Huawei also works closely with its supply chain, both upstream and downstream. In addition, we comply with our customers' sustainability requirements and conduct joint audits with them. We also require our direct suppliers to cascade our requirements to their sub-tier suppliers, asking them to respect the rights of their employees and comply with all legal requirements regarding environmental protection, health and safety, privacy, and anti-bribery compliance. Together, our goal is to create a responsible supply chain. Huawei has a comprehensive qualification process for all new suppliers, and carries out risk-informed annual audits on current suppliers. All suppliers are evaluated based on their sustainability performance, the results of audits, and the completion of any corrective actions. Huawei has a zero-tolerance policy towards the use of forced labor. If a supplier is found to have violated this policy, we will take disciplinary action against them like terminating our business relationship. To date, no use of forced labor has been discovered among our suppliers.

Respecting human rights has been a long-standing focus for Huawei. In compliance with all applicable laws, regulations, and standards, we actively communicate with international organizations, governments, and industry institutions to develop human rights standards and guidelines in the use of new technologies. At the same time, we will continue to optimize management mechanisms and work with our suppliers, partners, and customers to promptly identify, manage, and mitigate any human rights risks or adverse impacts.

## Appendix I Sustainability Goals and Performance

● Achieved ○ On track ○ Not achieved

No.	Category	Goals and Initiatives	2021 Progress	Status
1	Digital Inclusion	Implement seven inclusive education projects that will benefit more than 110,000 people in 2021	Achieved. See pages 24–25 of this report.	●
2		Implement six environmental protection projects to help 32 protected areas in 25 countries protect biodiversity more efficiently in 2021	Achieved. See pages 26–28 of this report.	●
3	Security and Trustworthiness	Zero level-1 cyber security incidents	Achieved	●
4		Zero level-1 personal data leaks	Achieved	●
5		At least 90% of incidents are fixed within one hour	Achieved	●
6		Problem report fix response time: 98%	Achieved	●
7	Environmental Protection	Reduce the carbon emissions (Scope 1 and Scope 2 GHG emissions) per unit of sales revenue by 16% by 2025 compared with 2019	On track. See page 58 of this report.	○
8		Increase the average energy efficiency of our main products by 2.7 times by 2025 compared with 2019	On track. See pages 51–56 of this report.	○
9		Ensure all of Huawei's top 100 suppliers (by procurement spending) will have set carbon emissions reduction targets by 2025	On track. See pages 63–65 of this report.	○
10		Less than 1.5% of e-waste from Huawei's ICT business is landfilled	Achieved. See page 74 of this report.	●
11		No e-waste from Huawei's smart devices is landfilled	Achieved. See page 74 of this report.	●
12		Use 40% more electricity from renewable energy sources on Huawei campuses in 2021 over 2020	Achieved. See page 58 of this report.	●
13	Healthy and Harmonious Ecosystem	Invest CNY15 billion in employee benefits in 2021	Achieved. See page 81 of this report.	●
14		Run 400 social contribution programs worldwide in 2021	Achieved. See page 100 of this report.	●
15		Zero supplier violations of CSR red lines	Achieved	●
16		Zero fatal subcontractor EHS incidents	Achieved	●
17	Sustainability Management System	Zero outstanding CSD Committee tasks	Achieved	●
18		Release quarterly CSD newsletters to improve our employees' sustainability awareness and capabilities	Achieved	●

