



ESPRESSIF | 688018.SH

# Espressif 2023 ESG Report

SUSTAINABLE  
DEVELOPMENT  GOALS

# Contents

## Message from Management

About Espressif  
2023 ESG Highlights  
ESG Management  
ESG Governance  
Materiality Assessments  
Stakeholder Engagement  
ESG Goals

### 01 Environmental Protection

Environmental Governance and Strategy  
Climate Risks and Opportunities  
GHG Emissions Management  
Energy Saving and Emission Reduction  
Circular Economy Lifecycle  
Biodiversity Protection

### 03 Innovation

In-house R&D Commitment  
IP Management  
Technological innovation  
Product and Service Innovation  
Solution Innovation  
Technical Association Participation

### 05 Business Sustainably

Innovative and comprehensive service  
Optimizing Customer Experience  
Products Quality Management  
Customer Feedback

### 07 Governance

Governance Structure  
Protection of Shareholder Rights  
Compliance & Ethics  
Internal Control and Risk Management  
Information security

### 02 Community Symbiosis

Sharing Booms Industry  
Espressif Developer Conference 2023  
High-Quality Professional Education

### 04 Talent

Diversity and Inclusivity  
Employee Rights  
Career Development  
Occupational Health and Safety

### 06 Supply Chain Management

Supplier Code of Conduct  
Control Risks at the Source  
Multi-faceted Responsibility Management

### 08 Appendix

GRI Content Index  
About This Report  
Report Feedback and Comments

# Message from Management

In a year of challenges and opportunities, Espressif remained committed to our core values of openness, sharing, and innovation. These principles have driven our continuous development in technology, market, and social responsibility, particularly in our Environment, Social, and Governance (ESG) initiatives.

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**1,433** M  
Revenue

**136** M  
Net Income

In 2023, the company reported operating revenues of RMB 1.43 billion, up 12.74% year-on-year, and net income of RMB 0.14 billion, marking a 39.95% increase from the previous year.

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## Driving Innovation, Leading with Technology

In 2023, our technological innovations have achieved remarkable results, particularly in the field of AIoT. Our ESP32-S3 and ESP32-P4 chips stand out as milestones on this journey of innovation. The ESP32-S3 chip, equipped with Edge AI capabilities, supports an integrated functionality of voice, connection, and display control, providing robust support for smart home and industrial IoT applications. On the other hand, the ESP32-P4 chip takes a significant step forward, not only offering higher computational

power to support complex Multi-IO, HMI, and AIoT applications but also meeting the high-performance computing needs of applications that combine cameras, displays, and AI processing, offering a more powerful and flexible solution to the market.

## Open Source and Ecosystem Prosperity

It is worth mentioning that Espressif has always been committed to the philosophy of open source and sharing. Our extensive open technical documents and the vast array of open-source code projects on platforms such as GitHub provide rich learning materials and resources for the development of AI models and various applications. This not only significantly improves the product development efficiency of downstream developers but also promotes the prosperity of our developer ecosystem, ultimately bringing more B2B business opportunities to Espressif Technology, realizing a win-win situation for both the company and the developer community.

Besides, through collaborations with educational institutions and contributions to STEM programs, we aim to inspire and empower young minds, fostering an environment where technology and creativity can flourish.

## Green Technology, Shared Future

While pursuing technological innovation, we have not forgotten our responsibility for environmental protection. By developing low-energy green technologies and sharing these achievements with global partners, we have collectively promoted the industry's green transformation and sustainable development.

## Strengthening Governance

Espressif Technology adheres to high standards of corporate governance. By establishing a transparent, efficient management system, we ensure the healthy and sustainable development of the company and continue to drive innovation in technology and management models to adapt to the ever-changing market and societal needs.

## Looking Forward: A New Chapter in Technology

Espressif will continue to adhere to our values of openness, sharing, and innovation, collaborating with global partners to explore new technologies and models. We believe our collective efforts will lead to a better world.

— The Espressif Technology Management Team



## About Espressif



Wi-Fi MCU global market share

**Leading**



Espressif IoT chips  
global shipment volume  
exceeds

**1 Billion**



Providing a variety of AIoT  
solutions to hundreds of  
millions of users worldwide

**Hundreds of  
Millions**

## A World-Leading AIoT Platform

Espressif System (688018.SH) is a global fabless semiconductor company, established in 2008 and listed in July 2019. We have eight R&D centers in five countries, including China, India, the Czech Republic, Brazil and Singapore, with a team from almost 30 countries and regions. Espressif has been dedicated to the research and development and design of software and hardware products in the AIoT field for many years, focusing on developing wireless communication SoCs that are highly integrated, low-power, high-performance, secure, stable, and cost-effective. We are committed to providing secure, stable, and energy-saving AIoT solutions. At the same time, we adhere to technological openness, empowering developers to create intelligent products with Espressif's solutions and build a smart world of interconnected things.

We uphold the "craftsman" spirit, providing customers with outstanding smart hardware and comprehensive software solutions to help them quickly realize product intelligence and shorten the development cycle. For this reason, Espressif's chips and modules have become increasingly popular among customers and are widely used in smart home, consumer electronics, industrial control, health and medical, vehicular networking, energy management, education, and other fields.

## Espressif's Worldwide Expansion

### China

Shanghai    Suzhou    Wuxi    Hefei

### India

Pune

### Brazil

Campinas

### Czech Republic

Brno

### Singapore



## A Complete-Solution Provider

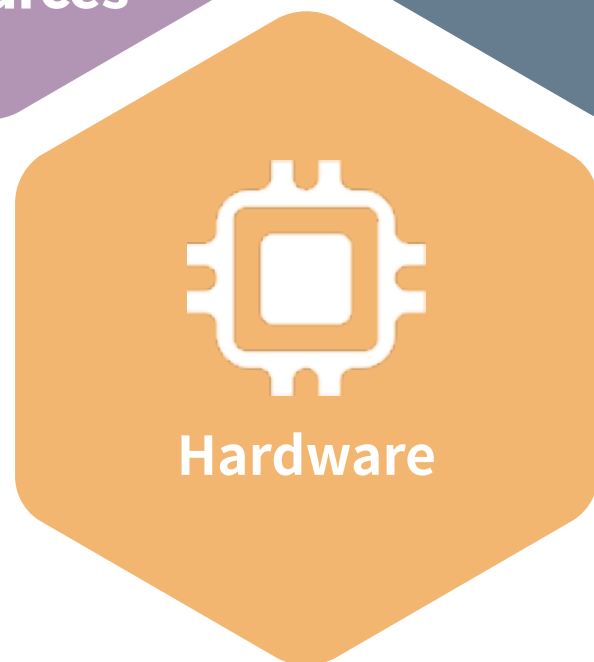
The ESP RainMaker, ESP-ADF, ESP-WHO, Mesh development framework ESP-MDF, etc., accelerate the implementation of AIoT projects

Espressif provides a wealth of technical documentation and resources, including technical specifications, technical reference manuals, user guides, API references, test reports, etc

Espressif offers solutions for audio, face recognition, HMI, and device connectivity, which are widely applied in smart home, industrial control, consumer electronics, and other fields



ESP-IDF integrates a real-time operating system, peripheral drivers, networking protocols such as Wi-Fi and Bluetooth, libraries, and development tools, offering a wealth of documentation and sample resources



High-performance Wi-Fi + Classic Bluetooth / Low Power Bluetooth + Thread / Zigbee + AI SoCs, modules, and development boards.

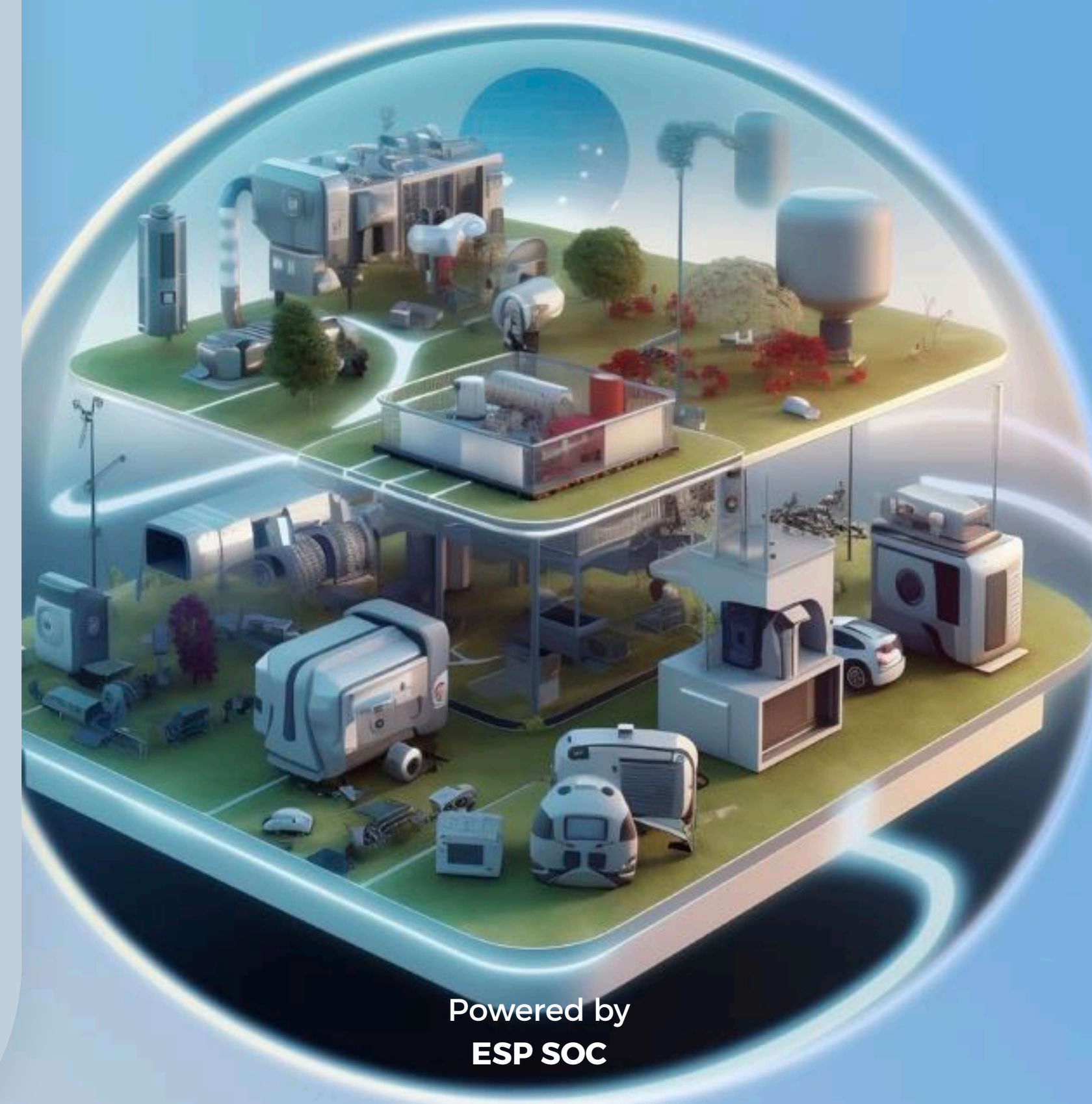
## Core Values

Integrity, Passion, Openness, Collaboration, Innovation

## Vision and Mission

Enabling Intelligent Life for the World

Advancing the intelligent connection of all things through shared technology



# Global Ecosystem

Espressif's open-source ecosystem is highly renowned among the global IoT developer community. Numerous international engineers and tech enthusiasts actively develop new software applications based on Espressif's hardware products and foundational software development kits. They freely exchange and share their experiences with the company's products and technologies online.

## Development Platforms

Espressif's IoT development framework, ESP-IDF, has a mature and strict development and maintenance process. Adhering to the spirit of openness, Espressif's products also support operating systems such as NuttX, Zephyr, Vela, and OpenHarmony, covering a vast global developer community.

Espressif's products are also compatible with development platforms such as Arduino IDE, Amazon FreeRTOS, NodeMCU, MicroPython, PlatformIO, and Mongoose OS.



**4,100K+**

4,100 K+ views for the most popular videos of ESP32-powered projects on YouTube



**200+**

200+ books written about Espressif's SoCs in 10+ languages

**CSDN**

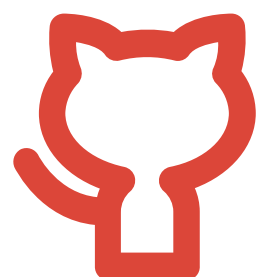
**170,053**

The search results for ESP32 and ESP8266 on CSDN technical blog reached 170,053



**76K+**

76 K+ members of ESP32 groups on Reddit



**102K+**

102 K+ open-source, Espressif-powered projects on GitHub



## 2023 ESG Rating Results



## Corporate Honors

### 2023

- China TOP 10 Wireless Connection Companies, AspenCore
- Espressif Technology is among the first globally to support Bluetooth Mesh Protocol 1.1, Bluetooth SIG
- Best Partner Award of Xiaomi IoT Module Business of the Year 2023, Xiaomi
- 2023 National College Students' IoT Design Competition Best Support Award, National Association of Higher Education Computer Education, National College Students' IoT Design Competition Organizing Committee
- Member of the Fourth Council of Pudong New Area R&D Institutions Association in Shanghai, Pudong New Area R&D Institutions Association in Shanghai

### 2022

- Top Ten "Annual Open Source Contribution Enterprise" in the 2022 China Developers Influence List, CSDN
- Tech G "Outstanding Technological Innovation Award", Shanghai International Consumer Electronics Show
- 2022 National College Students' IoT Design Competition Best Support Award, National Association of Higher Education Computer Education, National College Students' IoT Design Competition Organizing Committee
- Most Innovative STAR Market Listed Company, China STAR Market Daily, Cailianpress

### 2021

- The 6th "China IoT Innovation Award", ElecFans
- Most Valuable STAR Market Listed Company of 2021, China STAR Market Daily
- Most Investment-Worthy Company of the Year 2021 on the Science and Technology Innovation Board, SMDC
- Industry New Star Award, Shanghai Integrated Circuit Industry Association
- Member of the Sixth Council of Shanghai Integrated Circuit Industry Association, Shanghai Integrated Circuit Industry Association

### 2020

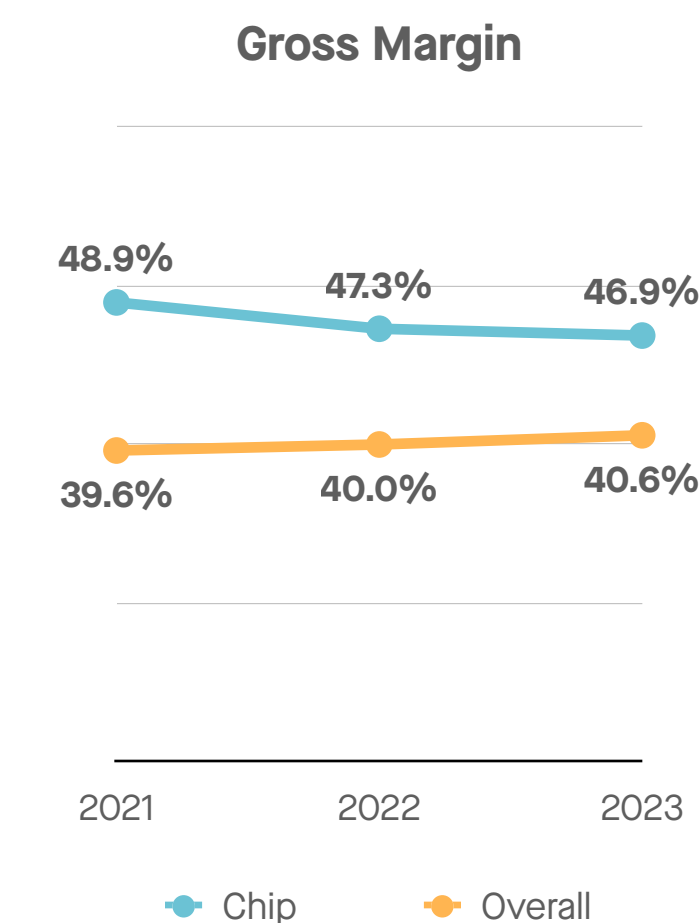
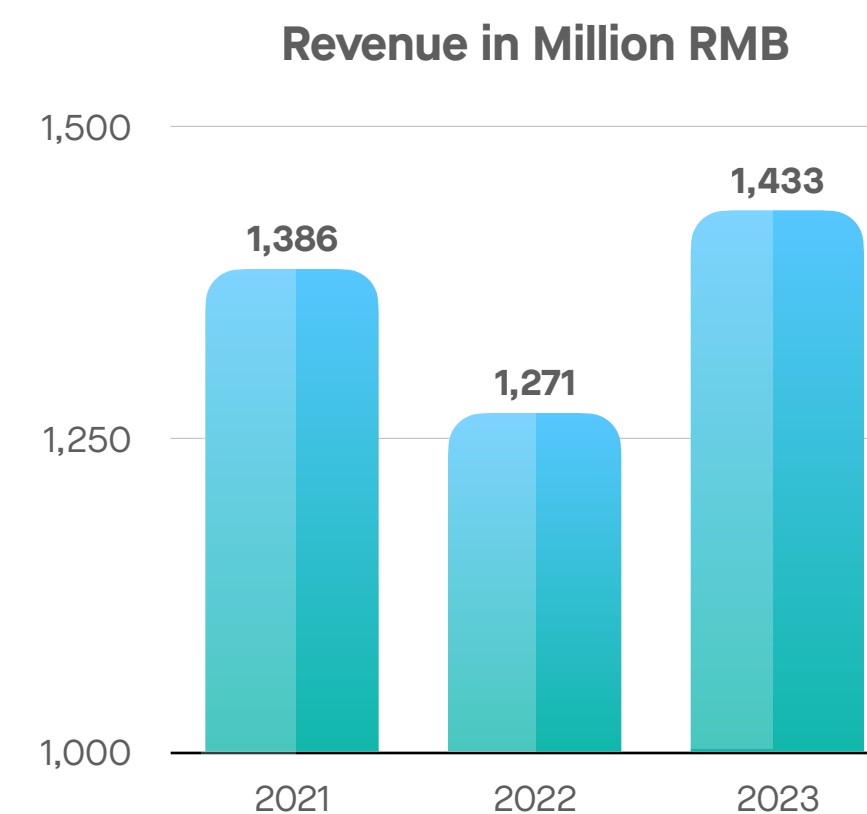
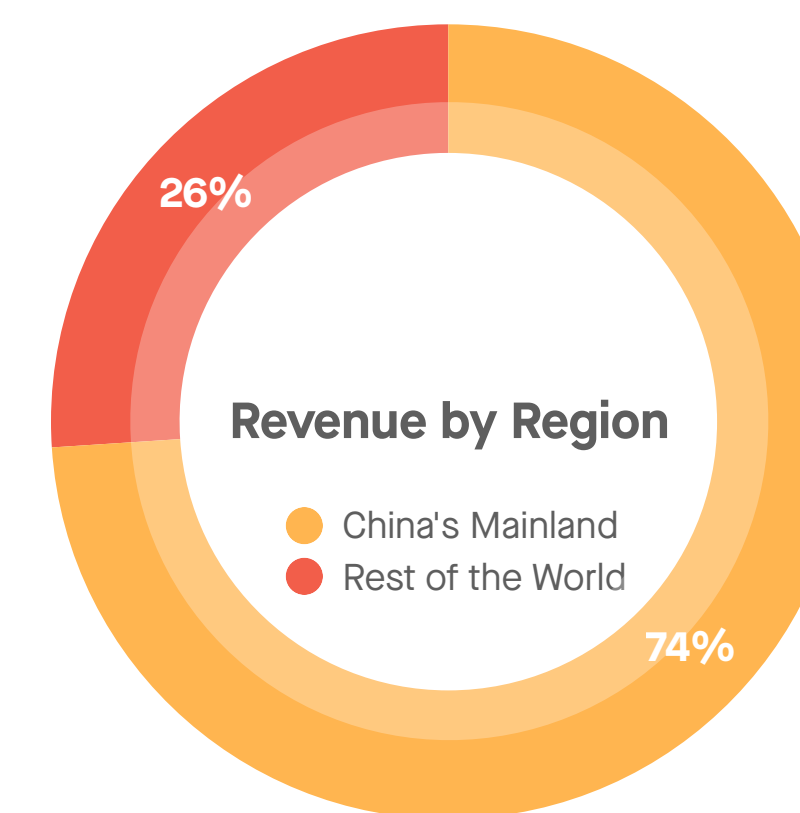
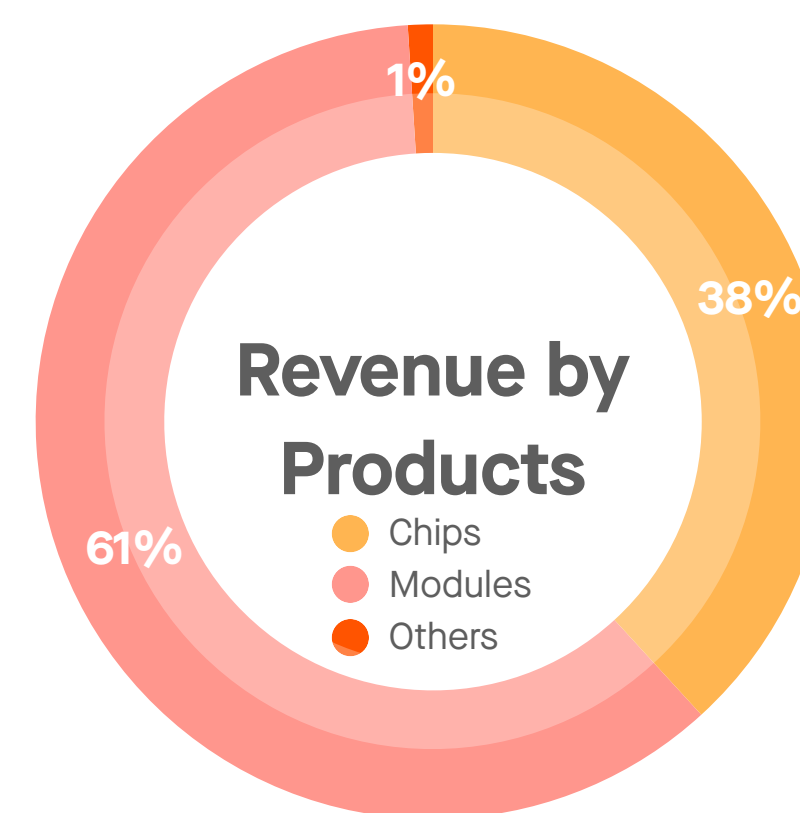
- Tencent Cloud IoT Most Valuable Partner of the Year 2020, Tencent Cloud
- Forbes China's Most Innovative Companies List of 2020, Forbes
- The 14th China Listed Company Value Selection IPO New Star Award, Securities Times
- Outstanding Supplier of Xiaomi Ecological Chain IoT Module in 2020, Xiaomi
- Best STAR Market Listed Company of Sci-Tech Innovation Star in 2020, Awarded by: China STAR Market Daily, Cailianpress

## Key Financial Data

In 2023, Espressif's revenue reached 1,433.07 million RMB, with a net income of 136.21 million RMB. The Non-GAAP net income was 154.94 million RMB. For more financial information, please refer to our 2023 Annual Report.