## Appendix II GRI Standards

General Disclosures			
Organizational profile 2016			
Disclosure	Indicators	Relevance to the UN SDGs	Page
102-1	Name of the organization		1
102-2	Activities, brands, products, and services		1
102-3	Location of headquarters		Back cover page
102-4	Location of operations		1
102-5	Ownership and legal form		1
102-6	Markets served		1
102-7	Scale of the organization		1
102-8	Information on employees and other workers		80–86
102-9	Supply chain		91–94
102-10	Significant changes to the organization and its supply chain		1
102-11	Precautionary Principle or approach		/
102-12	External initiatives		19–21
102-13	Membership of associations		21
Strategy 2016			
102-14	Statement from senior decision-maker		2–5
102-15	Key impacts, risks, and opportunities		14–16
Ethics and integrity 2016			
102-16	Values, principles, standards, and norms of behavior		87–90
102-17	Mechanisms for advice and concerns about ethics		87–90
Governance 2016			
102-18	Governance structure		14
102-19	Delegating authority		14
102-20	Executive-level responsibility for economic, environmental, and social topics		14
102-21	Consulting stakeholders on economic, environmental, and social topics	SDG 16	17–21
102-22	Composition of the highest governance body and its committees	SDGs 5, 16	14
102-23	Chair of the highest governance body		14
102-24	Nominating and selecting the highest governance body	SDGs 5, 16	14
102-25	Conflicts of interest		/
102-26	Role of highest governance body in setting purpose, values, and strategy		13–14
102-27	Collective knowledge of highest governance body		13–14
102-28	Evaluating the highest governance body's performance		13–14

General Disclosures			
102-29	Identifying and managing economic, environmental, and social impacts	SDG 16	13-14
102-30	Effectiveness of risk management processes		13-16
102-31	Review of economic, environmental, and social topics		21
102-32	Highest governance body's role in sustainability reporting		13-14
102-33	Communicating critical concerns		21
102-34	Nature and total number of critical concerns		21
102-35	Remuneration policies		80-86
102-36	Process for determining remuneration	SDG 16	80-86
102-37	Stakeholders' involvement in remuneration		80-86
102-38	Annual total compensation ratio		/
102-39	Percentage increase in annual total compensation ratio		/
Stakeholder engagement 2016			
102-40	List of stakeholder groups		17-18
102-41	Collective bargaining agreements		100%
102-42	Identifying and selecting stakeholders		17-18
102-43	Approach to stakeholder engagement		17-18
102-44	Key topics and concerns raised		17-18
Reporting practice 2016			
102-45	Entities included in the consolidated financial statements		1
102-46	Defining report content and topic Boundaries		21
102-47	List of material topics		21
102-48	Restatements of information		1
102-49	Changes in reporting		1
102-50	Reporting period		1
102-51	Date of most recent report		1
102-52	Reporting cycle		1
102-53	Contact point for questions regarding the report		1
102-54	Claims of reporting in accordance with the GRI Standards		1
102-55	GRI content index		Appendix II
102-56	External assurance		Appendix IV
Management Approach 2016			
103-1	Explanation of the material topic and its Boundary		21
103-2	The management approach and its components		13-14
103-3	Evaluation of the management approach		13-14

Topic-specific Disclosures			
<b>Economic Performance 2016</b>			
Disclosure	Indicators	Relevance to the UN SDG s	Page
201-1	Direct economic value generated and distributed	SDGs 2, 5, 7, 8, 9	1
201-2	Financial implications and other risks and opportunities due to climate change	SDG 13	1, 14-16
201-3	Defined benefit plan obligations and other retirement plans		1, 80-86
201-4	Financial assistance received from government		/
<b>Market Presence 2016</b>			
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	SDGs 1, 5, 8	/
202-2	Proportion of senior management hired from the local community	SDG 8	/
<b>Indirect Economic Impacts 2016</b>			
203-1	Infrastructure investments and services supported	SDGs 11, 2, 5, 7, 9	31-33
203-2	Significant indirect economic impacts	SDGs 1, 10, 17, 2, 3, 8	31-33, 95-103
<b>Procurement Practices 2016</b>			
204-1	Proportion of spending on local suppliers	SDG 12	/
<b>Anti-corruption 2016</b>			
205-1	Operations assessed for risks related to corruption	SDG 16	88
205-2	Communication and training about anti-corruption policies and procedures	SDG 16	88
205-3	Confirmed incidents of corruption and actions taken	SDG 16	88
<b>Anti-competitive Behavior 2016</b>			
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	SDG 16	90
<b>Tax 2019</b>			
207-1	Approach to tax	SDG 8	1
207-2	Tax governance, control, and risk management	SDG 8	1
207-3	Stakeholder engagement and management of concerns related to tax	SDG 8	1
207-4	Country-by-country reporting	SDG 8	1
<b>Materials 2016</b>			
301-1	Materials used by weight or volume	SDGs 12, 8	/
301-2	Recycled input materials used	SDGs 12, 8	71-74
301-3	Reclaimed products and their packaging materials	SDGs 12, 8	71-74
<b>Energy 2016</b>			
302-1	Energy consumption within the organization	SDGs 12, 13, 7, 8	58
302-2	Energy consumption outside of the organization	SDGs 12, 13, 7, 8	57
302-3	Energy intensity	SDGs 12, 13, 7, 8	58
302-4	Reduction of energy consumption	SDGs 12, 13, 7, 8	51-77
302-5	Reductions in energy requirements of products and services	SDGs 12, 13, 7, 8	51-77

Topic-specific Disclosures			
<b>Water and Effluents 2018</b>			
303-1	Interactions with water as a shared resource	SDG 6	61–62
303-2	Management of water discharge-related impacts	SDG 6	61–62
303-3	Water withdrawal	SDG 6	61–62
303-4	Water discharge	SDG 6	61–62
303-5	Water consumption	SDG 6	61–62
<b>Biodiversity 2016</b>			
304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	SDGs 14, 15, 6	/
304-2	Significant impacts of activities, products, and services on biodiversity	SDGs 14, 15	26–28
304-3	Habitats protected or restored	SDGs 14, 15, 6	26–28
304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	SDGs 14, 15, 6	/
<b>Emissions 2016</b>			
305-1	Direct (Scope 1) GHG emissions	SDGs 12, 13, 14, 15, 7	57
305-2	Energy indirect (Scope 2) GHG emissions	SDGs 12, 13, 14, 15, 7	57
305-3	Other indirect (Scope 3) GHG emissions	SDGs 12, 13, 14, 15, 7	57
305-4	GHG emissions intensity	SDGs 13, 14, 15, 7	58
305-5	Reduction of GHG emissions	SDGs 13, 14, 15, 7	58
305-6	Emissions of ozone-depleting substances (ODS)	SDGs 12, 3	None
305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	SDGs 12, 14, 15, 3	/
<b>Waste 2020</b>			
306-1	Water discharge by quality and destination	SDGs 12, 14, 3, 6	/
306-2	Waste by type and disposal method	SDGs 12, 3, 6	61–62, 74
306-3	Significant spills	SDGs 12, 14, 15, 3,6	None
306-4	Transport of hazardous waste	SDGs 12, 3	61
306-5	Water bodies affected by water discharges and/or runoff	SDGs 14, 15, 6	/
<b>Environmental Compliance 2016</b>			
307-1	Non-compliance with environmental laws and regulations	SDG 16	None
<b>Supplier Environmental Assessment 2016</b>			
308-1	New suppliers that were screened using environmental criteria	SDG 12	63, 91–94
308-2	Negative environmental impacts in the supply chain and actions taken	SDG 12	63, 91–94
<b>Employment 2016</b>			
401-1	New employee hires and employee turnover	SDGs 5, 8	80–86
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	SDGs 5, 8	80–86
401-3	Parental leave	SDGs 5, 8	80–86