### Core Financial Data

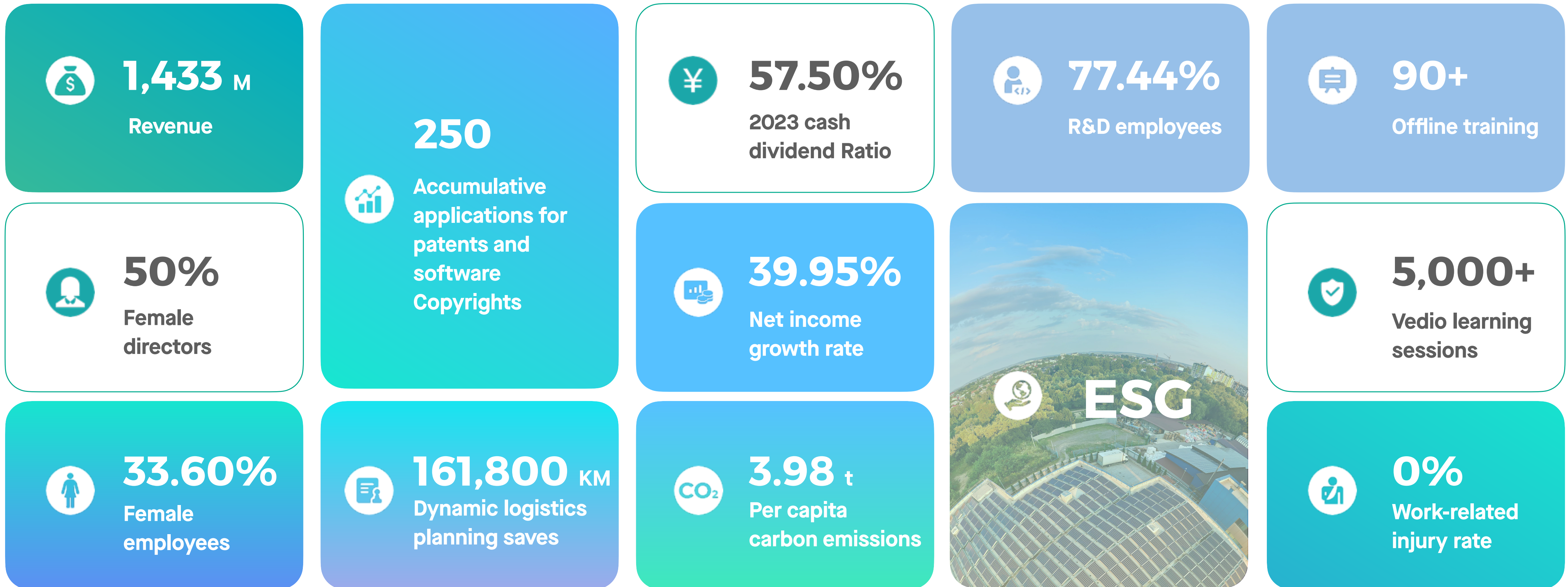
CNY	2023	2022	2021
Revenue	1,433,064,911	1,271,127,201	1,386,371,541
Revenue YoY (%)	12.74	-8.31	66.77
Research and development expenses	403,713,557	337,121,814	271,689,981
Net income	136,204,637	97,323,103	198,427,708
Non-GAAP net income	154,942,053	112,049,122	220,215,708
Total assets	2,203,800,366	2,082,796,825	2,129,056,143
Total shareholders' equity	1,913,000,228	1,826,677,535	1,823,017,913
Weighted ROE (%)	7.14	5.36	11.52
Net cash provided by operating activities	302,597,343	71,321,658	31,460,857
Basic EPS	1.7012	1.2129	2.4775
Diluted EPS	1.6929	1.2127	2.4566





# 2023 ESG Highlights

Espressif is committed to enabling developers worldwide to utilize our technology by open-sourcing it, facilitating the development of connected, smart devices. We integrate the principles of technological innovation, societal contribution, environmental responsibility, and energy efficiency throughout our business operations. Leveraging our extensive experience in the AIoT field, Espressif will continue to contribute to the creation of a more intelligent, secure, and sustainable IoT future.



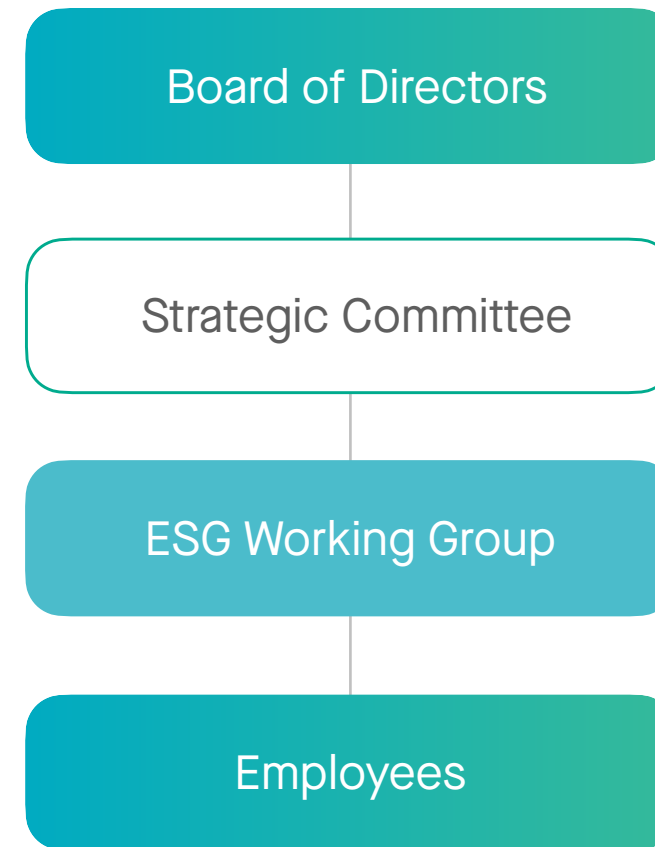
# ESG Management

## ESG Governance

Espressif's Environmental, Social, and Governance (ESG) is collaboratively managed by all members, covering the board of directors, managers of various departments, and all employees. The Strategic Committee of the Board of Directors is a specialized governance body established by the board according to the company's bylaws. It is responsible for guiding and supervising ESG matters.

The Strategic Committee of the Board establishes an ESG Working Group responsible for implementing the committee's directives into company-wide plans. This includes but is not limited to producing the company's annual Environmental, Social, and Governance (ESG) report, organizing assessments to learn about the company's annual ESG performance, the risks and opportunities faced, and formulating corresponding improvement plans. The ESG Working Group reports to the Strategic Committee of the Board at least once a year on the company's ESG management policies, plans, actions, and reports.

### ESG Governance Framework



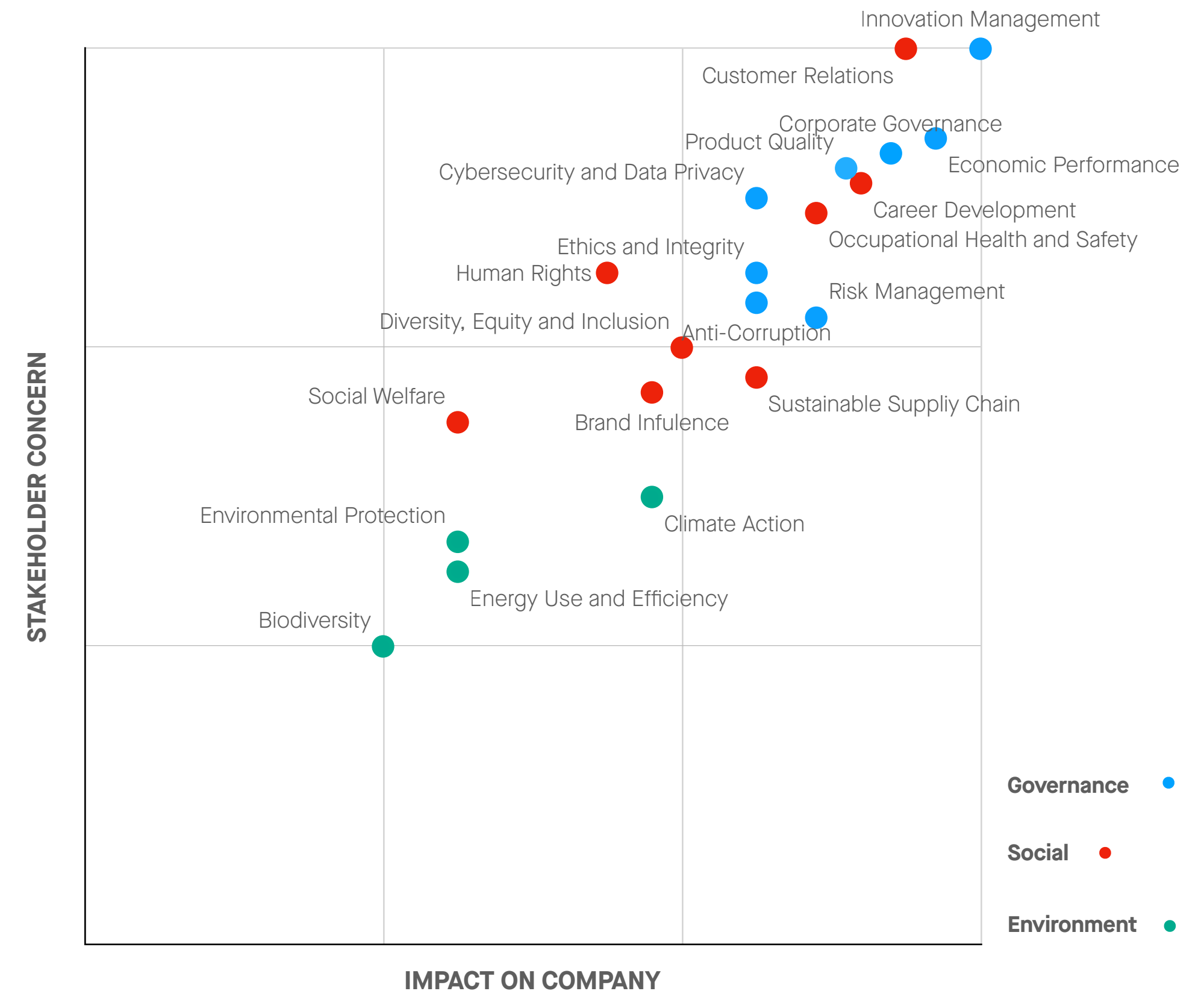
## Materiality Assessments

During the reporting period, the company conducted an ESG material topics analysis to help identify the most critical matters to the company and its stakeholders and to provide guidance when developing ESG management plans and measures. The ESG Working Group identified priority issues through the following procedures:

- Our process prioritized selecting issues that concern stakeholders. We based our selection on standards such as the CASS-CSR4.0, the GRI Standards, the National Standard of China's Guidance for Social Responsibility Reporting (GB/T36001-2015), and the SDGs Enterprise Action Guide.
- Collecting opinions on the importance of concerned issues from various stakeholders through written feedback, surveys, telephone discussions, consulting with the company's management and the board committees;
- Assessing and ranking substantive issues based on the judgments of stakeholders and executives and reporting them to the Strategic Committee of the Board.

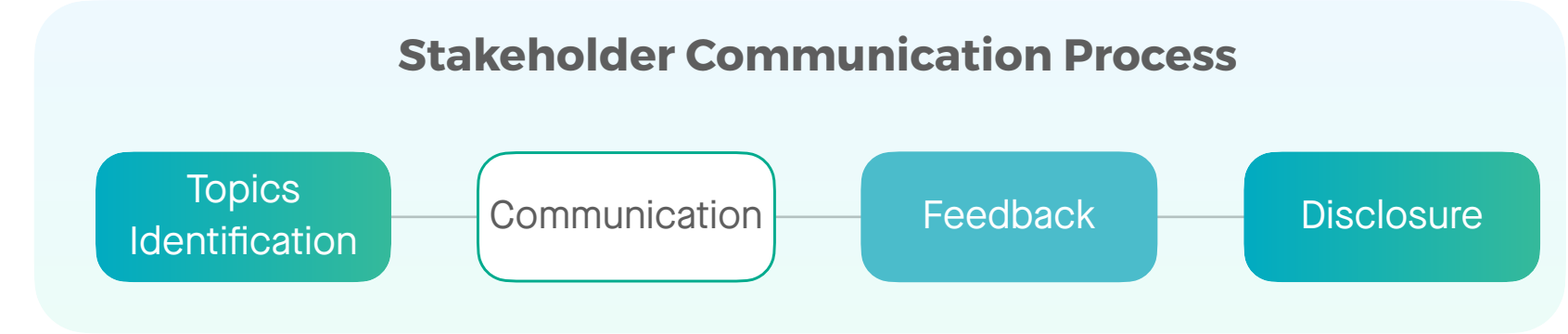
By positioning the results of the assessment of material topics within a matrix, we can intuitively see the most critical issues to internal and external stakeholders. The priority issues to focus on are:

- Innovation Management
- Customer Relations
- Economic Performance
- Corporate Governance
- Product Quality
- Career Development
- Occupational Health and Safety
- Cybersecurity and Data Privacy
- Risk Management
- Ethics and Integrity
- Anti-Corruption



# Stakeholder Engagement

Based on the development of its operations and changes in the external environment, Espressif has identified seven main types of stakeholders: customers, employees, developers, suppliers, investors, governments, and the social public/media. We recognize the focus areas of stakeholders and establish communication channels to respond promptly, ensuring that our significant issues align with stakeholders' expectations, market trends, and business opportunities.



Main Stakeholders	Customers	Employees	Developers	Suppliers	Investors	Governments	Social Public/Media
Focus Areas	<ul style="list-style-type: none"> <li>High-quality products</li> <li>Comprehensive service system</li> <li>Operating capabilities</li> <li>Communication channels</li> <li>Competitiveness</li> <li>Innovation</li> <li>Cybersecurity and data privacy</li> <li>Compliance &amp; Ethics</li> <li>Corporate governance</li> <li>Risk management</li> </ul>	<ul style="list-style-type: none"> <li>Employee rights</li> <li>Working environment and corporate culture</li> <li>Training and development</li> <li>Opportunity for promotion</li> <li>Compensation and decent living</li> <li>Health and safety</li> <li>Cybersecurity and data privacy</li> <li>Personal competitiveness</li> </ul>	<ul style="list-style-type: none"> <li>Open-source Community</li> <li>Accessible green and secure AIoT technology</li> <li>Communication between developers</li> <li>Innovation</li> </ul>	<ul style="list-style-type: none"> <li>Supplier Management</li> <li>Fair trading</li> <li>Honoring contracts</li> <li>Win-win strategy</li> <li>Sustainable corporation</li> <li>Compliance &amp; Ethics</li> <li>Information security</li> </ul>	<ul style="list-style-type: none"> <li>Economic growth</li> <li>Corporate governance</li> <li>Risk management</li> <li>Information disclosure</li> <li>Investors relation</li> <li>Competitiveness</li> <li>Industry and market development</li> <li>Innovation</li> </ul>	<ul style="list-style-type: none"> <li>Compliance &amp; Ethics</li> <li>Product safety and reliability</li> <li>Employment</li> <li>Drive technological advancement / Support industry development</li> </ul>	<ul style="list-style-type: none"> <li>Social welfare</li> <li>Brand market image</li> <li>Biodiversity protection</li> <li>Corporate governance</li> <li>Employment</li> <li>Drive technological advancement / Support industry development</li> <li>Environmental protection</li> </ul>
Responses	<ul style="list-style-type: none"> <li>Products comply with regulatory compliance requirements</li> <li>Quarterly business review, targeted discussion on customer situations</li> <li>Smooth channels for handling customer complaints / Timely and efficient complaint resolution</li> <li>At least one customer satisfaction survey per year</li> <li>Regular business visits and frequent communication of customer needs</li> <li>Open and abundant technical documentation resources</li> </ul>	<ul style="list-style-type: none"> <li>Quarterly CEO letter, conveying the company's cultural concepts</li> <li>Publishing a monthly company newsletter to help employees understand company developments</li> <li>Providing various online and offline training on different topics</li> <li>Annual employee confidentiality, business ethics, and compliance training</li> <li>Biannual performance evaluations, with irregular performance feedback</li> <li>Implementation of health and safety</li> <li>Providing employees with welfare</li> <li>Offering competitive salaries</li> <li>Employee satisfaction surveys and feedback</li> <li>Tipoff email</li> </ul>	<ul style="list-style-type: none"> <li>Follow the rules of the open-source community</li> <li>Actively participate in community open-source projects, provide solutions and code</li> <li>Open and abundant technical documentation resources</li> </ul>	<ul style="list-style-type: none"> <li>Multidimensional assessment for supplier admission</li> <li>CSR audits for suppliers</li> <li>Requirements for certification in quality, safety, and environmental management systems</li> <li>Require suppliers to comply with product regulatory compliance</li> <li>Require suppliers to adhere to Espressif's code of business conduct</li> <li>Regularly conduct supplier evaluations and communications</li> <li>On-site quality audits</li> <li>Timely payment</li> </ul>	<ul style="list-style-type: none"> <li>CEO attends every shareholders' meeting and regular performance briefing sessions, engaging in face-to-face communication with investors</li> <li>holds irregular investor meetings (including online meetings)</li> <li>Respond to investor inquiries through the online "SSE e-Interaction" platform, investor email, and phone</li> <li>Publishing company news through official channels, allowing investors to understand the company's development promptly</li> </ul>	<ul style="list-style-type: none"> <li>Cooperate with government surveys</li> <li>Participate in policy seminars and symposiums</li> <li>Respond to public inquiries about policies</li> <li>Study the latest laws, regulations, and policy changes</li> <li>Pay taxes in accordance with the law</li> </ul>	<ul style="list-style-type: none"> <li>Support education and welfare courses</li> <li>Continuously introduce AIoT technology and products, enabling more people to enjoy the improvement of life quality through technology</li> <li>Release company news and latest technology information on various domestic and foreign media channels such as the official website's news subscription channel, WeChat official account, Zhihu, Bilibili, Twitter, etc.</li> <li>Wildlife conservation programs and regular donations</li> <li>Advocate for green office practices</li> <li>Value chain management from an environmental protection perspective</li> <li>Protect ecological resources</li> <li>Release report regularly</li> </ul>

# ESG Goals



2023 Espressif continued the strategy in 2021 and 2022, integrating the United Nations Sustainable Development Goals (SDGs) into our ESG management. **In line with the company's actual environmental, social, and corporate governance practices, Espressif set short-, medium-, and long-term goals** and incorporated them into the company's long-term development strategy.

Subsequent sections provide details on the progress made in implementing the United Nations Sustainable Development Goals, with each chapter's title page indicating the SDGs addressed by the disclosed content.

Environmental



Social



Corporate Governance



## Goals

	Environmental	Social	Corporate Governance
2030 Goals	<ul style="list-style-type: none"> <li>100% use of recyclable green packaging, reuse of trays and bulk cartons, improving resource utilization efficiency;</li> <li>Advance Espressif's wildlife conservation plan, spread knowledge about endangered wildlife, and call for more people to join the animal protection program;</li> <li>Practice low-carbon concepts, advocate for green office life, and improve systems and methods for verifying and tracking the carbon footprint of the supply chain;</li> <li>Persist in energy-saving and emission-reduction measures, focus on greenhouse gas emissions, identify climate change risks and opportunities promptly, and actively respond.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain product innovation and high standards of product quality, striving to improve customer satisfaction;</li> <li>Continue to improve the signing rate of supplier codes of conduct and the coverage of ESG-related system certifications;</li> <li>Perfect the employee rights protection system, continue to maintain a 0% rate of work-related injuries;</li> <li>Reduce inequality, maintain diversity in employee nationalities and backgrounds, and firmly eliminate discrimination events;</li> <li>Improve the construction of open-source documentation on major platforms, continuously output open-source project codes and technical tutorials, giving back to the developer community;</li> <li>Persist in high-quality communication methods such as global developer conferences;</li> <li>Continue to support STEM education, provide high-quality professional educational resources, and create more employment opportunities.</li> </ul>	<ul style="list-style-type: none"> <li>100% of employees receive annual training on business conduct and ethical standards;</li> <li>Adhere to a gender equality recruitment policy and career development channels, maintaining a female representation of over 25% on the board of directors;</li> <li>Continue to execute and constantly improve the existing employee training system, instilling awareness of safety, integrity, anti-corruption, and green office practices;</li> <li>Continuously strengthen the company's information security and data privacy confidentiality mechanisms, ensure that employees receive 100% of their training, and increase outreach to other stakeholders.</li> </ul>
Long-term Goals	<ul style="list-style-type: none"> <li>Persist in independent research and development of low-power designs, achieving the vision of saving energy through technological innovation;</li> <li>Strengthen the influence on the developer community and the upstream and downstream, actively empowering the community to undergo green and low-carbon transformation and upgrade.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that the proportion of women in management positions is maintained at over 20%;</li> <li>Continuously build a thriving ecosystem based on open documentation and open-source code, adhere to a win-win hardware-software symbiotic strategy, and promote the development and progress of the industry.</li> </ul>	<ul style="list-style-type: none"> <li>Strengthen an efficient corporate governance structure and improve various corporate charters and systems, ensuring transparency, accountability, and fairness;</li> <li>Optimize supply chain management, ensure efficient operation of logistics and supply chains, and avoid potential risks.</li> </ul>

# 01

## Environmental Protection

### SDGs Goals

<b>6</b> CLEAN WATER AND SANITATION 	<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>13</b> CLIMATE ACTION 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 
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# 01 Environmental Protection

## Environmental Governance and Strategy

### Environmental Management System

Espressif's commitment to sustainable development is demonstrated by our adherence to environmental laws and regulations, including the Environmental Protection Law of the PRC, the Energy Conservation Law of the PRC, and other national and local standards. In line with the ISO 14001 standard, we established an environmental management system. It introduces various programs throughout the entire product life cycle to minimize the environmental impact.

### Environmental Risk Management

We research potential risks and opportunities and take proactive measures to address climate change. We promote sustainable development throughout the value chain with initiatives such as green product design, eco-friendly manufacturing, green transportation, energy management, waste disposal, and recycling.

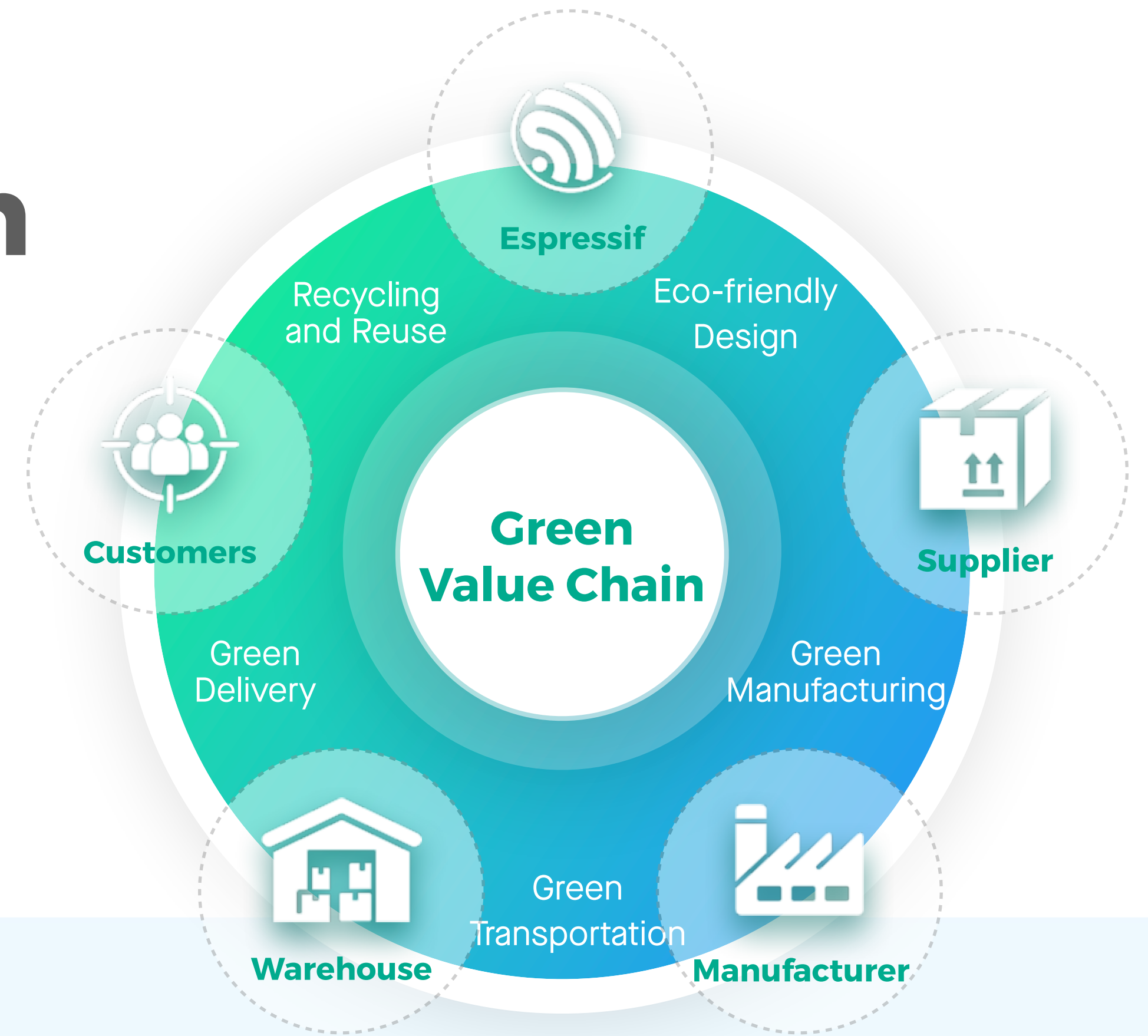
To enhance employees' awareness of environmental management, we conduct mandatory environmental training annually. We require all new employees to participate in at least one training session.

**52**  
environmental training sessions

**100**%  
of employees received training

### Governance Procedures

The Strategic Committee convenes an ESG Working Group meeting annually to discuss policies, plans, and performance over the past year. The Chairman submits a report of the committee's discussions and execution results to the Board. Issues discussed include climate change at the company's operational sites, resource use, and supply chain environmental management.



## Future Blueprint

### 2030 Goals

Increase the frequency of carbon emission data surveys, tracking the monthly usage of resources in operations to control resource consumption and carbon emissions.

Improve the tracking of carbon emissions upstream and downstream and establish a more comprehensive green database.

As the company continues to grow, we will strive to control carbon emission intensity, ensuring the company makes a positive contribution while maintaining sustainable

development. By 2030, achieve greenhouse gas emission intensity (Scope 2) of  $\leq 4.87$  tons/person.

### Long-term Goals

In the long term, the company will continue to improve the energy management system, strive to keep carbon emission intensity at a controllable level and further reduce it. Meanwhile, we will enhance the radiating influence on the industry, empowering the community to undergo green and low-carbon transformation and upgrade.

### Our Vision

Espressif believes that creating "impact" is the purpose of the products. The significance we want to create goes beyond technological products improving life; it lies in considering ecological construction and low-carbon environmental protection as the responsibility and commitment. We hope to bring more and better changes to the world with our strength.

# Climate Risks and Opportunities



We have identified the impacts of climate change-related risks, then established response measures, and made decisions accordingly.

## Climate Risks and Response Measures

Climate Risks	Potential Impacts	Response Measures
Physical Risks	Extreme High Temperature	It may cause fires, equipment damage, server malfunctions, data loss, and affecting operations.
	Extreme Precipitation	More loss or extended transportation time, adversely affecting project progress and operating costs.
	Typhoons	They may lead to power outages, flooding, safety accidents, or the forced suspension of R&D progress, thereby affecting operating costs.
	Global Warming, Sea Level Rise	Some offices have long been faced with the climate threats of global warming and rising sea levels, which could have a sustained impact on the company's operations.
Transition Risks	Environmental Information Disclosure	Our customers, supply chain, and regulatory departments have significantly increased their focus on the company's environmental information disclosure. Failure to disclose relevant information promptly may lead to a crisis in cooperation or compliance risks.
	Low-carbon Technology Innovation Risk	As a knowledge-intensive industry, the semiconductor sector advances rapidly in technology development. Espressif faces risks in research and development progress and market promotion failing to meet expectations in developing low-carbon (low-power) chips.

## Potential Opportunities

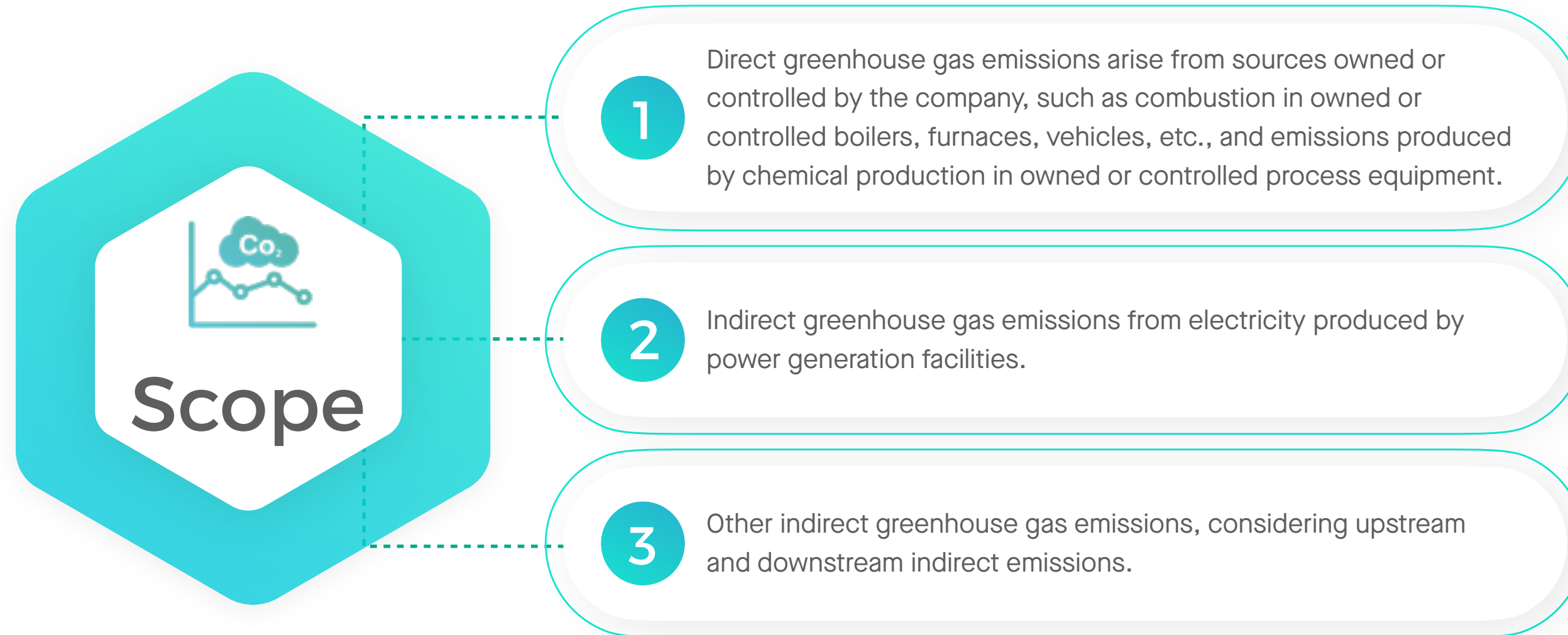
The abundance of paperless open documentation and code resources combined with AI has lowered the barriers of developers, thereby feeding back into the company's business development.

Espressif continuously providing global developers with a wealth of free open-source technical documentation, enhancing the efficiency of IoT project development, reducing the likelihood of rework and returns, thus achieving the goal of energy saving and emission reduction. On the other hand, the development of AIGC combined with the company's extensive open resources, has attracted more IoT developers to join our ecosystem, promoting the development of our business (see Section 02 Community Symbiosis for details).

### User demand for low-carbon drives our R&D

As the IoT market expands, and user demands shift to intelligent connectivity, with frequent demands for low power consumption. Espressif focuses on "connectivity + edge computing," expands our connectivity technology from Wi-Fi 4 to Wi-Fi 6, low-power Bluetooth, Thread, and Zigbee technologies, and continuously increases the edge computing capabilities.

# GHG Emissions Management



## 2023 Espressif GHG Emissions

Emission Intensity tCO <sub>2</sub>	2021	2022	2023
<b>Scope I</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>Scope II</b>	<b>1,017.24</b>	<b>1,504.83</b>	<b>2,394.49</b>
Purchased Electricity	1,017.24	1,504.83	2,394.49
<b>Scope III</b>	<b>198.90</b>	<b>7,412.67</b>	<b>9,826.26</b>
Purchased Goods and Services	8,941.04	7,229.32	9,464.35
Business Travel	198.90	168.89	320.40
Upstream Transportation			28.41
Upstream Leased Assets		14.46	13.10
<b>Total (Scope I &amp; Scope II)</b>	<b>1,017.24</b>	<b>1,504.83</b>	<b>2,394.49</b>
<b>Per Capita (Scope I &amp; Scope II)</b>	<b>1.97</b>	<b>2.75</b>	<b>3.98</b>

## Energy Management

The company operates in the IC industry's design segment and does not involve product manufacturing; therefore, our primary energy consumption comes from office operations, employee commuting, and other aspects. To promote low-carbon operations, we tracked Espressif's carbon footprint for the first time in 2021. Further, we advanced the implementation of energy-saving and emission-reduction measures through quantified results.

### GHG Emissions Accounting

We are aware of the risks brought about by global climate change. Due to Espressif's business characteristics, our carbon emissions mainly come from purchased electricity for office spaces, business travel, and hotel accommodations, as defined by GHG Protocol Scope 2 and 3. We have collected data on the annual group's purchased electricity, employee travel kilometers, upstream transportation and distribution kilometers, and factory production carbon emissions for 2023. As shown in the table, we have conducted corporate carbon emission estimates with specific emissions.

\* This report's calculations refer to the "Greenhouse Gas Protocol (GHG Protocol)" developed by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) for the corporate carbon emission accounting for the year 2023. To facilitate the description of direct and indirect emission sources, the GHG Protocol sets three "scopes" (Scope 1, Scope 2, and Scope 3) for greenhouse gas accounting and reporting.

\* Starting from 2023, we have expanded the statistical scope of Scope 3, adding categories "Purchased Goods and Services," "Upstream Transportation," and "Upstream Leased Assets" beyond the "Business Travel" category and covering as many traceable sources as possible.



# Energy Saving and Emission Reduction

## Innovation beats challenges

We continuously improve our environmental management system, focusing on the research and development of low-energy-consumption technologies. We aim to save energy through technological innovation. Espressif has made breakthroughs in low-energy products, with the latest mass-produced in 2023, ESP32-C6, ESP32-H2, and several chips to be launched in 2024, all being low-power products.

### Low-Power Circuit Design

Espressif incorporates green concepts into chip design process, reducing energy consumption. Espressif's research and development of low-power design significantly reduces product power consumption.

Espressif offers various solutions that allow users to select power consumption modes. These solutions meet the different scenario requirements of IoT applications and assist downstream device manufacturers in passing strict power consumption certification tests. For example, Espressif's single live wire switch solution has created a smart switch with lower power consumption and superior Wi-Fi performance.

### High Integration

Espressif's chipsets are highly integrated, reducing the need for additional components such as resistors, capacitors, inductors, switches, baluns, and power management chips, which reduces the waste of printed circuit boards.

## Intelligence across industries

During the reporting period, Espressif's products entered more downstream markets, such as industrial control, education, healthcare, agriculture, vehicle networking, energy management, etc., promoting the low-energy chip market.

### Intelligent Industrial Control

Espressif products have a wide range of industrial control application scenarios. For example, they can connect to various sensors and actuators to precisely control the production line. By collecting, analyzing, and interpreting data, our products can quickly identify problems, thereby improving production efficiency and product quality and providing strong support for the sustainable development of enterprises.

Additionally, Espressif software products (such as ESP Insights) allow developers to remotely monitor their devices, and all data can be uploaded to the cloud (ESP RainMaker) for remote maintenance. Using this technology, if a device malfunctions or behaves abnormally, engineers can quickly locate and fix the issue, reducing downtime and enhancing production benefits.

### Intelligent Agriculture

Espressif products can be used to build intelligent agricultural systems. Based on AI, machine learning, and the integration of advanced image recognition technologies, data on crop growth can be collected. This data can be transmitted via Wi-Fi to the cloud or local servers, where it is analyzed. For example, when the level of specific nutrients in the soil falls below the ideal level,

the system can automatically release a proper amount of fertilizer or nutritional supplements.

At the same time, this technology can also be applied to warn of pests and diseases, enabling field monitoring and helping farmers increase yield and quality while reducing management costs.

## Optimization of logistics

Fuel is the most significant cost within the entire transportation chain. How the packaging and transportation of raw materials, work-in-progress, and finished products are optimized directly impacts Scope 3 carbon emissions.

Espressif globally adjusts storage and transportation planning dynamically, focusing on optimizing efficiency to reduce environmental impact. New initiatives during the reporting period include:

- Increase a foundry in Vietnam for direct shipment to customers and optimizing raw material transportation routes resulted in saving a total of 161,800 kilometers.
- Improving packaging design to reduce transportation weight and increase loading efficiency.

**161.8** thousand KM  
Saving transportation distance

**0.49** tCO2  
Saving GHG emissions

# Circular Economy Lifecycle

Espressif is a fables company, thus reducing the environmental impact of transportation has become an essential task.

## Green Procurement and Manufacturing

Since carbon emissions arise at every stage of the product lifecycle, especially in manufacturing, the company has implemented a series of measures to minimize environmental pollution as much as possible, including:

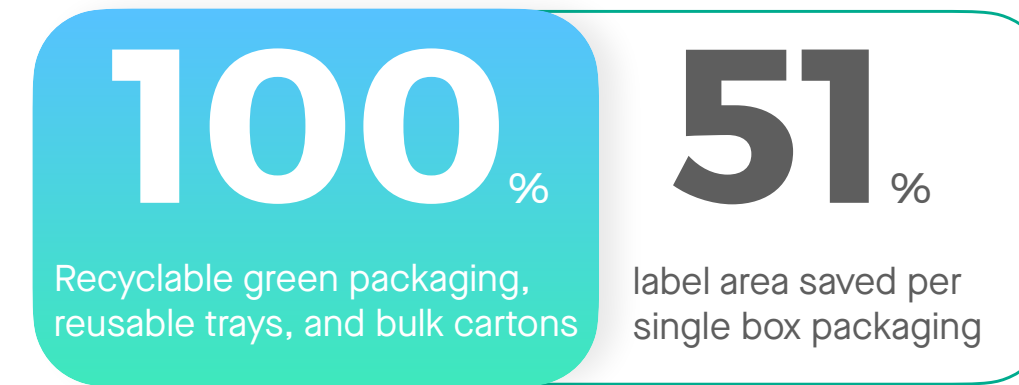
- Requiring suppliers to sign "Supplier Environmental Commitment," "Supplier Corporate Social Responsibility and Environmental Protection Agreement," declarations, and collaborating with suppliers who have obtained environmental certifications.
- Supporting suppliers in the use of renewable energy.
- Procuring non-toxic and harmless materials.
- Minimizing water use and expanding reuse.
- Reducing land waste and increasing resource recycling.

## Green Packaging

Improving the environmental impact of packaging is a crucial element of our green supply chain. We improve resource utilization efficiency by enhancing packaging design, using eco-friendly materials, and increasing the recyclability of packaging.

The company's sustainable packaging plan includes:

- Smaller, lighter, and more suitable sized packaging.
- Using recyclable materials instead of plastic.
- Replace plastic films with recyclable materials.
- Convert plastic trays and foam components to paper or reduce use through design.
- Increasing the reuse of trays, reels, and bulk cartons.
- Reducing the size of unit labels by 20% and reducing label usage, saving 51% per carton packaging.
- Product packaging materials meet the 94/62/EC Directive on Packaging and Packaging Waste.
- Standardizing packaging box sizes.



## Certification

In 2023, Espressif continued to encourage suppliers to pass environmental certifications. Core suppliers have passed the following certifications:



## Energy Reservation

Espressif advocates the environmental protection that everyone is responsible for environmental protection. We raise employees' environmental awareness through low-carbon advocacy, making our office more eco-friendly and energy-saving.

We have a series of measures to guide employees in low-carbon working. For example, we remind employees to adjust air conditioners to reduce waste; we call on employees to turn off lights when leaving, save water, recycle paper, and digitalize office operations; we provide employees with personal tableware and water cups to reduce the use of disposable tableware; we choose suppliers certified by the FSC for international forest management; we adopt "online interviews" to reduce emissions.

In terms of waste management, we strictly follow the classification policy, store wet and dry waste at designated points, and handle them according to the prescribed procedures. We also participate in caring for stray animals in the community, helping to find adopters for stray animals.