Topic-specific Disclosures			
<b>Labor/Management Relations 2016</b>			
402-1	Minimum notice periods regarding operational changes		/
<b>Occupational Health and Safety 2018</b>			
403-1	Occupational health and safety management system	SDGs 3, 8	80–86
403-2	Hazard identification, risk assessment, and incident investigation	SDGs 3, 8	80–86
403-3	Occupational health services	SDGs 3, 8	80–86
403-4	Worker participation, consultation, and communication on occupational health and safety	SDGs 3, 8	80–86
403-5	Worker training on occupational health and safety	SDGs 3, 8	80–86
403-6	Promotion of worker health	SDGs 3, 8	80–86
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	SDGs 3, 8	80–86
403-8	Workers covered by an occupational health and safety management system	SDGs 3, 8	80–86
403-9	Work-related injuries	SDGs 3, 8	/
403-10	Work-related ill health	SDGs 3, 8	80–86
<b>Training and Education 2016</b>			
404-1	Average hours of training per year per employee	SDGs 4, 5, 8	84
404-2	Programs for upgrading employee skills and transition assistance programs	SDGs 4, 5, 8	84
404-3	Percentage of employees receiving regular performance and career development reviews	SDGs 5, 8	100%
<b>Diversity and Equal Opportunity 2016</b>			
405-1	Diversity of governance bodies and employees	SDGs 5, 8	85–86
405-2	Ratio of basic salary and remuneration of women to men	SDGs 10, 5, 8	/
<b>Non-discrimination 2016</b>			
406-1	Incidents of discrimination and corrective actions taken	SDGs 16, 5, 8	/
<b>Freedom of Association and Collective Bargaining 2016</b>			
407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	SDG 8	/
<b>Child Labor 2016</b>			
408-1	Operations and suppliers at significant risk for incidents of child labor	SDGs 16, 8	85
<b>Forced or Compulsory Labor 2016</b>			
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	SDG 8	85
<b>Security Practices 2016</b>			
410-1	Security personnel trained in human rights policies or procedures	SDG 16	100%
<b>Rights of Indigenous Peoples 2016</b>			
411-1	Incidents of violations involving rights of indigenous peoples	SDG 10	/

Topic-specific Disclosures			
<b>Human Rights Assessment 2016</b>			
412-1	Operations that have been subject to human rights reviews or impact assessments	SDG 16	104
412-2	Employee training on human rights policies or procedures	SDG 16	104
413-3	Significant investment agreements and contracts that include human rights clauses or that underwent human rights screening	SDG 16	104
<b>Local Communities 2016</b>			
413-1	Operations with local community engagement, impact assessments, and development programs	SDGs 12, 17	95-103
413-2	Operations with significant actual and potential negative impacts on local communities	SDGs 12, 17	/
<b>Supplier Social Assessment 2016</b>			
414-1	New suppliers that were screened using social criteria	SDGs 12, 17	91-94
414-2	Negative social impacts in the supply chain and actions taken	SDGs 12, 17	91-94
<b>Public Policy 2016</b>			
415-1	Political contributions	SDG 16	/
<b>Customer Health and Safety 2016</b>			
416-1	Assessment of the health and safety impacts of product and service categories	SDGs 12, 16	71-77
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	SDGs 12, 16	/
<b>Marketing and Labeling 2016</b>			
417-1	Requirements for product and service information and labeling	SDGs 12, 16	89-90
417-2	Incidents of non-compliance concerning product and service information and labeling	SDGs 12, 16	/
417-3	Incidents of non-compliance concerning marketing communications	SDGs 12, 16	/
<b>Customer Privacy 2016</b>			
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	SDGs 12, 16	/
<b>Socioeconomic Compliance 2016</b>			
419-1	Non-compliance with laws and regulations in the social and economic area	SDGs 12, 16	/

## Appendix III Acronyms and Abbreviations

Acronym/Abbreviation	Full Name
3GPP	3rd Generation Partnership Project
5G	The 5th Generation Mobile Communication Technology
AAU	Active Antenna Unit
AEO	Authorized Economic Operator
AI	Artificial Intelligence
AP	Access Point
App	Application
APT	Advanced Persistent Threat
ASEAN	Association of Southeast Asian Nations
BCG	Business Conduct Guidelines
BCM	Business Continuity Management
BCP	Business Continuity Plan
BOD	Board of Directors
CAHRAs	Conflict-Affected and High-Risk Areas
CCO	Chief Compliance Officer
CCSK	Certificate of Cloud Security Knowledge
CEC	Committee of Ethics and Compliance
CEO	Chief Executive Officer
CESA	China Electronics Standardization Association
CIPP	Certified Information Privacy Professional
CISSP	Certified Information Systems Security Professional
CMRT	Conflict Minerals Reporting Template
CQC	China Quality Certification Center
CRCPE	Check, Root Cause Analysis, Correct, Prevent, and Evaluate
CRT	Cobalt Reporting Template
CSD	Corporate Sustainable Development
CSR	Corporate Social Responsibility
EBI	Enterprise Building Integrator
EHS	Environment, Health and Safety
EMS	Electronics Manufacturing Services
EOL	End of Life
ESG	Environmental, Social, and Governance
ETSI	European Telecommunications Standards Institute
EU	European Union
FTTH	Fiber to the Home
FTTM	Fiber to the Machine