### Laboratory Management

Espressif has increased the efficiency of lab instrument use by establishing a laboratory reservation system. This system prevents conflicts in experiment scheduling, enables the tracking of instrument usage, and controls laboratory energy consumption.

Espressif staff can schedule laboratory instruments via a webpage or app. When the laboratory is not

reserved, machines and lighting equipment are turned off, which saves energy. Besides, the reservation platform clearly shows the status of instrument usage, avoiding conflicts and improving the efficiency of our engineers.

## Waste Management

We cooperate with professional waste disposal companies to handle daily waste, reduce waste landfilling, and minimize the negative impact on the environment.

The company generates various types of electronic waste daily, including used servers, storage devices, network equipment, computers, monitors, and electronics used for testing. We collaborate with qualified professional e-waste suppliers to ensure proper tracking, processing, and recycling of our electronic waste.

To minimize electronic waste, the company has designed an inventory management program. Portable office computers and other electronic products that meet specific criteria can be transferred to employees for personal use upon application, aiming to extend their lifecycle.

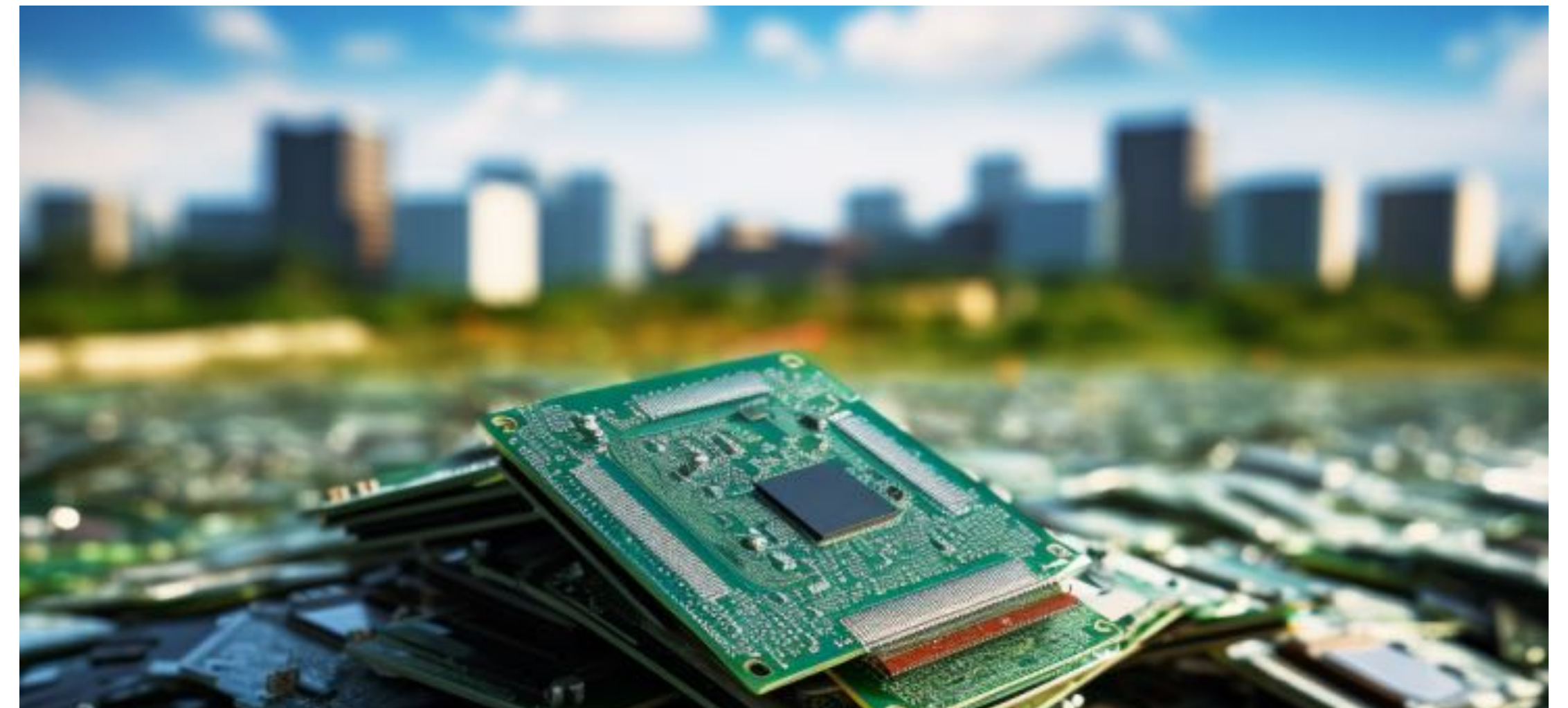
**158** t  
Water Usage

**33.5** kg  
Hazardous Waste

**287,100** liters  
Garbage Disposal

## Waste Disposal Rules

	Classification	Example	Disposal Method
Solid waste	Non-reusable waste	Domestic garbage	Handled by designated suppliers, medical waste such as masks are sent to specified incineration points for harmless treatment.
	Kitchen waste	Kitchen waste, waste cooking oil	Handled harmlessly by professional, qualified suppliers.
	Reusable waste	Packaging cartons, hardware parts	Regularly collected by designated suppliers, equipment scrap and hardware parts go through scrapping.
	Hazardous waste	Chemical packaging containers	Stored at designated points, disposed by qualified companies.
	Construction waste	Decorative waste materials	Construction waste is stored at designated points, dealt with by the contractor.
Waste water	Other wastewater	Generated from restrooms, pantries, and cleaning activities	Directly enter into septic tanks and discharg into the municipal sewer network after meeting standards.



# Biodiversity Protection



**Kaluga**  
**Critically Endangered**

The Kaluga is a critically endangered giant predatory sturgeon living in the Amur River in Russia's Far East. Due to its valuable caviar being heavily harvested, it continues to face threats to its survival.



**ESP32-S2-kaluga-1**  
A multimedia development board based on ESP32-S2



**Blue-footed Booby**  
**Least Concern**

The Blue-footed Booby is a seabird that inhabits tropical and subtropical islands in the Pacific Ocean. They have bright blue feet, which are easily identifiable and are a sexually selected trait related to diet.



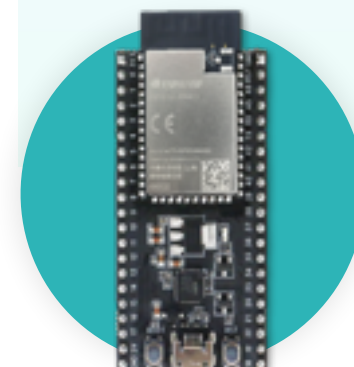
**Clemmys Guttata**  
**Endangered**

Clemmys guttata is a small, semi-aquatic turtle living in the Great Lakes region of North America. Although Clemmys guttata can currently be seen in multiple conservation areas, its future survival remains a concern due to environmental changes and human poaching.

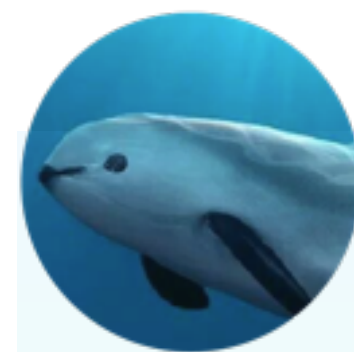


**Saola**  
**Critically Endangered**

The Saola, an endangered mammal known as the "Asian Unicorn," has been shrouded in mystery since its discovery in 1992. To date, scientists have only recorded wild Saola on four separate occasions.

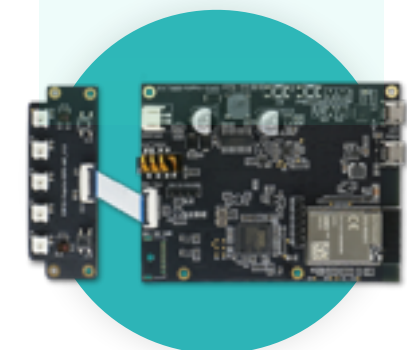


**ESP32-S2-Saola-1**  
A general-purpose development board based on ESP32-S2

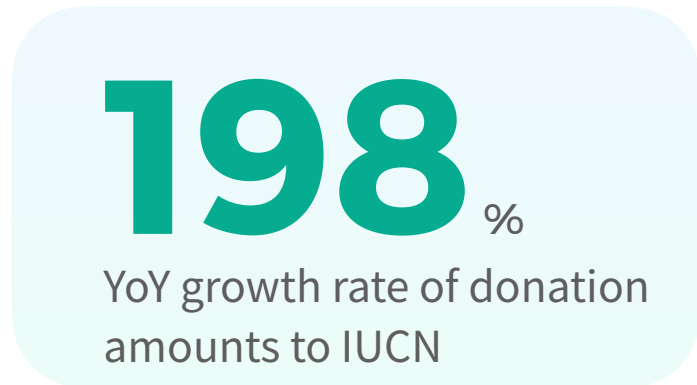


**Vaquita**  
**Critically Endangered**

The Vaquita is the world's rarest marine mammal, discovered in 1958 and now on the brink of extinction. In recent years, the population of Vaquitas has rapidly decreased due to illegal fishing activities, with only about 10 individuals remaining in their main habitat area in Mexico.



**ESP32-Vaquita-DSPG**  
An audio development board based on ESP32



(Red List of Species™)

**Espressif is concerned about the environment and ecology.** To further raise public awareness, since 2020, we have initiated an **endangered species protection program** in reference to the IUCN Red List of Species™. Some of Espressif's development boards are named after endangered species, and a portion of the income from these development boards is donated continuously to IUCN on a quarterly basis. In the same year, we released T-shirts with themes of wildlife protection and started using these animal names as names for meeting rooms to call on employees to join together in protecting biodiversity.

# 02

## Community Symbiosis

SDGs

4 QUALITY EDUCATION



17 PARTNERSHIPS FOR THE GOALS



# 02 Symbiosis: Sharing Booms Industry

**Espressif's thriving ecosystem begins with the company's open documentation and open-source code. The development of AI technology catalyzes the achievement of energy-saving and emission reduction while driving industry development and bringing more job opportunities to the community. Meanwhile, these measures can reduce operating costs and assist in market expansion, thereby giving the company stronger motivation to continue investing in such an ecosystem, ultimately forming a positive and sustainable virtuous cycle.**

## Actions

### Open resources + AI accelerate development

Espressif provides many self-service resources, including free documentation and open-source code, such as official technical documentation and GitHub code. These resources are presented online and easily accessible to developers.

With the popularity of AI-assisted tools like ChatGPT and Copilot, Espressif's extensive open resources provide nutrition for training AI models. More innovators are using AI assistants to develop and optimize code for IoT applications built with Espressif products, accelerating the development of the IoT application market.

Our commitment to open source ensures the symbiosis with industry partners. Espressif's hardware and software are non-exclusive and can achieve a win-win situation with other companies through software symbiosis (such as Wokwi and LVGL) and hardware symbiosis (such as Arduino).

### Diverse platforms prosper our ecosystem

The company adopts a B2D2B (Business to Developer to Business) business model, dedicated to creating a thriving developer ecosystem to capture business opportunities. Espressif has held its Global Developer Conference (entirely online) for two years. The company also maintains the ESP32 forum and Bug Bounty reward program, energizing the ecosystem for collaborative development.

### Devoted to high-quality education

Investment in education is our commitment. We spare no effort in sharing the latest technologies with students and faculty to enhance students' industry awareness and competitiveness, helping them secure more job opportunities in the future. Meanwhile, Espressif encourages employees to participate in volunteer activities.

## Social Impact

### Saving more resources

All documentation is available in the cloud, and the operations are paperless. These materials reduce redo or return products, effectively improving user development efficiency. Holding the developer conference online eliminates the carbon emissions of global business travel. Moreover, it has a broader radiating scope, impacting developers worldwide. We indirectly achieve energy-saving and emission-reduction goals by helping clients reduce the consumption of human and material resources.

### More job opportunities

A thriving open-source ecosystem provides more individuals, startups, and research teams with low-cost opportunities to build IoT projects, promoting industry growth and creating more job opportunities. Our impact is not limited to the office location; the internet allows everyone in the e-community to benefit.

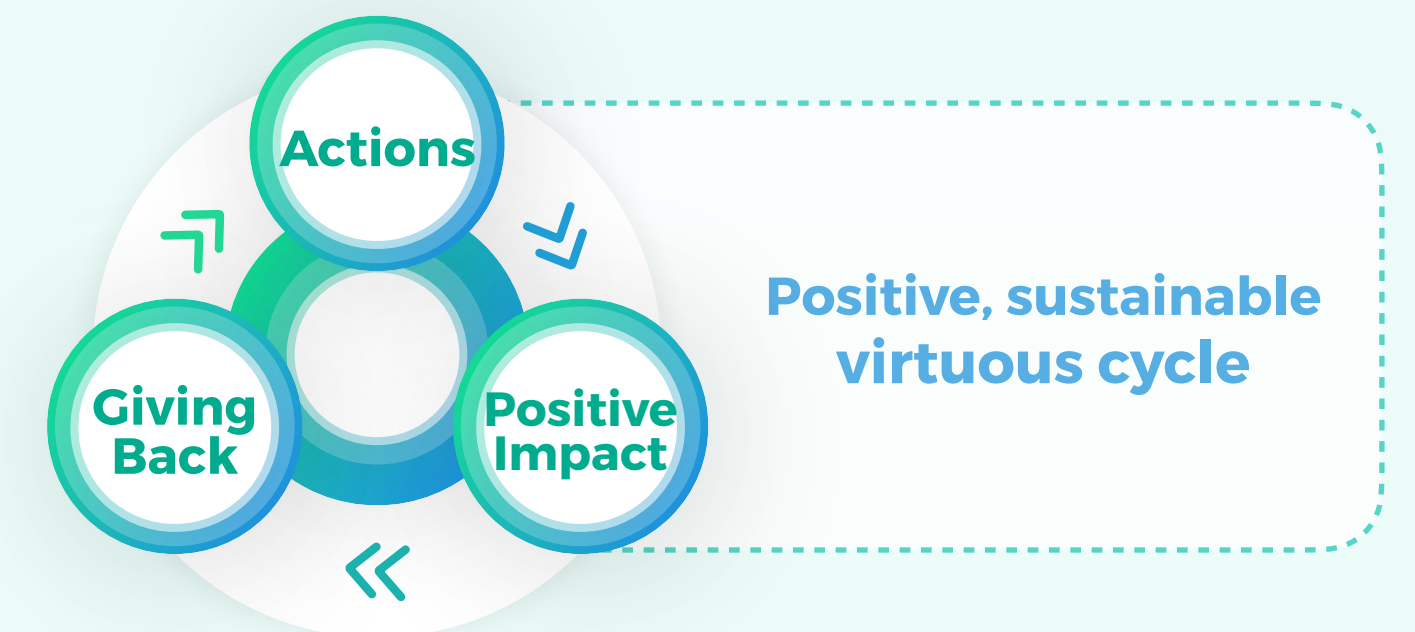
## Giving back

### Lower Costs, accelerating development

Our ecosystem helps spread the company's reputation, and spontaneous promotion by developers reduces the company's marketing expenses and brings more potential business opportunities to the company.

### Highlight differences, more competitiveness

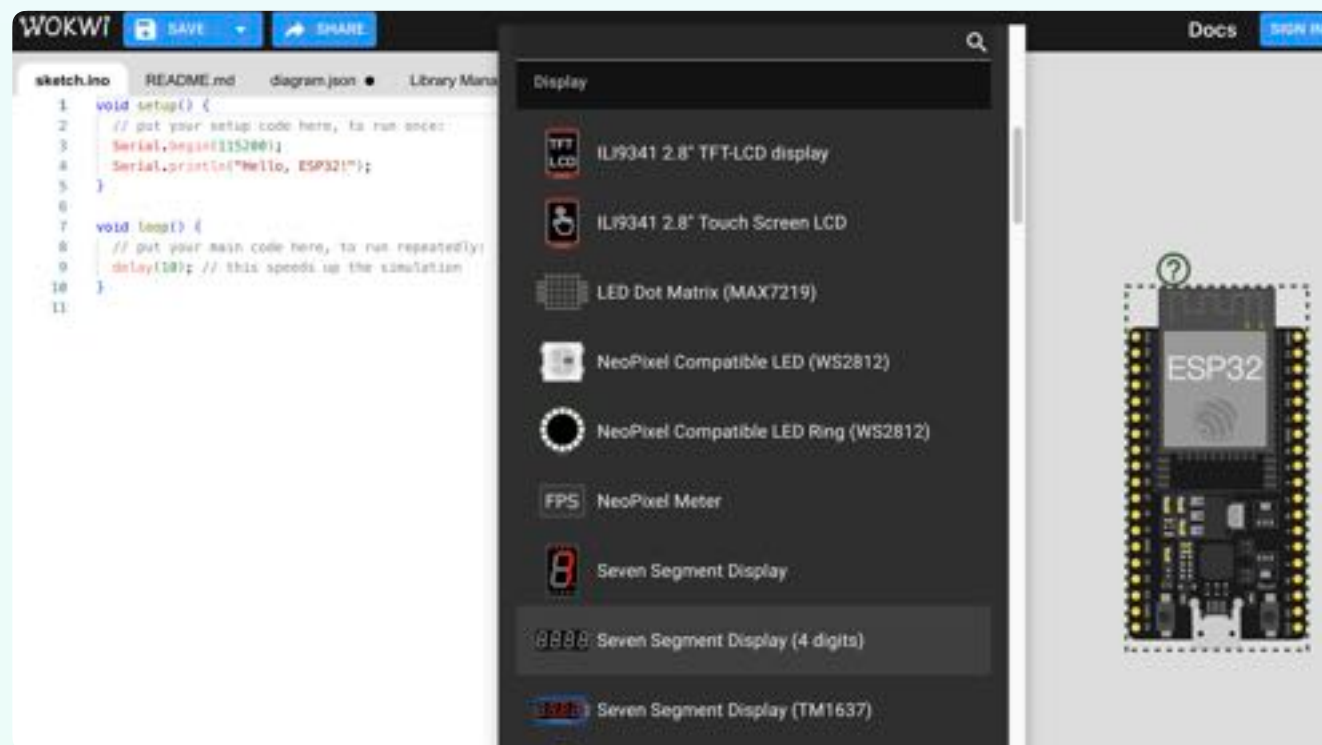
The company has gained high recognition globally by providing differentiated products and complimentary additional ecological services to our customers, thereby enhancing our competitiveness.



### Example 1: Espressif and Wokwi's Symbiosis

Wokwi is an online hardware simulation platform that supports a variety of hardware, including Espressif's products. The platform allows users to run and test their embedded code in the browser without actual hardware devices.

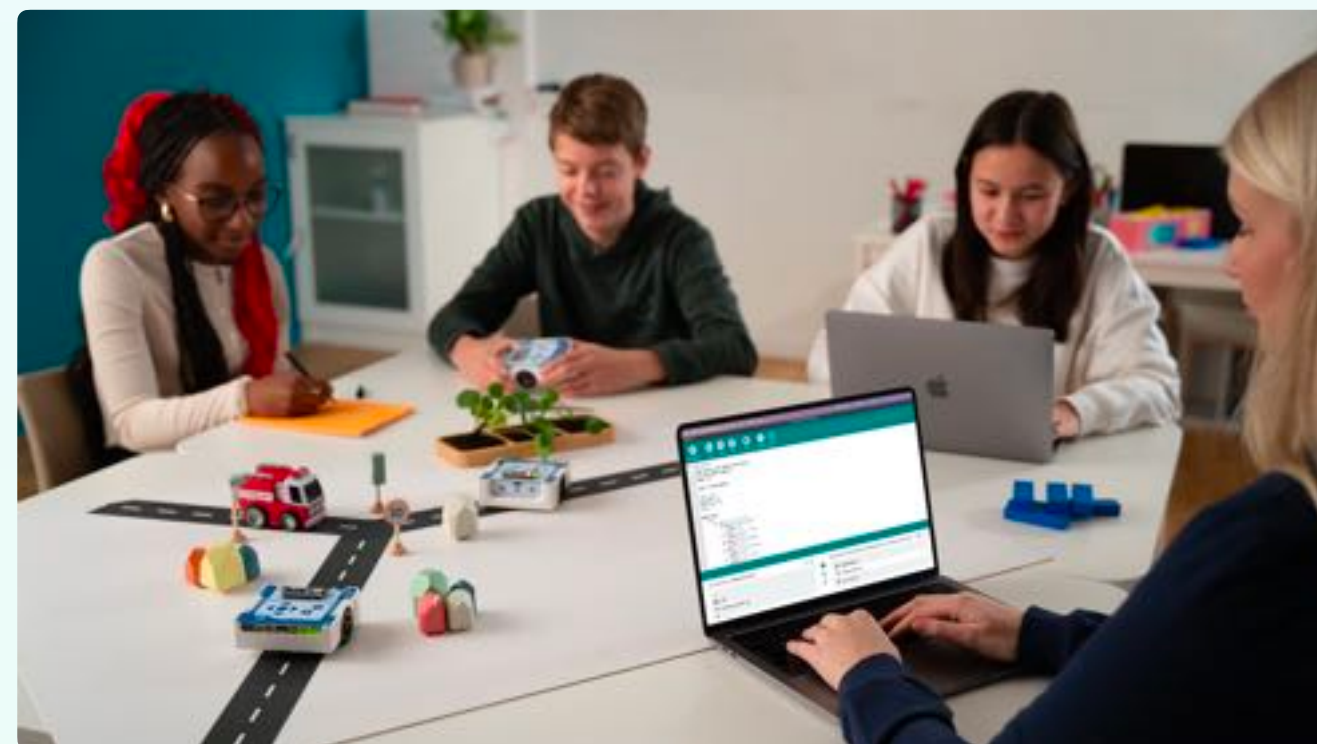
This platform is free, so Espressif developers can avoid the transportation carbon emissions associated with purchasing test development boards during the experimental phase and issues with development board wear and tear due to failed experiments. Through software symbiosis, developers on other platforms can become familiar with Espressif products, improving development efficiency and promoting the company's brand.



### Example 2: Espressif and Arduino's Symbiosis

The Arduino platform includes both hardware and software components. The hardware is a series of programmable development boards, and the software is an Integrated Development Environment (IDE). Like Espressif's, the Arduino community is open-source, allowing users to share projects, code, and experiences.

As early as 2015, Espressif's products had achieved software symbiosis with Arduino. In 2023, Arduino officially launched the Arduino Nano ESP32 development board, featuring the main control chip ESP32-S3 from Espressif, thus tightly integrating the Arduino hardware and software platform with the ESP ecosystem. Integrating the two ecosystems will further expand the community, bringing more development opportunities to each other.

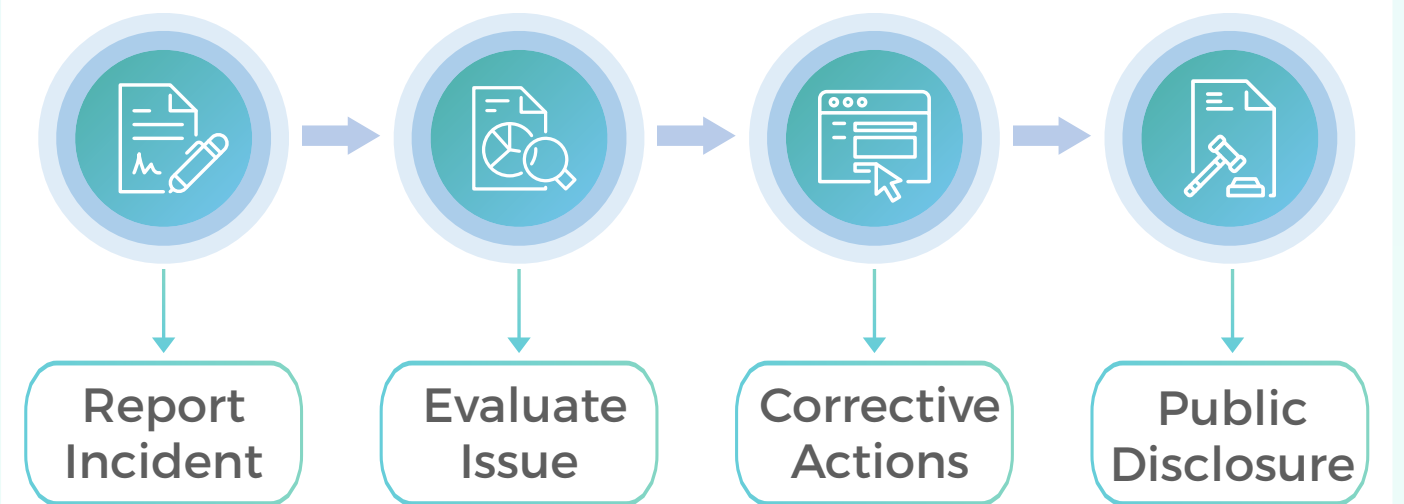


### Example 3: ESP32 Bug Bounty Program

The Espressif Bug Bounty Reward Program has been in operation for seven years. The program stipulates that for every valid security-related bug identified in our development platform, we pay \$500, with an additional \$1,729 awarded if the developer provides verification testing. The feedback from developers help us improve the software before commercialization, providing better software support for customers. Espressif thanks developers in the ecosystem for contributing to the company's growth.

IoT security incidents are a long-term and persistent threat; Espressif takes such issues seriously. We respond quickly to vulnerabilities and propose mitigation solutions. The company has also won global customer trust and recognition for its severe and open attitude towards handling security incidents.

#### Espressif Security Incident Response Process



# Espressif Developer Conference 2023



Since the release of the ESP8266 in 2014, Espressif has established a long-term cooperative relationship with the developer community, achieving fruitful results. The developer community will continue to drive innovation in the AIoT field alongside us. For example, we provide developers with development kits, documentation, and manuals that can be accessed without signing a non-disclosure agreement. We also offer open-source software and tools to help the developer community create IoT products more effectively.

In September 2023, Espressif held its second Global Developer Conference, inviting technical experts from Espressif and its partners to give nearly 30 speeches on topics such as Thread, ESP32-C6 and Wi-Fi 6 low-power features, ESP-Mesh-Lite + ESP RainMaker cloud solutions, ESP-IDF, RUST, SquareLine Studio, and AWS IoT. Like the previous year, this developer conference was broadcast from two live centers in Shanghai and Brno and streamed over three platforms: Espressif's WeChat channel, Bilibili, and YouTube, for 16 hours over two days, attracting approximately 70,000 viewers globally.

Espressif is committed to sharing the latest products and solutions with global developers through conferences and building a beneficial, two-way instant communication platform. We hope engineers become more efficient, creative, and innovative by using our solutions and embodying a unique Espressif style.

Espressif has initiated the call for presentations for the third Global Developer Conference. We look forward to the developer community gaining a deeper understanding of our products and future directions. Through such events, we aim to gather feedback from customers, developers, and the community to create products that users love.



**Senior Principal Engineer**

**Richard Barry**

Refactoring FreeRTOS for the Next 20 Years



**CEO**

**Gábor Kiss-Vámosi**

Introducing SquareLine Studio v2

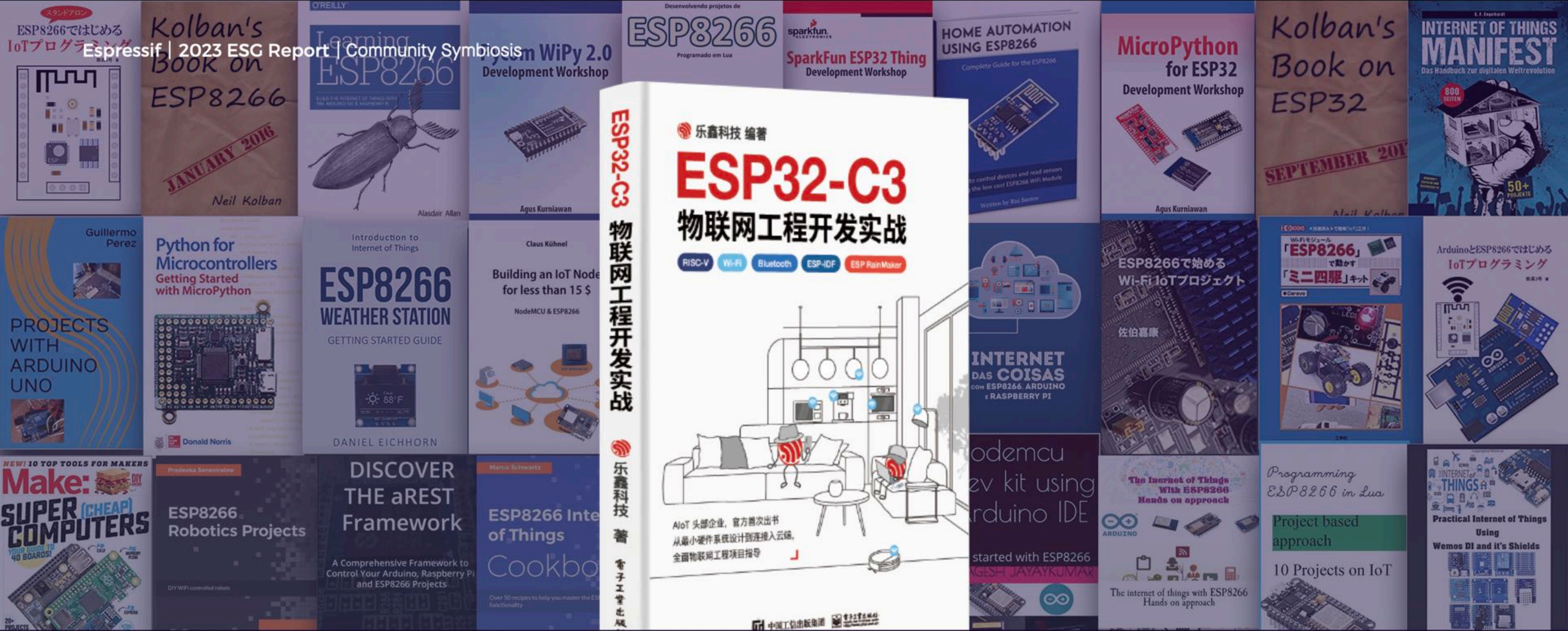


**CEO**

**Surya Jayaweera**

From Rockets to Cellos: Real-world Applications of ESP32 Series Microcontrollers and Development Board Variants





More than **200** books on how to use ESP products can be found  
 cover over **10** languages

# High-Quality Professional Education

**Professional education is the cornerstone of the semiconductor industry's future development. Espressif is devoted to cultivating talent for the industry. We have launched many school-enterprise cooperation projects with various universities, including collaborative courses, experimental courses, internships, competitions, scholarships, etc.**

## IoT-Embedded Courses: From Theory to Practice

University students must learn about IoT-embedded systems. Universities typically offer embedded experimental courses to help students learn IoT-embedded development based on hardware development boards and software programming.

Espressif cooperates with universities on these courses. Not only do we provide a large number of ESP32 series development boards as hardware support, but we also bring Espressif's IoT operating system ESP-IDF, rich software SDKs, and ESP RainMaker into the classroom, allowing students to learn IoT project development from scratch.

At the same time, Espressif also provides technical support for university professors

writing embedded teaching books, which are used for teaching and the community, benefiting the developers and engineers.

## Internship Program: From Internship to Employment

Espressif signs university-enterprise joint training agreements with universities, providing students with internship opportunities that can lead to employment. Students who pass Espressif's preliminary evaluation can apply for an internship. Students with suitable thesis topics may also complete them at the company.

During the internship, students will participate in the company's actual R&D projects, working alongside an international team. Due to the nature of the our R&D team, students can directly communicate with and learn from many technical experts in the industry and participate in internal training.

After completing the internship, students who pass the comprehensive assessment will receive an offer from Espressif's campus recruitment and become official employees.

## College IoT Competition

The National College IoT Competition is a large-scale and influential academic competition in the IoT field in China. It was jointly initiated by the Computer Science Professional Teaching Steering Committee and the IoT Engineering Professional Construction and Research Expert Group. Since its first event in 2014, it has been successfully held for ten consecutive sessions.

Espressif has sponsored this Competition for the second consecutive year, providing teachers and students with the topic "Exploring Agricultural Innovation Based on ESP32-S3" and providing rich development resources, including various AI development boards based on ESP32-S3, the deep learning library ESP-DL, and software development frameworks such as voice recognition and face recognition. In this competition, the company invites students to focus on smart agriculture and to solve real agricultural problems.

Espressif supported approximately 200 teams from universities nationwide, with 13 teams advancing to the final round.

Through this competition, students can explore, experience, and learn IoT application,

apply classroom knowledge to reality, and gain an in-depth understanding of cutting-edge AI technologies through Espressif's rich development resources and competition training. Furthermore, Espressif offers internship opportunities to outstanding students in the competition, further opening up future employment pathways for students.

## Overseas STEM Education

Leveraging the powerful global influence of the ESP32 series chips, Espressif has also established STEM education cooperation with multiple overseas universities. This cooperation includes teaching using Espressif's hardware and software resources, conducting IoT workshops, and supporting IoT competitions.



03  
Innovation



SDGs

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

17 PARTNERSHIPS FOR THE GOALS



# 03 Innovation

The era of rapid development of IoT technology is upon us, with AI technology endowing IoT devices with powerful edge processing capabilities, compatibility of communication protocols promising interconnectivity among devices, low-power technologies further reducing device energy consumption, and security technologies safeguarding private information.

Espressif has always stuck to the integration of software and hardware and achieved many exciting breakthroughs in the field of cutting-edge IoT, including low power consumption, audio and video encoding, operating systems, development frameworks, AI, cloud, security, etc.

## In-house R&D Commitment

In the fiscal year 2023, Espressif's investment in research and development reached 404 million RMB, accounting for 28.17% of our revenue, with a YoY growth of 19.75%. The company thinks highly of R&D investment, maintaining a high research and development expense. As of the end of 2023, Espressif's research and development personnel numbered 484, approximately 77% of the total group staff.

## IP Management

The company places great importance on intellectual property and has designed a complete intellectual property management system, including intellectual property planning and layout, patent training mechanisms, patent reward and punishment mechanisms, patent application and review mechanisms, and

external cooperation management strategies. We strictly implement the above management methods, encourage research and development personnel to innovate, and avoid intellectual property risks. This management system has obtained GB/T29490-2013 intellectual property management system certification and continues to pass annual reviews.

## IP Achievements

Since our inception, Espressif has been engaged in research and development design work in IoT chips. After years of accumulation, we have accumulated core technologies in chip design, AI, RF, device control, processors, data transmission, and other aspects, possessing multiple IP rights. These technologies enable us to be the industry leader in integration, product size, software applications, RF, and computing capabilities.

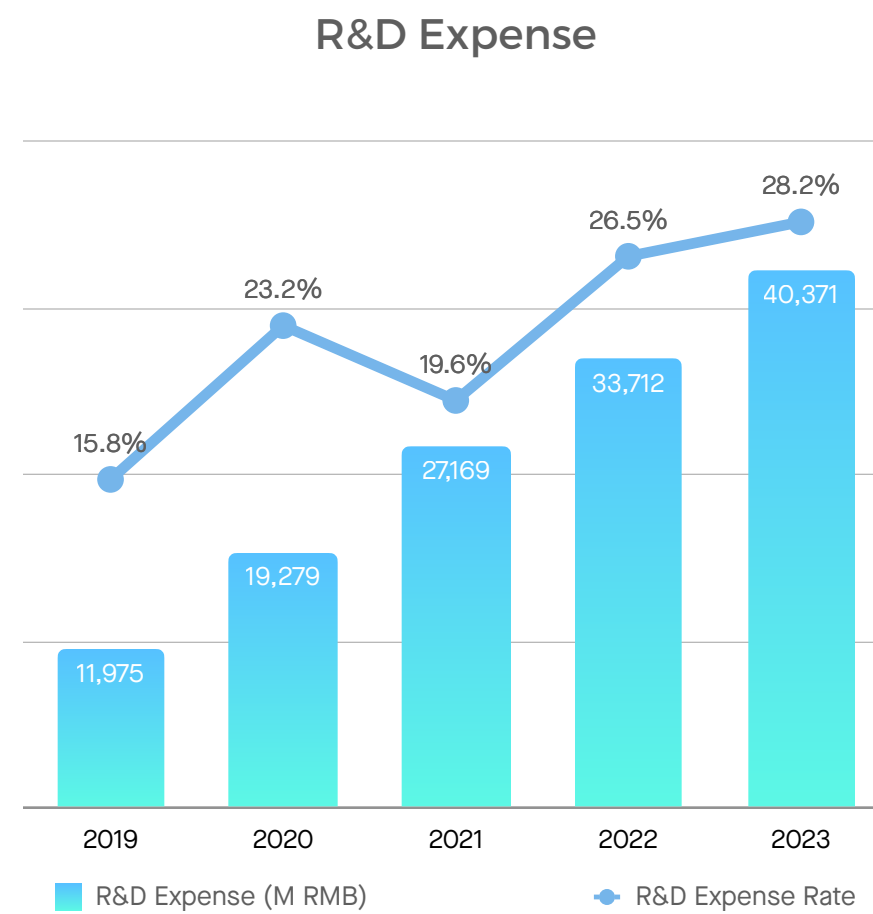
In 2023, Espressif was awarded the title of "National Intellectual Property Advantage Enterprise." By the end of 2023, the company had obtained 167 patents and software copyrights, including 89 approved domestic invention patents, 26 utility model patents, one design patent, 28 U.S. patents, and 23 registered software copyrights.

# 250

Applied IP

# 167

Obtained IP

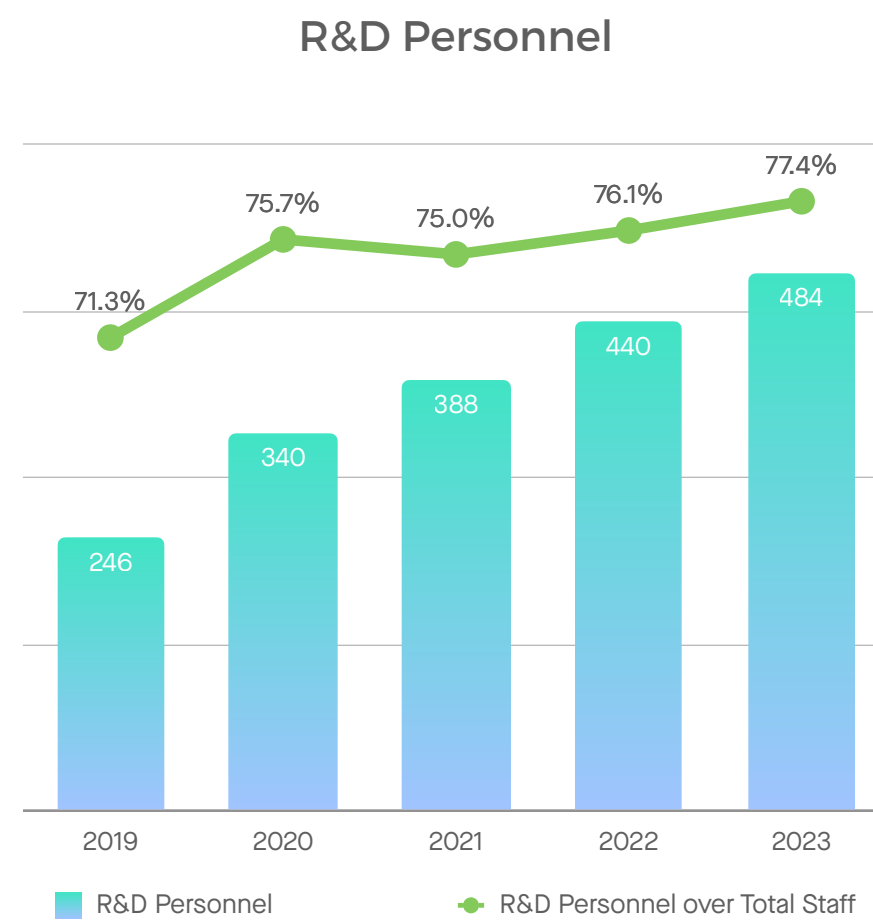


# 19.8%

R&D Exp YoY

# 28.2%

R&D Exp Rate



# 484

R&D Personnel

# 77%

R&D Personnel over Total Staff

# Technological innovation

Espressif is continually investing in cutting-edge technology. Based on AI, Espressif is building an IoT platform and supporting AI ecosystem developers. Through deep involvement with Matter, Espressif has launched several chips equipped with 802.15.4 (Thread/Zigbee), enabling IoT devices to interconnect across brands and ecosystems. In terms of security, Espressif SoCs come with comprehensive security systems, providing users with higher levels of data protection. Meanwhile, in power consumption management, Espressif has transitioned from Wi-Fi 4 to Wi-Fi 6 and supports a broader range of low-power communication technologies.

The positive accumulation of fundamental IoT technology is the cornerstone of Espressif's steady development. The company has formulated a strategy for the collaborative development of software and hardware. Over the years, Espressif has made progressive achievements, implementing IoT SoC, operating systems, development frameworks, AIoT development platforms, and more.

In 2023, Espressif achieved the following breakthroughs:

## Wireless Communication Protocol

Espressif's self-developed Wi-Fi 6 and low-power Bluetooth chips have been mass-produced, and the IEEE 802.15.4 technology product line has been expanded.

For example, ESP32-C5 is our first SoC supporting dual-band Wi-Fi 6, it also provides Bluetooth 5 and IEEE 802.15.4 connectivity. Its support for the 5G frequency band reduces interference and provides more stable, lower-latency connectivity.

ESP32-C, ESP32-H, ESP32-S3, and ESP32 now all support the Matter ecosystem.

## RF

Our RF front-end components are entirely self-developed, ensuring that Espressif's SoCs have excellent performance. For example, in the case of the ESP32-C2, under the "802.11b, 1 Mbps" mode, both the

transmission power and reception sensitivity have reached the maximum allowable limits.

## Low Energy

Espressif SoCs are equipped with outstanding low-energy technologies. For instance, when building a smart single-wire solution with ESP32-C3 or ESP32-C2, the switch maintains a Wi-Fi connection with a current as low as 600-800 uA; using ESP32-S, ESP32-C, ESP32 to run ESP-NOW can achieve ultra-low-power data transmission.

## IoT Development Framework

ESP-IDF, our open-source IoT development framework has empowered hundreds of millions of IoT devices. ESP-IDF has a clear and strict release process with support strategy, ensuring users continue to receive essential fixes applicable. In 2023, ESP-IDF was upgraded to v5.1, with 27 version iterations, bringing many new features.

## RISC-V MCU

Since 2020, the MCU all new released products by Espressif based on our self-developed RISC-V instruction set. During the reporting period, the newly released ESP32-P4 features a RISC-V 32-bit dual-core processor with a frequency up to 400 MHz.