Acronym/Abbreviation	Full Name
FTTR	Fiber to the Room
GDPR	General Data Protection Regulation
GeSI	Global Enabling Sustainability Initiative
GHG	Greenhouse Gas
GLOMO	Global Mobile Awards
GRI	Global Reporting Initiative
GSM	Global System for Mobile Communications Association
HDD	Hard Disk Drive
HR	Human Resources
HWD	HUAWEI Women Developers
IAPP	International Association of Privacy Professionals
ICPC	International Collegiate Programming Contest
ICT	Information and Communications Technology
IEA	International Energy Agency
IETF	Internet Engineering Task Force
IMP	Incident Management Plan
IoT	Internet of Things
IP	Internet Protocol
IP	Intellectual Property
IPD	Integrated Product Development
IPE	Institute of Public and Environmental Affairs
ISC	Integrated Supply Chain
ISO	International Organization for Standardization
IT	Information Technology
ITR	Issue to Resolution
ITU	International Telecommunication Union
IUCN	International Union for Conservation of Nature
JAC	Joint Audit Cooperation
JDM	Joint Design Manufacturer
LED	Light Emitting Diode
LTC	Lead to Cash
MFP	Manager Feedback Program
MOOC	Massive Open Online Course
MoU	Memorandum of Understanding
MWI	Manufacturing Work Instruction
NbS	Nature-based Solution
NEO	New Employee Orientation
NESAS	Network Equipment Security Assurance Scheme

Acronym/Abbreviation	Full Name
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
OECD	Organisation for Economic Co-operation and Development
OFPV	Offshore Floating Photovoltaic
PB	Petabyte
PC	Personal Computer
PDCA	Plan, Do, Check, Act
PSIRT	Product Security Incident Response Team
PUE	Power Usage Effectiveness
R&D	Research and Development
RBA	Responsible Business Alliance
RBC	Responsible Business Conduct
RCI	Responsible Cobalt Initiative
RDC	Regional Distribution Center
RFCx	Rainforest Connection
RGC	Risk, Governance, and Control
RMAP	Responsible Minerals Assurance Process
RMI	Responsible Minerals Initiative
RRU	Remote Radio Unit
SCAS	Security Assurance Specifications
SDIF	Signal Direct Injection Feeding
SME	Small and Medium-sized Enterprise
STEAM	Science, Technology, Engineering, the Arts, and Mathematics
STEM	Science, Technology, Engineering and Mathematics
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TOR	Top of Rack
UN SDGs	United Nations Sustainable Development Goals
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	UN Framework Convention on Climate Change
UNGC	United Nations Global Compact
VPN	Virtual Private Network
VR	Virtual Reality
Wi-Fi	Wireless Fidelity
WTO	World Trade Organization
WWF	World Wide Fund for Nature

## Appendix IV External Assurance Statement



# ASSURANCE STATEMENT

### SGS-CSTC'S REPORT ON SUSTAINABILITY ACTIVITIES IN THE HUAWEI INVESTMENT & HOLDING CO., LTD.'S SUSTAINABILITY REPORT FOR 2021

#### NATURE AND SCOPE OF THE ASSURANCE/VERIFICATION

SGS-CSTC STANDARDS TECHNICAL SERVICES CO., LTD. (hereafter as "SGS") was commissioned by the Huawei Investment & Holding Co., Ltd. (hereafter as "HUAWEI") to conduct an independent assurance of the Chinese version of HUAWEI's Sustainability Report for 2021 (hereafter as "the Report"). The scope of the assurance, based on the SGS Sustainability Report Assurance methodology, included the text, and data in accompanying tables, contained in the Report. Other data and information disclosed were not included in this assurance process. On-site assurance process was executed at the Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, Guangdong, P.R. China.

The HUAWEI's management and relevant functional departments are responsible for the information contained in the Report.