## Edge AI

ESP32-S3 MCU adds AI vector instructions to accelerate, forming a robust hardware foundation for AIoT. The ESP32-P4 has higher computing power and meets the high-performance computing needs for multiple IO, HMI, and AIoT applications.

Espressif's deep learning library ESP-DL provides APIs for neural network inference, image processing, mathematical operations, and deep learning models. Amazon Alexa Built-in devices' Audio Front End has certified our high-performance algorithms.

## Cloud

Espressif SoCs support almost all mainstream cloud platforms. In addition, we have developed our own lightweight AIoT cloud software, ESP RainMaker®, which is highly integrated with AWS and supports the building and deployment of customized AIoT solutions with minimal code.

## Security

Security features are at the core of Espressif SoC design. Espressif SoCs integrate essential security components such as secure boot, flash encryption and so on, ensuring device security. Digital signature peripherals and dedicated critical management units ensure private keys are generated inside the SoC. Hardware access protection can achieve access rights management and privilege separation.

# Product and Service Innovation

In 2023, Espressif released its first SoC without connectivity features, the ESP32-P4, and updated ESP-IDF to version 5.1. ESP RainMaker ESP Insights continued to evolve.

## High-Performance SoC ESP32-P4

The ESP32-P4 represents Espressif's breakthrough into the multimedia market as the first SoC without connectivity features. It is powered by Espressif's self-developed high-performance dual-core RISC-V processor, featuring AI instruction, advanced memory subsystems, and integrated high-speed peripherals, fully meeting the higher demands of next-generation embedded applications for HMI support, edge computing, and IO connection.

ESP32-P4 introduces support for MIPI CSI and MIPI DSI interfaces, enabling the integration of high-resolution cameras and display interfaces. ESP32-P4 supports capacitive touch input and voice recognition, making it an ideal choice for building HMI applications. Additionally, it integrates hardware accelerators for media encoding and compression and a PPA suitable for GUI.

## IoT Development Framework ESP-IDF 5.1

In 2023, Espressif released the latest stable version, v5.1 of ESP-IDF, which adds more features and optimizes the development experience based on v5.0.

Compared to ESP-IDF v5.0, v5.1 supports ESP32-C6 and ESP32-H2, while ESP32-P4 is currently in preview support status. Additionally, ESP-IDF v5.1 introduces several new Thread-related features, such as Border Router Self-Hosting Services and Border Router Deinitialization, and adds support for numerous BLE controller features for ESP32-C2, ESP32-C6, and ESP32-H2.

This version not only addresses customer issues and demands and refines the entire development framework.

## Lightweight AIoT Cloud Software ESP RainMaker®

ESP RainMaker provides a complete cloud solution for building IoT ecosystems, bridging the gap between underlying hardware (chips and modules), the software ecosystem (ESP-IDF IoT operating system, Matter, voice assistants, HMI, etc.), cloud backend (built on AWS), mobile apps, and device management dashboards, establishing an open, flexible, and privately deployable cloud infrastructure. Customers can quickly build IoT products based on the existing resources of ESP RainMaker, exploring product diversity with lower investment costs, less R&D input, shorter time, and realizing iteration.

The flexibility and openness displayed by ESP RainMaker in product architecture and business models make it suitable for enterprises of different sizes and types.

## Unified Connectivity Standard Espressif's Matter Products and Services

Espressif offers comprehensive Matter solutions, including Matter over Wi-Fi end devices, Matter over Thread end devices, Thread border routers, and Matter gateway reference designs. To simplify the development and manufacturing process for customers' products, Espressif also provides one-stop service support, such as Matter Device Certificate (DAC) generation and the plug-and-play ESP-ZeroCode modules, bringing more convenient and efficient.

The company now supports the latest Matter 1.2 standard and its nine new types of home appliance devices. Based on this, Espressif's feature-rich and cost-effective Matter solution platform can provide corporate customers and developers with broader innovation space and development opportunities.

# Solution Innovation

Based on Espressif's SoCs and software frameworks, the company has launched many IoT application solutions to meet the industry's demands.

## HMI Smart Screen

Espressif has developed robust HMI smart screen solutions based on the ESP32 SoCs, capable of achieving data visualization, touch and knob controls, voice wake-up and recognition, multi-mode gateways, and other functions, constructing user-friendly HMI applications. Our smart screen solutions are widely applicable in fields such as smart home central control, screens for appliances, medical health devices, industrial control, and children's education.

The ESP32-S3 is suitable for RGB interface screens with maximum resolutions of 800×480, while the ESP32-C3 supports SPI interface screens. Espressif's HMI solutions support standard GUI development frameworks, including LVGL and Slint.

## LE Solutions

Espressif's low-energy solutions include ESP-NOW and the Wi-Fi single-fire line smart switch.

ESP-NOW is a wireless communication protocol defined by Espressif. It enables

direct, rapid, and low-power control of smart devices without a router. It can coexist with Wi-Fi and Bluetooth LE, supporting multiple series of SoCs. It is widely used in smart appliances, remote control, and sensors. ESP-NOW removes the need to pass through complex layers and add/depack headers during data transmission, significantly reducing congestion-related stuttering and delays and resulting in higher response speeds.

For example, the ESP32-C2-based button battery switch addresses wireless switches' response lag and gateway needs. It can be used with ESP-NOW without a gateway and reacts quickly. Moreover, the product supports an extended standby time: with ten button presses daily, a single-button battery can last five years.

## AI Solutions

Espressif Technology offers a comprehensive range of AI solutions. The advanced ESP32-S3 AI acceleration feature provides robust hardware support for intelligent audio and image recognition.

Regarding audio, our ESP-SR integrates components such as AI acoustic front-end algorithms, voice wake-up engines, and multi-command word recognition models, achieving high-quality and stable sound data collection. Meanwhile, its algorithms provide powerful support for voice interaction with features like acoustic echo cancellation, blind source separation, and noise suppression. In addition, the ESP-Skainet smart voice assistant combines ESP32 with AI voice recognition, supporting a 200+ offline voice command recognition engine and front-end acoustic algorithms, offering engineers a convenient solution for rapidly developing AI voice interaction applications.

Espressif's ESP-WHO provides facial detection and recognition functions. Together with the ESP32-S3-EYE AI development board, it allows rapid construction of image recognition models; ESP-RTC real-time audio and video communication solution enables Wi-Fi connectivity and audio-video processing, offering users clear video call experiences; the ESP-EYE development board is Amazon AWS qualified, compatible with FreeRTOS operating system, suitable for real-life scenarios of image recognition and voice

processing, facilitating richer AWS service connections.

Furthermore, Espressif also provides a complete set of AIoT solutions, integrating the ESP-EYE development board, ESP-WHO AI framework, and ESP-IDF software SDK, helping to implement AI technology in IoT application development successfully.



# Technical Association Participation

Open-source technology and the movement towards a unified IoT ecosystem are the future development trends. Espressif participates in global technical associations, working with industry partners to promote technological innovation.

## RISC-V

RISC-V is an open-source instruction set, which promotes an open license and collaborative model. The RISC-V International Foundation is a global non-profit organization headquartered in Switzerland. Espressif is a founding strategic member of the RISC-V International Foundation, and over the years, we have successfully developed RISC-V MCUs and achieved commercialization.

## Matter

Matter is a smart home interconnection protocol initiated by Amazon, Google, Apple, and CSA to achieve interconnectivity among different ecosystems. Espressif joined the Matter program at the outset of the protocol's launch, continuously supporting the development of the Matter certification project. During the reporting period, the company announced entry into the alliance's board and became a Promoter Member. This means that Espressif will further expand participation and leadership role within the CSA.

## Bluetooth SIG

Bluetooth SIG is an international organization aimed at developing Bluetooth specifications and promoting Bluetooth technology. Espressif, as a member of the alliance, has always been actively involved in and promoting the development and implementation of SIG protocols. During the reporting period, the company announced self-developed Bluetooth Mesh protocol stack, ESP-BLE-MESH, now supports all the features of the latest Bluetooth Mesh Protocol 1.1, making it one of the first companies globally to support this update prior to its official release by the Bluetooth SIG. In the process of promoting the Bluetooth Mesh Protocol 1.1, SIG highly recognized Espressif's outstanding contributions in Mesh Profile Enhancement, including multiple enhancement features such as CBP, ENH, EPA, PRB, and SBR.



### Bluetooth SIG appreciation – Recognition of IOP Participation

#### Mesh Device Firmware Update Mesh Profile Enhancements ( CBP, ENH, EPA, PRB, SBR)

Michal Narajowski Codecoup sp. z o.o.	<b>Espressif Systems (Shanghai) Co., Ltd.</b>	Mike Weng Infineon Technologies AG	Badrinarayanan K MindTree Limited	Peter Kozar Silicon Laboratories	Piotr Winiarczyk Silvair, Inc.
Telink Semiconductor (Shanghai) Co., Ltd	Chirag Kharwar Qualcomm Technologies, Inc.	Jagdeep Kumar Hans Qualcomm Technologies, Inc.			



# 04 Talent

SDGs

**3** GOOD HEALTH AND WELL-BEING



**5** GENDER EQUALITY



**8** DECENT WORK AND ECONOMIC GROWTH



**10** REDUCED INEQUALITIES



# 04 Talent

**Employees are Espressif's top priority, supporting the company's long-term development.** Espressif has established R&D centers in Shanghai, Suzhou, Wuxi, and Hefei in China, and internationally in Singapore, India, the Czech Republic, and Brazil. We aim to gather outstanding global talents to promote the advancement of underlying IoT technologies and contribute to the development of IoT.

Espressif always insists on development of IoT technologies, meaning that engineers joining Espressif have the opportunity to engage in core R&D work, with ample space for exploration, thereby becoming future technology experts.

Diversity is the source of innovation. Espressif respects the different backgrounds and skills of

each employee and fully encourages them to leverage their talents to do things. Our team consists of talents from about 30 countries and regions, injecting diverse innovative energy into Espressif.

The R&D is quite challenging, and Espressif hopes to recruit top talents to join us in tackling difficult tasks. Relying on Espressif's values, our team tirelessly pushes the boundaries of underlying IoT technology.

Employee welfare is our top concern. Espressif provides employees with competitive compensation and benefits, adopts a flat and flexible management system, and creates a relaxed and vibrant working atmosphere for employees.

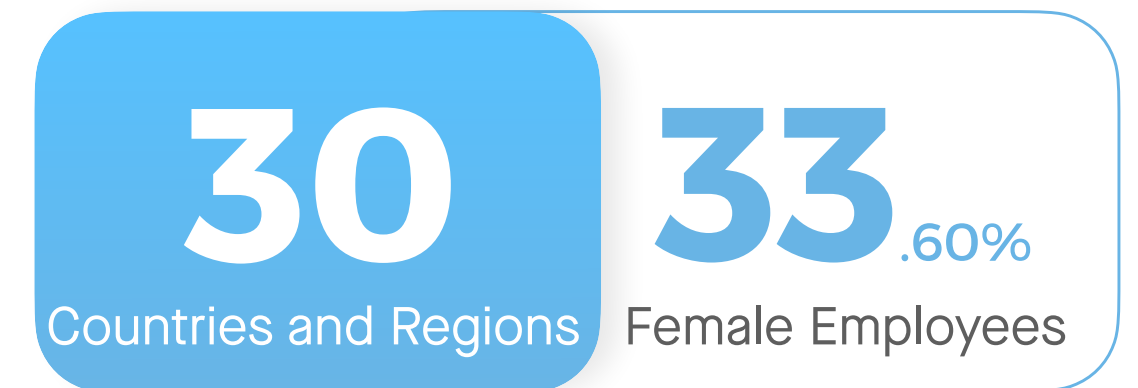
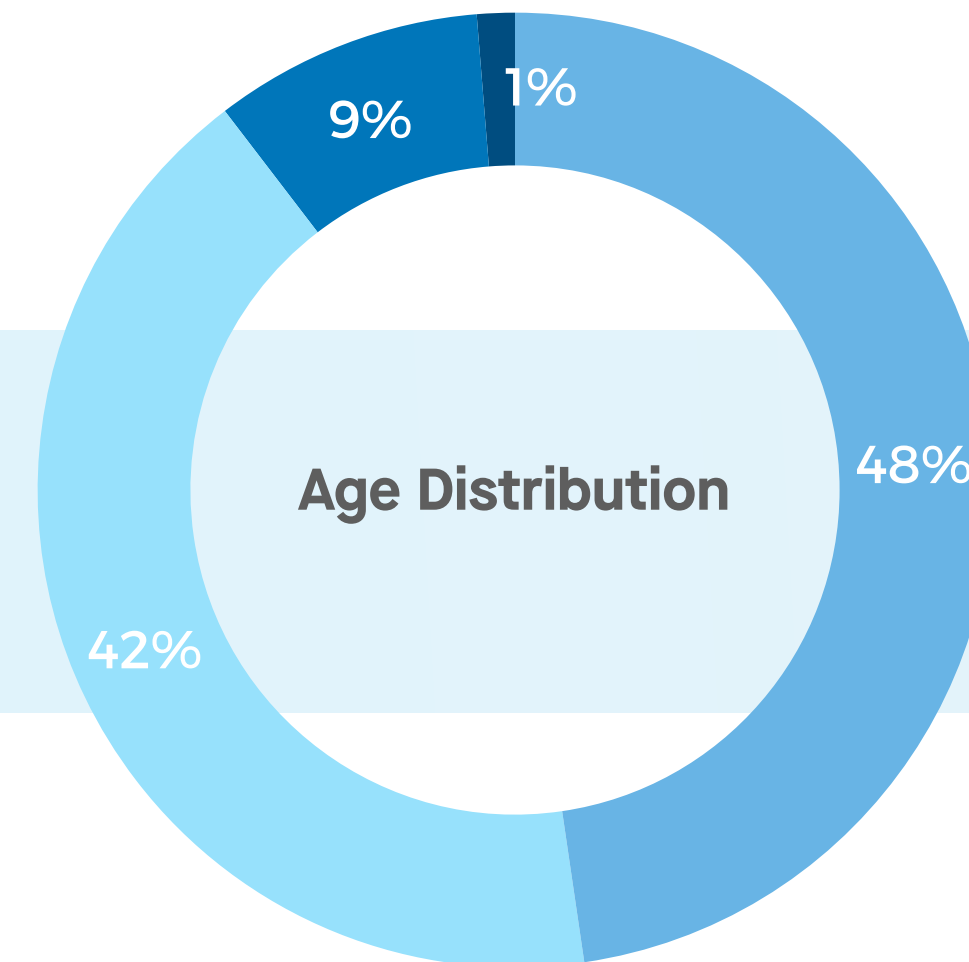
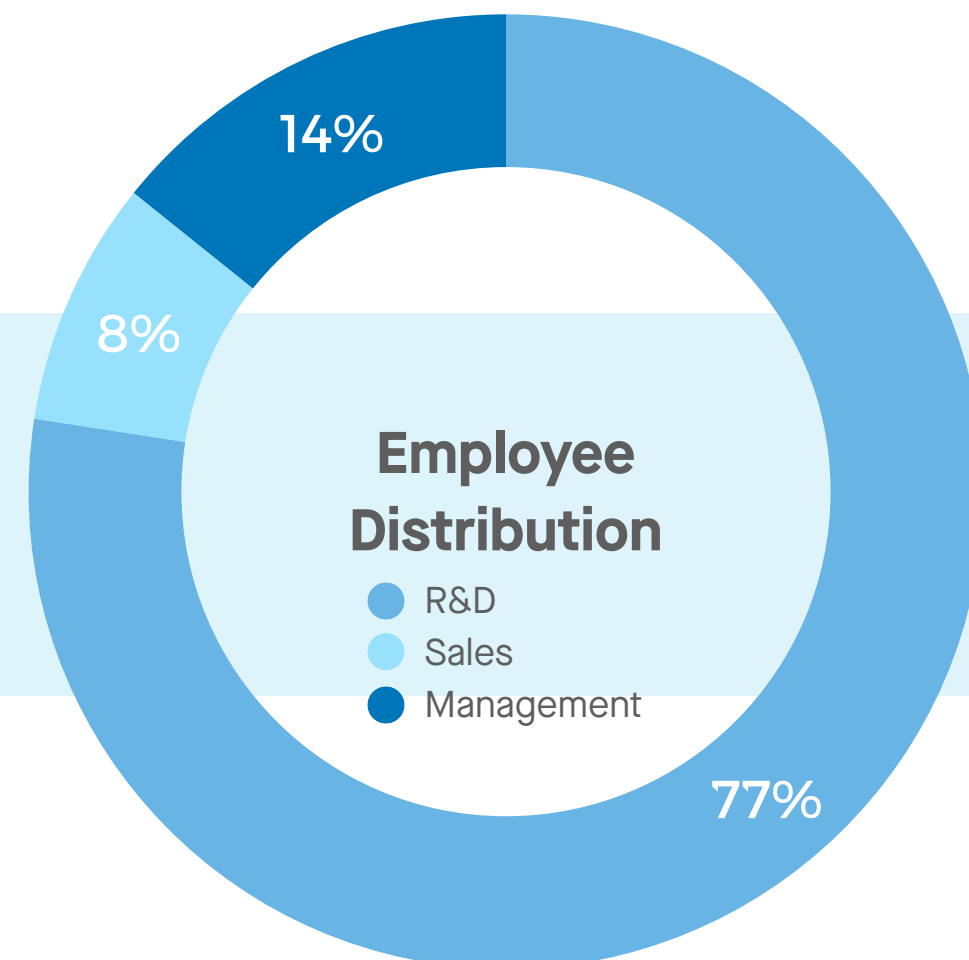
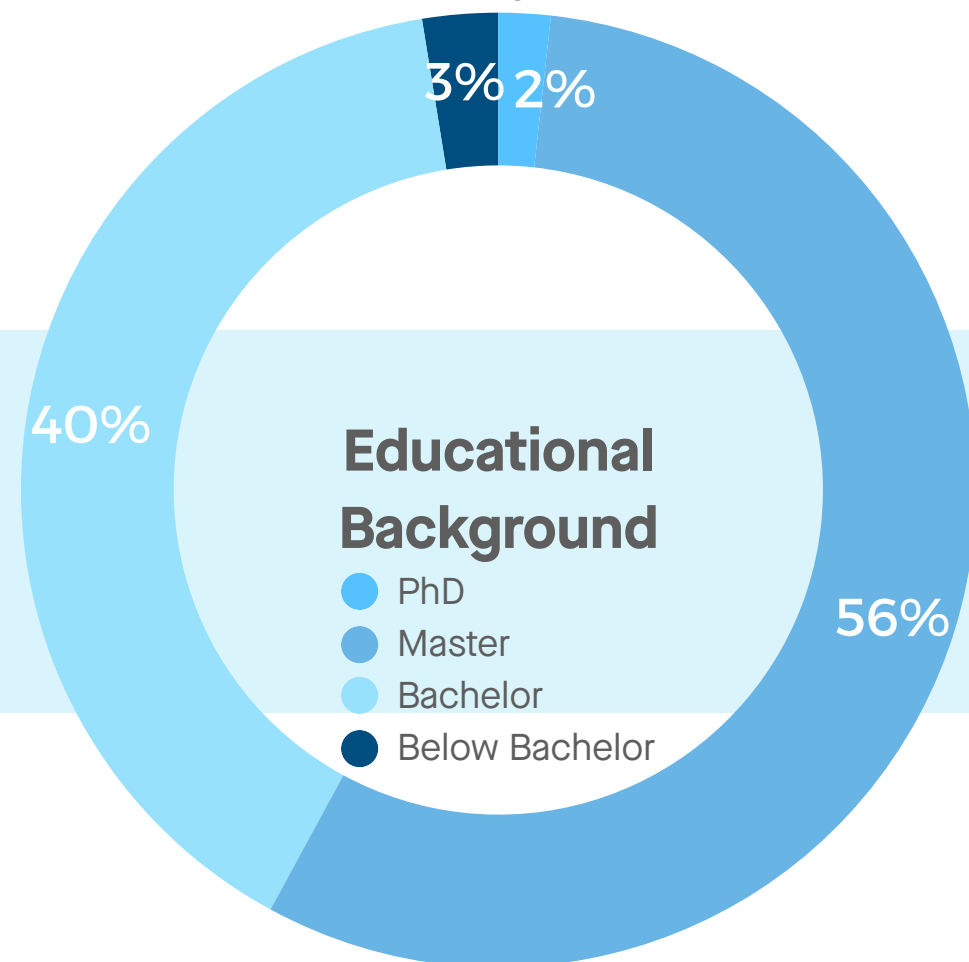
## Diversity and Inclusivity

Espressif values diversity and our inclusive culture encourages us to embrace differences and keep an open mind to new ideas. We are committed to creating an environment where employees feel free to express their thoughts.

We are firmly dedicated to fostering a fair working atmosphere. We strictly prohibit any form of discrimination based on skin color, age, gender, race or ethnicity, disability, pregnancy, religious beliefs, marital status, or any other factors in hiring or employment practices. All recruitment and assessments must be based on personal abilities,

and we strictly forbid medical tests or examinations with discriminatory intent.

As of the end of 2023, Espressif's workforce has reached 625 employees. Our staff come from approximately 30 countries and regions, with R&D personnel accounting for 77.44%. The proportion of male employees in the company is 66.40%. In comparison, female employees account for 33.60%, and female managers comprise 28.13% of the management staff. Additionally, Espressif recruits and supports individuals with disabilities, providing them with the necessary assistance.




- Below 30
- Between 30 and 40
- Between 40 and 50
- Over 50


# Employee Rights


**Protecting employees' rights is Espressif's fundamental commitment. Espressif strictly adheres to labor laws such as the Labor Law, Labor Contract Law. In our overseas R&D centers, we respect the laws of different countries and have adjusted our employee rights system accordingly.**


**Beyond legal requirements, we are among the first companies on the STAR Market to initiate stock incentive plans, widely motivating employees.**


## Labor and Human Rights


 Employment: Contract signing rate is 100%, and we do not employ child labor in any form.


 Work-life balance: Espressif provides paid annual leave, and employees enjoy statutory holidays. We adopt a flexible work system and offer team-building funds to each employee.

 Compensation and benefits: Espressif offers competitive compensation and stock incentive projects, including five insurances, an additional housing provident fund, commercial medical insurance, and others.

 New employee care: Espressif assigns "mentors" and "buddies" for every new hire. Employees are encouraged to report any work or life issues, and the company will help resolve the problems.

 Humane rights: Espressif has zero tolerance for sexual harassment, sexual abuse, physical punishment, mental or physical coercion, or verbal abuse, and has established systems to prevent such behaviors.

 Anti-discrimination: Espressif treats employees equally and protects their legal rights. There were no discrimination incidents in 2023.

 Privacy: Espressif protects employee privacy and does not collect private information.

## Compensation Scheme

Espressif employs staff globally according to local laws and provides competitive compensation incentives to attract the best local talent. We implement budget management for compensation benefits, continuously optimize personnel structure and compensation incentive systems to enhance employee motivation. Based on the

overall framework, the company sets different compensation incentive systems:

1. Compensation incentives should consider local market conditions and legal regulations;
2. For the management team, technical and business backbone: Comprised of fixed salary, project bonuses, annual performance bonuses, and stock incentives;
3. For other employees: Comprised of fixed salary, project, and annual performance bonuses.

The Compensation and Assessment Committee is responsible for formulating and assessing the compensation plans and performance of directors and senior management. The shareholders' meeting is responsible for reviewing the directors' compensation standards and annual stock incentive plans. In 2023, the company's 2023 Restricted Stock Incentive Plan was approved by over 99.99% of shareholders present at the shareholders' meeting.

# Career Development

**Espressif has built a learning system. We believe continuous learning, maintaining thoughtfulness, and adhering to originality are essential for long-term development. Espressif encourages every employee to embrace knowledge, expand the boundaries of their thoughts and skills, and reflect this in their work.**

## Training

Espressif has established a training system and designed training courses to help employees learn and improve. Training categories include new employee orientation, graduate training and so on. The company encourages departments to conduct various forms of knowledge sharing. The company has over 60 offline training courses and nearly 90 courses with 5,000 video lessons. A 100% training coverage rate for employees was recorded.

## Reading Culture

Books are the ladder of human progress. Espressif encourages employees to cultivate a love for reading. We suggest they read 6 books each year. We have a library where books can be borrowed for free, and employees can suggest book purchases to enrich their collection.

## Promotion

Espressif respects every employee's labor. We have established a promotion system based on performance and rewards employees accordingly. In 2023, 100% employees were assessed for performance and career development.

# Occupational Health and Safety

## Safety Management

Espressif has established the "Safety Management Standard" system, adhering to "safety first, prevention as the main approach, participation by all, and comprehensive management." In 2023, we carried out 33 on-site safety training and periodic online training covering prominent responsible persons and safety production management personnel training, general safety training, and laboratory safety training.

Based on the requirements of the emergency plan, we have formulated the "Emergency Plan for Production Safety Accidents" and conducted emergency resource surveys, resulting in the "Emergency Resource Survey Report" to standardize and guide emergency rescue actions within the company.

The company controls potential safety hazards that employees may encounter through design, engineering, and management controls, safe work processes, and necessary safety training. In 2023, the company lost zero workdays due to occupational injuries and employee mortality rates.

## Occupational Health

We pay close attention to each employee's health status. Espressif guarantees employees' occupational safety and provides preparedness for emergencies, work injuries, and diseases. Additionally, Espressif focuses on employees' mental health, offering training for new graduates to help them identify and alleviate workplace stress.

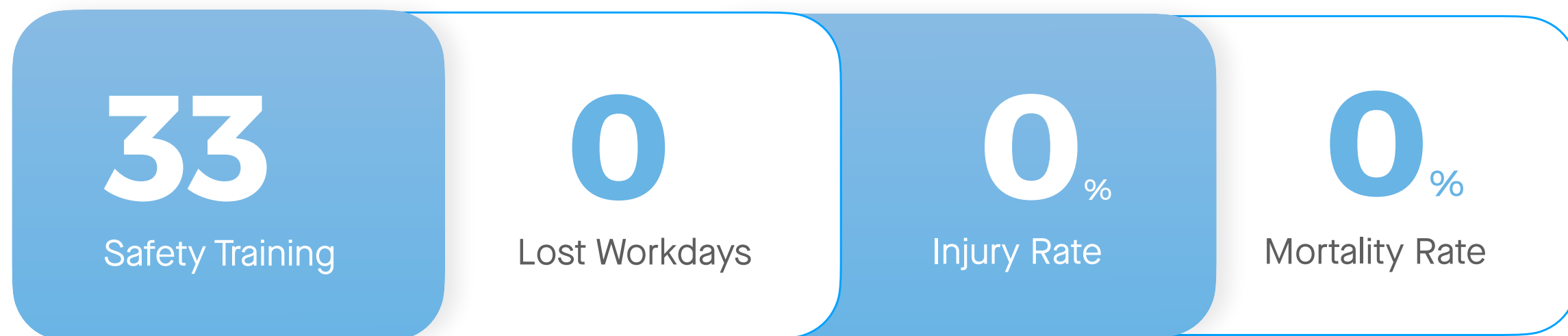
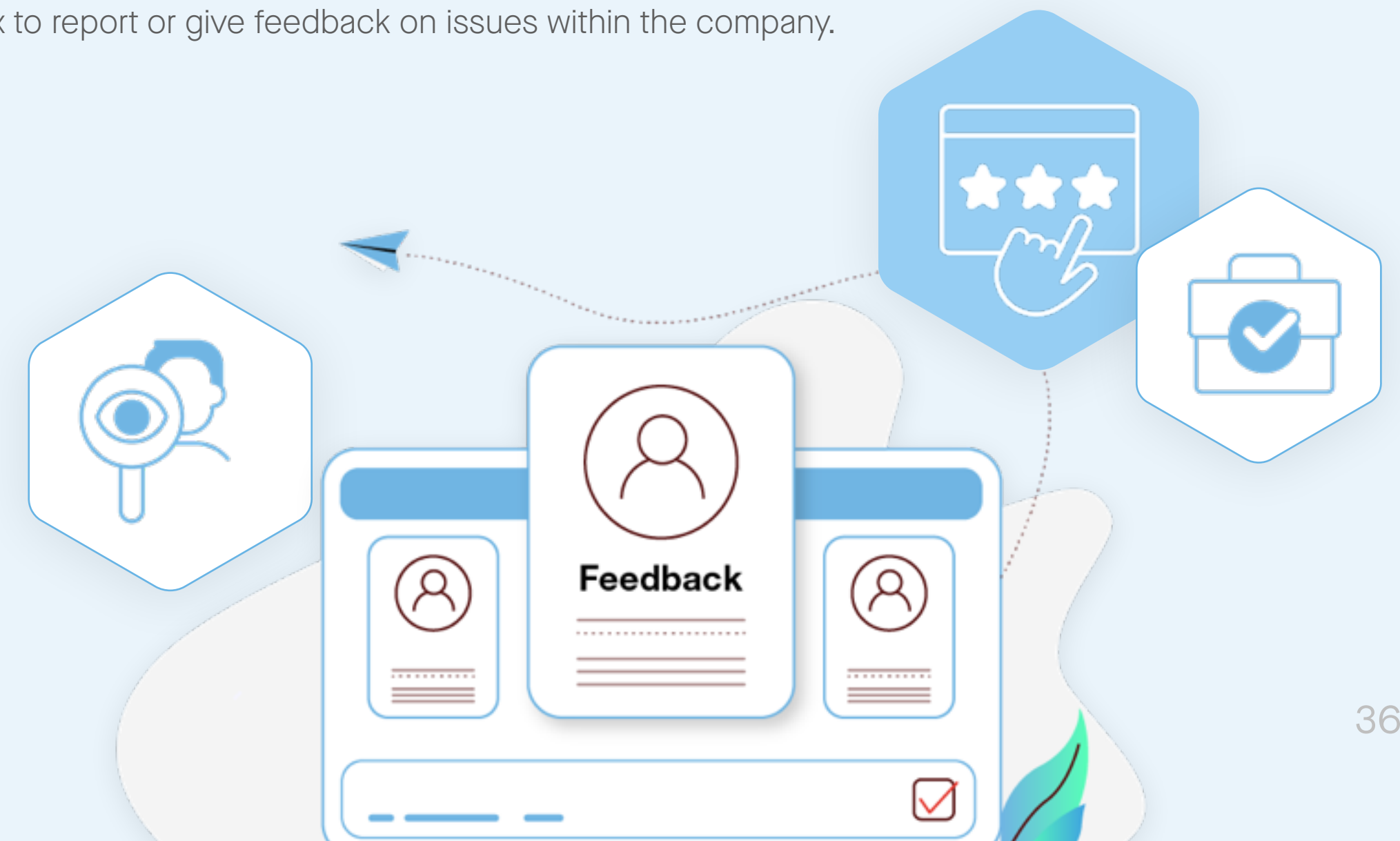
## Caring for Women

The office is equipped with refrigerators and microwaves; the pantry provides pure water and hot water for both drinking and disinfecting cups; and we provide various common medicines, such as ibuprofen for relieving menstrual pain and fever.

The office provides exclusive lactation rooms with good privacy to address the difficulties female employees encounter during lactation; special lactation leave is also available, avoiding overtime and business trips during lactation.

## Employee Feed Back

Employee feedback is an essential reference for corporate management. Espressif actively listens to employee voices and encourages them to speak their minds openly. We conduct an "Employee Satisfaction Survey" annually to anonymously collect employee feedback for management optimization. Additionally, employees can send emails to a specially designated mailbox or the CEO's mailbox to report or give feedback on issues within the company.



**05**  
**Business**  
**Sustainably**

EXCELLENT



AVERAGE

**SDGs**

<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>12</b> RESPONSIBLE CONSUMPTION AND PRODUCTION 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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# 05 Business Sustainably

**"Professional and reliable, creating value for customers" is our strategy. Espressif is committed to working with partners to advance the intelligent connection, designing outstanding AIoT chips and focusing on self-developed open-source operating systems and comprehensive solutions.**

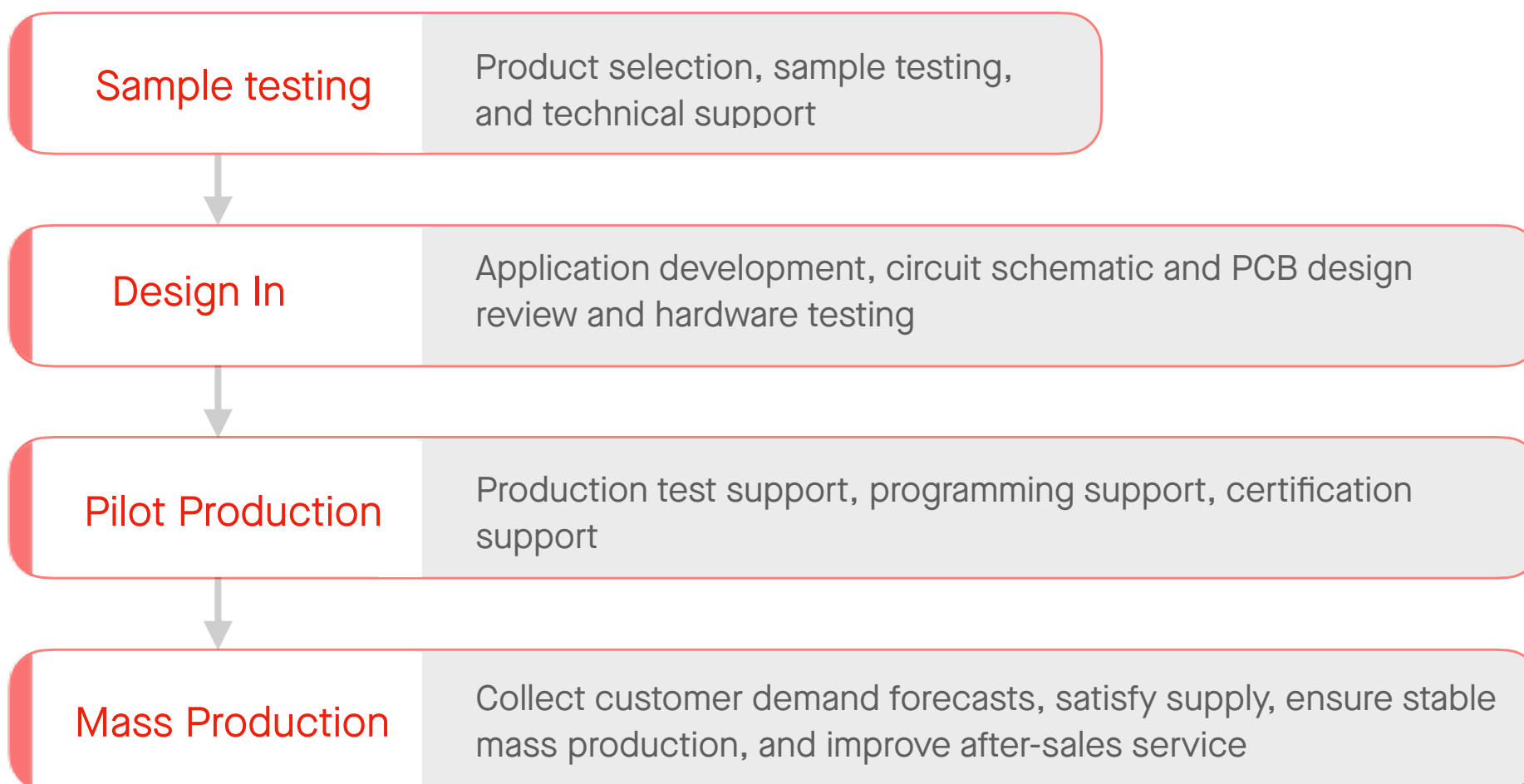
As a leading global manufacturer of SoCs, Espressif analyzes customers' demands and offers a wide range of products, solutions, and services. In 2023, Espressif established high-quality customer relationships with numerous clients and received many honors, including Best Strategic Partner.

## Innovative and comprehensive service

Espressif has a comprehensive customer service system, providing customers professional support from product design and certification to manufacturing. Customers only need to focus on

their own product design work, and with the help of Espressif's service resources, they can quickly apply their products to real-world scenarios, thereby achieving long-term mutual development.

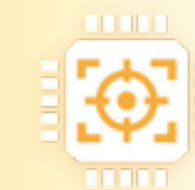
**Our service scope penetrates the entire process:**



## Quick Glance of Espressif Chip Family and Software



### ESP Product Selector



#### Chips, modules, development boards

Include MPN, market status, basic product information including cores, antennas, packaging, storage, peripherals, etc., as well as packaging information.

#### Application solutions and software

Espressif solution introduction, recommended chips, supported operating system ESP-IDF version.

## Innovative Service

**Espressif has innovated its customer service system, aiding customers with any business or technical issues encountered during development to ensure the best experience.**

### ESP Chip & Module Selector

Espressif engineers have developed an online product selector, [ESP Product Selector](#), to simplify product selection. This selector helps customers quickly compare and understand the key performance parameters and differences between different product series, thereby quickly determining selection and accelerating the whole process.

### Professional and Comprehensive Documentation

Espressif provides a wide variety of technical documentation and resources. The content includes product ordering information, certification information, technical specifications, beginner's guides, design guides, programming guides, testing guides, usage guides, technical references, hardware resources.





### FAQ

The [ESP-FAQ](#) launched by Espressif covers development environments, application solutions, software platforms, hardware-related issues, and testing, among other common problems. Users can quickly search and get answers.

# Optimizing Customer Experience

## Communication

Through the CRM system, Espressif manages customer inquiries, business issues, and technical service requests. Maintaining communication is crucial for optimizing the customer experience.

-  We regularly disseminate the latest product introductions and company news through multiple channels, such as the official website, WeChat, YouTube, Twitter, Facebook, Bilibili, and email newsletters.
-  Espressif engineers engage in various platforms like GitHub and the Espressif BBS forum to discuss with the developer community.
-  In 2023, in addition to the online communication window on the official website, Espressif also participated in several renowned industry exchange summits, such as the CES, Embedded World in Nuremberg, Smart Home Expo in India, and the Guangzhou International Lighting Exhibition, maintaining close contact with customers and showcasing a rich product line.
-  The company regularly visits customers and provides on-site support for encountered issues.

## Multiple Channels for Purchase

At the same time, we aim to make technology products not only cost-effective but also more accessible and closer to the general public. Espressif has joined e-commerce platforms like Taobao, AliExpress, and Amazon and added sample purchase links on the official website product pages.

## Information Security

We prioritize protecting customer information security. We value every design detail, sign "Confidentiality Agreements" with customers to protect them, and regularly conduct third-party penetration testing on the company and customer-facing networks to collect and handle customer data securely and responsibly. As of the end of the reporting period, Espressif has not received any confirmed complaints about customer privacy infringement.



# Products Quality Management

Espressif's products and services are sold worldwide, meeting international regulations and specific customer requirements. The company continues to solidify the foundation of its quality management. Espressif continuously launches innovative products and services, creating more customer value.

## Management Systems and Certification

The company has obtained ISO 9001:2015 quality management system certification and established a quality management system, strictly controlling product quality, focusing on product safety, and placing high emphasis on quality management. Espressif monitors

quality issues throughout the product life cycle and analyzes data from various sources to address and resolve issues in a timely manner.

Espressif's quality policy is "Innovative design, perfect quality, process optimization, and rapid response." To enhance the quality awareness of all employees, Espressif conducts presentations in various forms and requires all employees to understand their connotations accurately and implement them in actual work.

As of the date of this report, the company has not experienced any major product quality incidents.

### The product quality management system includes

- Stating the requirements
- Design and development
- Control of externally provided processes, products, and services, as well as production and service provision
- Release of products and services
- Control of non-conforming outputs











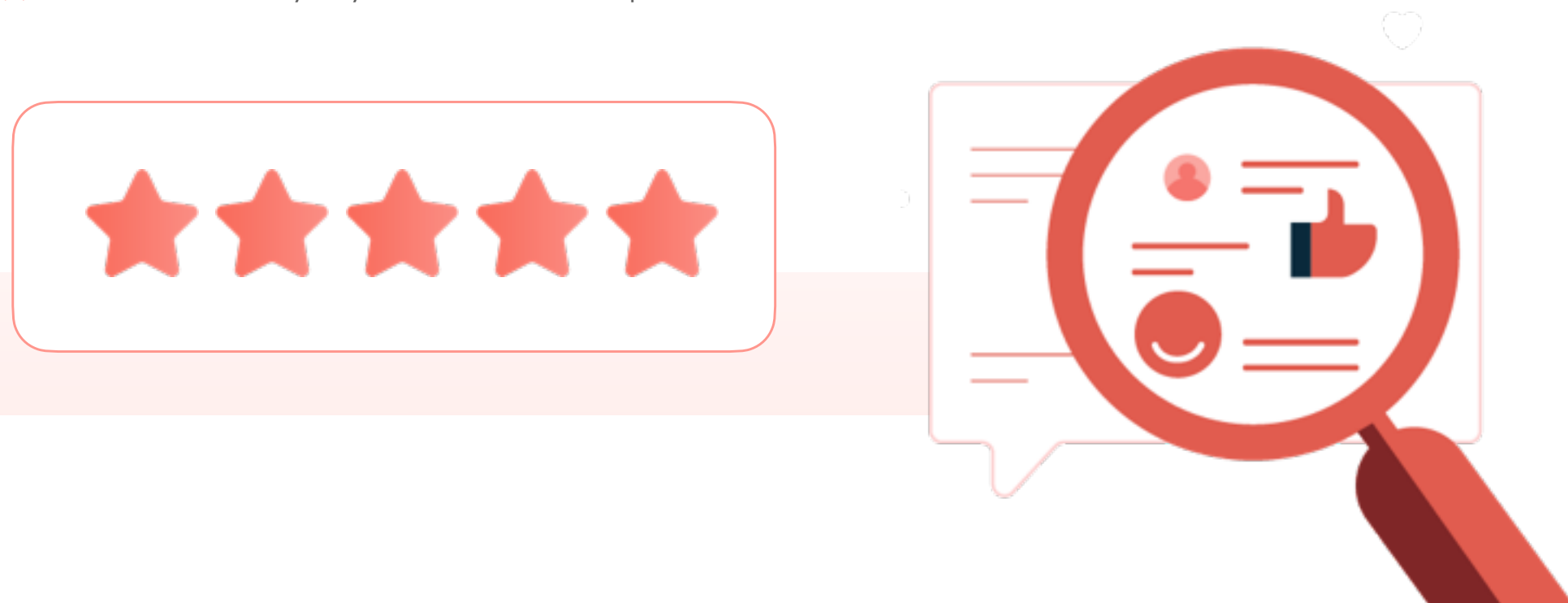
# Customer Feedback

## Customer Evaluation

Espressif values long-term partnerships and has established a customer satisfaction survey mechanism. Espressif conducts periodic visits, phone calls, or meeting communications with customers to fully understand customers' suggestions regarding the company's products and services. We carry out annual customer satisfaction surveys at the beginning (or end) of each year. Espressif analyzes and addresses customer feedback results, compiles them into customer satisfaction survey reports, and takes timely improvement measures to continually strive to offer customers the most competitive products and services.