Our responsibility is to express an opinion on the text, data, graphs and statements within the scope of verification with the intention to inform all HUAWEI's stakeholders.

The SGS protocols are based upon internationally recognized guidance, including the Principles contained within the GRI STANDARDS for accuracy and reliability and the guidance on levels of assurance contained within the AA1000 series of standards and guidance for Assurance Providers.

This report has been assured at a moderate level of scrutiny using our protocols for:

- evaluation of content veracity;
- evaluation of the report against the GRI STANDARDS.

The assurance comprised a combination of pre-assurance research, onsite interviews with relevant employees in the HUAWEI headquarters, documentation and record online review and validation with affiliates bodies where relevant.

Financial data drawn directly from independently audited financial accounts has not been checked back to source as part of this assurance process.

#### STATEMENT OF INDEPENDENCE AND COMPETENCE

SGS affirm our independence from HUAWEI, being free from bias and conflicts of interest with the organization, its subsidiaries and stakeholders.

The assurance team was assembled based on their knowledge, experience and qualifications for this assignment.

#### VERIFICATION/ ASSURANCE OPINION

On the basis of the methodology described and the verification work performed, the information and data contained within the Report verified is accurate, reliable and provides a fair and balanced representation of HUAWEI sustainability activities in 2021.

The assurance team is of the opinion that the Report can be used by the Reporting Organization's Stakeholders.

We believe that the organization has chosen an appropriate option for the reporting.

## **GRI STANDARDS CONCLUSIONS, FINDINGS AND RECOMMENDATIONS**

In our opinion the Report is presented in accordance with the core opinion for GRI STANDARDS and fulfils all the required content and quality criteria.

### **Principles**

#### **Stakeholder Engagement**

HUAWEI had identified its stakeholders who affected by its activities and considered the reasonable expectations and interests from stakeholders, and took some certain ways to communicate and exchange information with stakeholders.

#### **Sustainability Context**

HUAWEI had presented the efforts on sustainability development related to economic, environmental and social aspects and combined the performance in the wide context as well.

#### **Materiality**

Based on the topics concerned by the stakeholders, HUAWEI had considered reasonably disclosing issues and indicators with materiality, which substantively influencing the assessments and decisions of stakeholders, to reflect the organization's significant economic, environmental and social impacts.

#### **Completeness**

The Report included coverage of material aspects and boundaries, to reflect significant economic, environmental and social impacts and enable stakeholders to assess the organization's performance in the reporting period.

#### **Balance**

The Report followed the balance principle and truthfully disclosed the positive and negative information.

#### **Comparability**

HUAWEI had disclosed performance indicators in 2021, previous data of key indicators were disclosed, which could help stakeholders to understand and compare the improved performance year by year.

#### **Accuracy**

HUAWEI's information in the report was accurate, enable to release more qualitative and quantitative information with indicators for stakeholders.

#### **Timeliness**

Verification shown that the reported data and information was timely and effective. HUAWEI discloses its CSR report annually, which indicates good timeliness.

#### **Clarity**

The Report was presented different ways with words, charts, graphics and pictures, also described with actual cases to ensure the stakeholders understanding easily.

#### **Reliability**

The data and information can be traced and verified.

#### **Management Approach**

The Report had disclosed the management approach of identified material topics.

#### **General Disclosures**

The general disclosures were presented in accordance with the core option of GRI Standards.

**Topic-Specific Disclosures**

HUAWEI's topic-specific disclosures related to the material topics in economic, environmental, and social areas were in accordance with the core option of GRI Standards.

**Findings and recommendations**

Good practices and recommendations for sustainability report and management process were described in the internal management report which has been submitted to the management of HUAWEI for continuous improvement.

**Limitations of assurance**

Data tracing on headquarters level, not including original data of all subsidiaries.

The assurance process only involved interviews with the heads of relevant departments and certain employees of headquarters and consultation with relevant documents. No external stakeholder involved.

Signed:

A handwritten signature in black ink, consisting of stylized, cursive letters.

For and on behalf of SGS-CSTC Standards Technical Services Co., Ltd.  
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