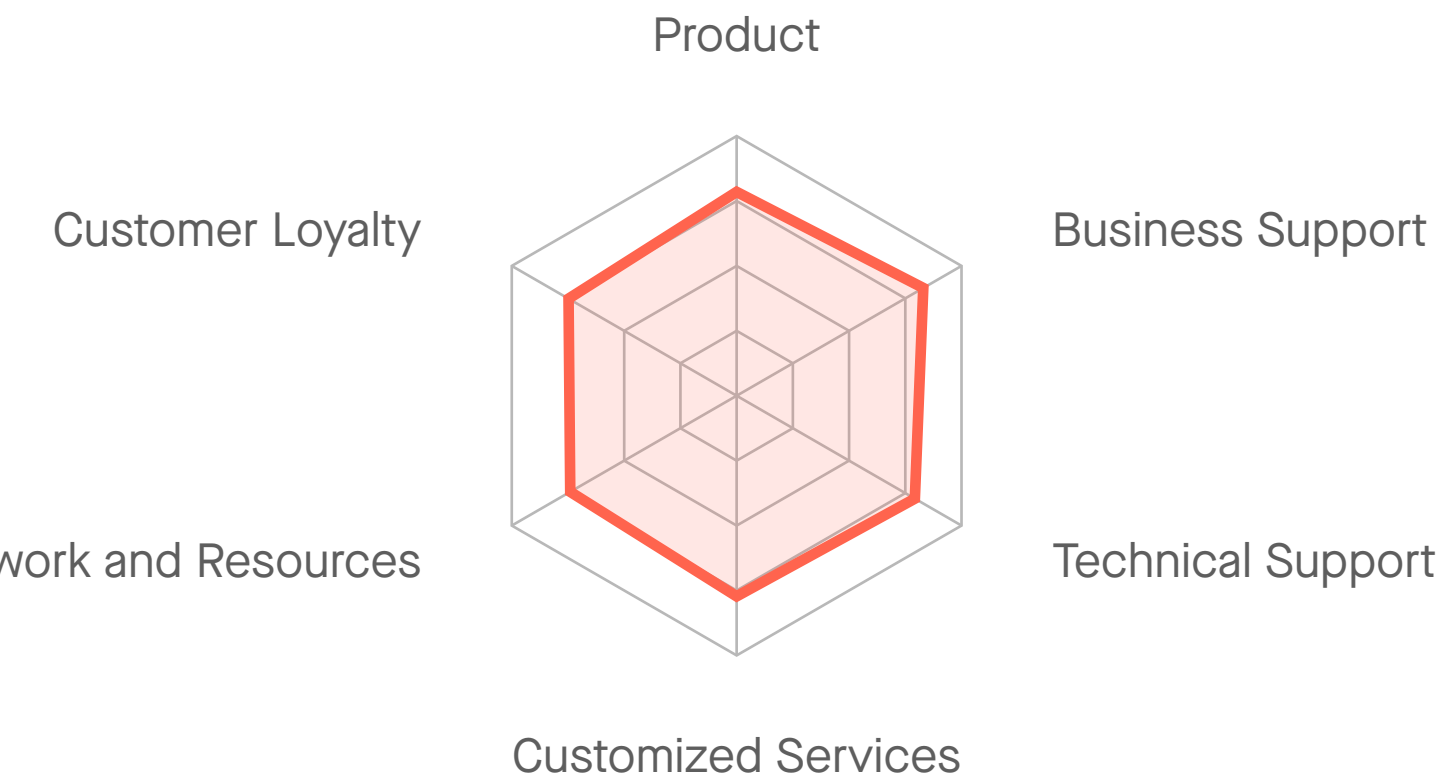
### Multi-dimensional Assessment

-  Product: Product quality, stability; pricing, delivery time, packaging.
-  Business Support: Timeliness of service; the problem-solving ability; timeliness of order delivery; after-sales service; regular visits by the support team and frequency of visits.
-  Technical Support: Customer awareness; response speed; problem-solving ability of the support team; satisfaction level with technical resources and documentation.
-  Customized Services: Customer awareness; customer satisfaction; satisfaction with the price.
-  Network and Resources: Network resources meet customer needs; customer awareness of resource access; clarity of technical documentation; which documentation solve problems.
-  Customer Loyalty: Intention to repurchase; recommendation index.



### Customer Satisfaction Survey 2023

The answers to each question in the survey questionnaire are divided into five levels, with the lowest score being 1 and the highest score being 5. Overall, the results of the 2023 annual customer satisfaction survey showed high combined scores across the six evaluation dimensions.



### Complaint Mechanism

We value customer complaints and treat each one seriously. Our team analyzes, assesses, and improves upon every complaint, addressing all types of complaints in a positive and efficient manner. Espressif manages the complaint process according to the internal "Customer Complaint Handling Management Specification."

For the year 2023, all customer complaint events were handled promptly according to corporate bylaws and the ratio of resolved complaints to total complaints was 100%.



# 06

## Supply Chain Management



SDGs

8 DECENT WORK AND ECONOMIC GROWTH



10 REDUCED INEQUALITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



# 06 Supply Chain Management

Espressif is at the forefront of the value chain, focusing on design stages without manufacturing. The manufacturing phases such as wafer fabrication, packaging, and testing are carried out by evaluated and qualified suppliers. Given the significant impact of the manufacturing process on society and the environment, we aim to control and minimize potential risks.

To achieve this goal, it is crucial to establish sustainable, mutually beneficial partnerships with our supply chain. The company has the management system that regulates supplier development, selection, evaluation, review, quality, and change control. This ensures that the suppliers deliver products and services that meet our quality and delivery standards, fostering stable win-win relationships with suppliers.

## Management Model



Business integrity, confidentiality, whistleblower protection, responsible mineral procurement, honest operations, fair trade, information security, respect for and protection of IP rights.

**Ethical Behavior**

Freedom of employment, prevention of child labor, working hours, compensation and benefits, humane treatment, non-discrimination, freedom of association.

**Labour Force**

Occupational safety, emergency preparedness, occupational injuries and diseases, public health/diet and accommodation.

**Health Safety**

Environmental permits and record-keeping, pollution control and prevention, hazardous substances.

**Environment Protection**

Legal and customer requirements, risk identification and management, training and communication, auditing and evaluation, continuous improvement, documentation and retention, supplier responsibility, grievance mechanisms.

**Manage**

**Supplier Code of Conduct**

# Control Risks at the Source

Before suppliers start cooperating with Espressif, they have to pass our strict assessment system. This system includes reviewing existing and potential new suppliers based on product compliance industry standards, social and environmental standards, conflict minerals management, and Espressif's business conduct guidelines.

Upon onboarding, all qualified suppliers are required to sign Espressif's "Business Conduct Guidelines," "Supplier Environmental Commitment

Statement," "Supplier Corporate Social Responsibility and Environmental Protection Agreement," and so on. The signing rate for core manufacturing suppliers is 100%; manufacturing enterprises must pass ISO 9001 and ISO 14001 certifications.

Additionally, the company has developed a mass production collaboration platform that digitalizes the process, enabling full-process tracking and significantly improving supply chain information synchronization and mass production efficiency.

## Strict Assessment

The company follows a regular business review process for core suppliers to track their operations. This procedure helps us identify and resolve issues within the supply chain.

After the evaluation, the company will urge suppliers to provide an improvement plan and monitor improvement measures within one month.

The company also encourages suppliers to use RBA guidelines to maintain and enhance compliance. Several core suppliers have participated in training and passed RBA certification.

### 2023 Annual Supplier Performance Evaluation Result



### Supplier Access Assessment

Management	Assessment Criteria	Core Supplier Achievement Rate
Governance	Signing the "Espressif Business Conduct Code"	100%
	Conflict Minerals Reporting Template (CMRT)	100%
	ISO 9001 Certification	100%
Social	Signing the "Supplier Security Survey"	100%
	ISO 45001 Certification	100%
Environment	Signing the "Declaration of Non-Use of Toxic and Harmful Substances"	100%
	Signing the "Supplier Corporate Social Responsibility and Environmental Protection Agreement"	100%
	Signing the "Supplier Environmental Commitment"	100%
	ISO 14001 Certification	100%

# Multi-faceted Responsibility Management

## Environmental Protection

Espressif has developed environmental management policies and green procurement standards based on relevant laws and regulations encapsulated in the "Espressif Environmental Substance Management Standard." We aim to produce environmentally friendly products, reducing environmental impact across the entire supply chain. From the onset of product design, the company sets precise environmental requirements for production materials and processes based on this standard. Espressif requires suppliers to establish an environmental management system according to the ISO 14001 international standard, obtain certification, adhere to local regulatory pollution discharge permits, and commit continuously to environmental protection activities. It is recommended that suppliers manage hazardous substances according to the IECQ QC 080000 standards to meet Espressif's requirements.

All core suppliers have passed ISO 14001 certification; Espressif also advises suppliers to manage hazardous substances according to QC 080000 and obtain system certification. Espressif's products comply with

China RoHS, EU RoHS, and REACH requirements. When customers opt for halogen-free products, suppliers must meet Espressif's HF (Halogen Free) requirements and provide testing reports.

## Conflict Mineral Management

We and our suppliers use cassiterite, columbite-tantalite, gold, wolframite, and their derivatives tin, tantalum, and tungsten (conflict minerals) in manufacturing products. Our goal is not to directly or indirectly fund or benefit armed groups in the Democratic Republic of the Congo or adjoining countries while continuing to support responsible sourcing from the region. The company strives to act according to industry practices, including supporting the RBA and the GeSI and improving supply chain due diligence. We require suppliers to establish compliance requirements for conflict minerals, implement controls and reporting, adopt appropriate sourcing screening measures, and provide data and material proof that they are "DRC conflict-free" to ensure our supply chain is not involved with conflict minerals. Espressif actively responds to downstream customer requests, issuing CMRT surveys and compliance declarations.

## Export Control

We ensure that the company's trade activities comply with international and local legal regulations. The legal team collaborates with R&D, business, and supply chain teams to establish and improve the company's export control compliance system. Regular training and updates ensure the team understands and follows the latest changes in international and domestic export regulations. In 2023, export compliance training totaled 14 hours, covering all logistics, purchasing, and supply chain-related positions.

We have also established strict approval processes to ensure that exported products and technologies do not violate any country's regulations and promptly answer any questions from customers to ensure the implementation of export control compliance.

Our export control compliance efforts support the company's robust operation and sustainable development.

## Products comply with environmental standards



REGULATIONS

07  
Governance

SDGs

5 GENDER EQUALITY 	8 DECENT WORK AND ECONOMIC GROWTH 	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 	17 PARTNERSHIPS FOR THE GOALS 
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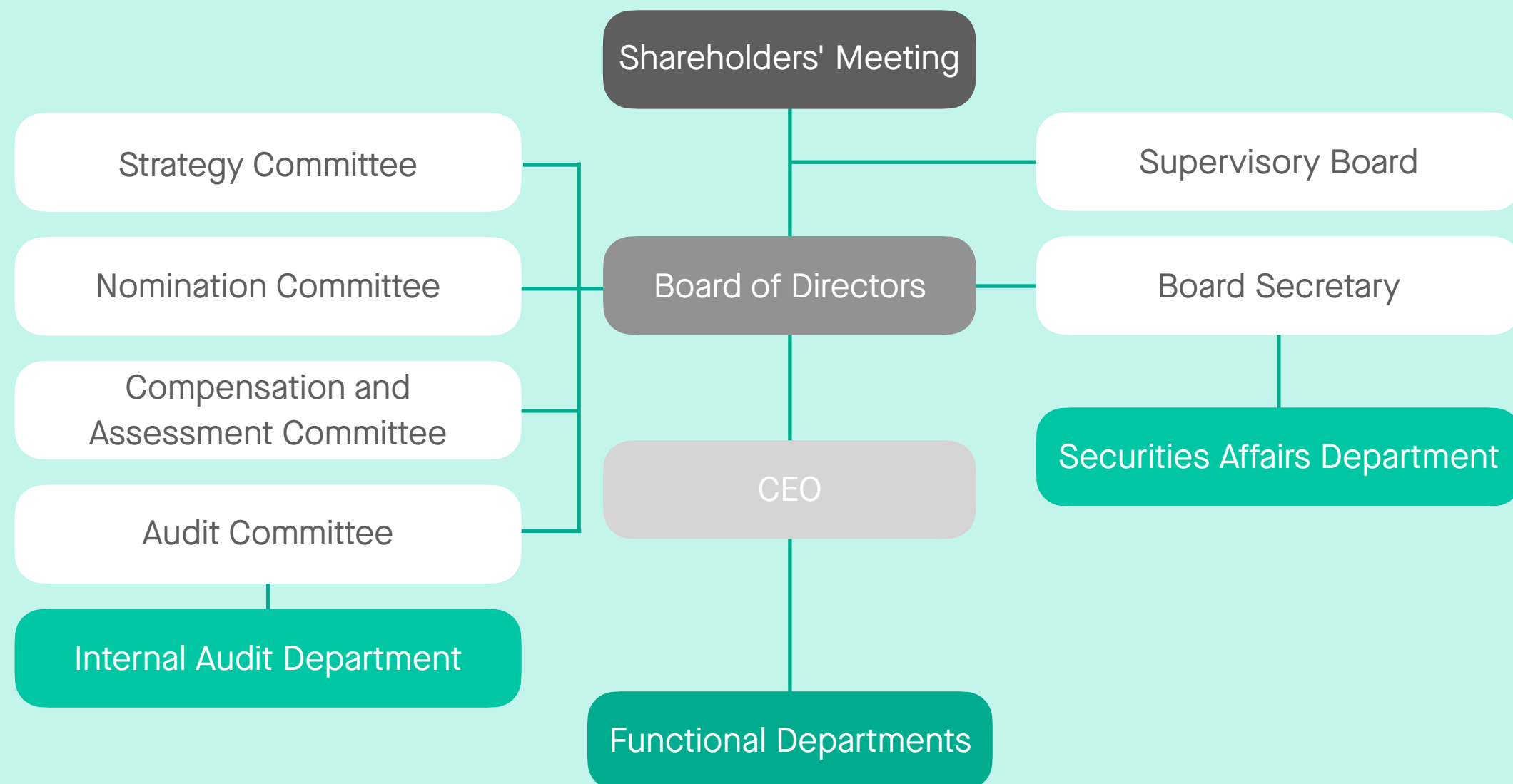
# 07 Governance

## Governance Structure

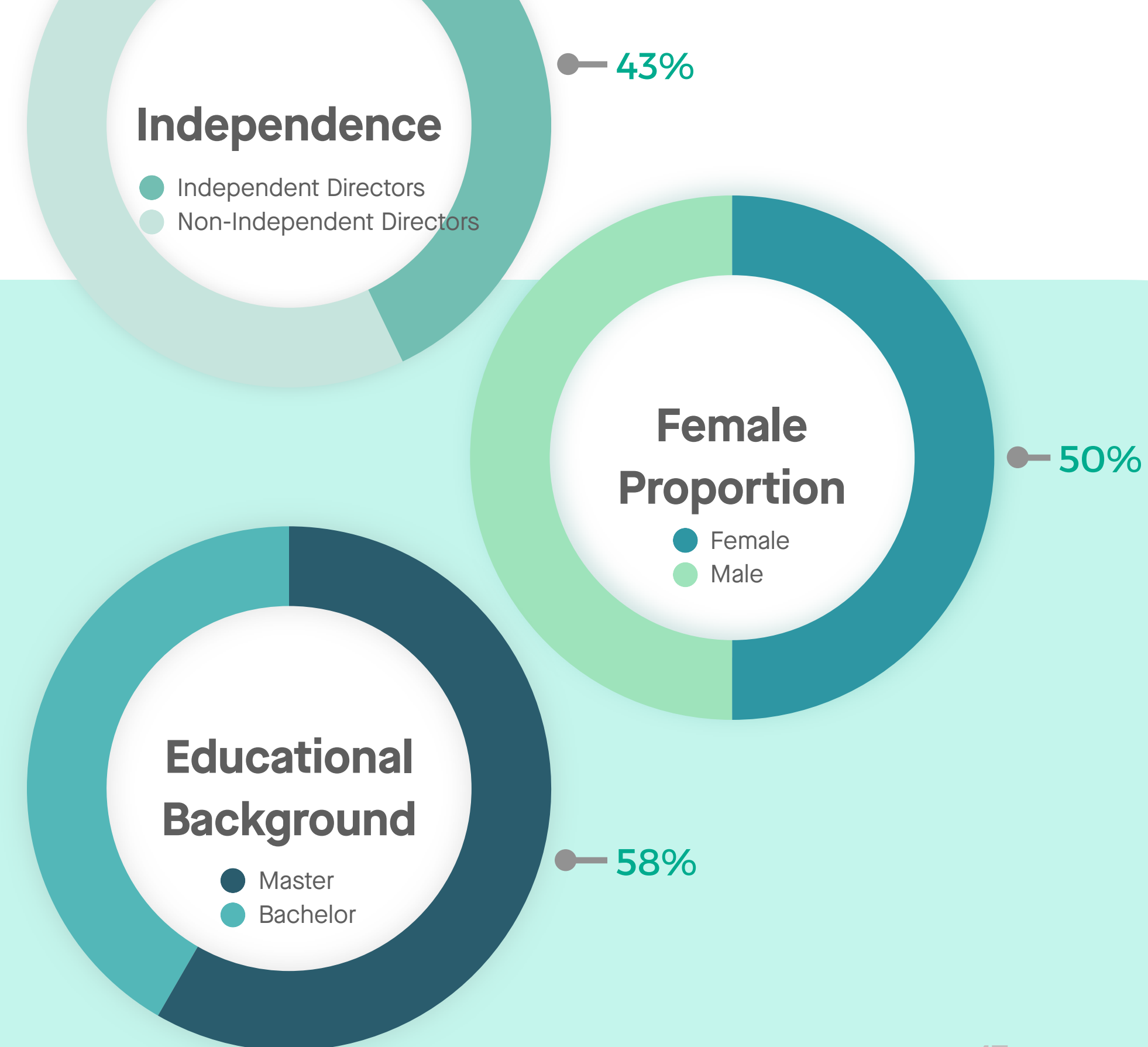
The company has established a complete corporate governance structure, consisting of the shareholders' meeting, board of directors, supervisory board, and company management. This creates a governance system where the powers and responsibilities of each body and management are clearly defined and are coordinated and balanced with each other. Espressif's governance framework is constituted by our code of conduct, corporate governance policies, company charter, and other internal control systems.

The shareholders' meeting is the highest governing body of the company. The board of directors is the routine decision-making body, with four specialized committees: the Strategy Committee, Nomination Committee, Compensation and Assessment Committee, and Audit Committee. The board of directors is accountable to the shareholders' meeting. The supervisory board is the company's supervisory body. The general manager, appointed by the board of directors, is responsible for the company's daily operations.

### Governance Structure



Professional and Diverse Structure of Directors, Supervisors, and Senior Executives



## Governance Structure



**Board of Directors**

**Members**  
There are 7 directors, of which 3 are independent directors. The list of directors can be found in the Espressif 2023 Annual Report.

**Meetings Frequency**  
A total of 14 meetings were held in 2023, with an attendance rate of 100%.

**Responsibilities**  
Assess and appoint senior management of the company, develop the company's business plan and investment proposals, formulate and amend the company's charter and basic management systems, decide on the external investments, asset sales and purchases, and among other matters.



### Strategy Committee

**Members**  
3 directors, including 2 independent directors.

**Meetings Frequency**  
2 meetings held in 2023, with an attendance rate of 100%.

**Responsibilities**  
Recommendations on the company's long-term development strategy and major investment decisions, etc.



### Audit Committee

**Members**  
3 directors, including 2 independent directors.

**Meetings Frequency**  
6 meetings held in 2023, with an attendance rate of 100%.

**Responsibilities**  
Propose external audit firms, supervise internal audit system, be responsible for internal and external audit communication, review the company's financial information and disclosure, etc.



### Nomination Committee

**Members**  
3 directors, including 2 independent directors.

**Meetings Frequency**  
1 meeting held in 2023, with an attendance rate of 100%.

**Responsibilities**  
Make recommendations, search for qualified candidates for directors and managers, review candidates for directors and managers, and make recommendations, etc.



### Compensation and Assessment Committee

**Members**  
3 directors, including 2 independent directors.

**Meetings Frequency**  
6 meetings held in 2023, with an attendance rate of 100%.

**Responsibilities**  
Conduct evaluations and make recommendations, and research and review the compensation policies and schemes for directors and senior management, etc.



# Protection of Shareholder Rights

## Information Disclosure

Our information disclosure system includes "Espressif Information Disclosure Management," "Insider Registration Management," and "Significant Internal Information Reporting System," applicable to all documents and statements disclosed by the company in various forms.

The Securities Affairs Department set for the company's information disclosure affairs. It is responsible for information disclosure under the leadership of the board secretary.

During the reporting period, our information disclosure is truthful, accurate, complete, and timely while ensuring all shareholders have equal opportunities to access information.

In 2023, the company disclosed four periodic reports and 106 temporary announcements.

## Investors Relation

Espressif emphasizes investor relations management, disclosing information through designated websites and media. At the same time, the company communicates with investors through various means such as the investor relations section on the official website, investor contact email and hotline, investor relations interactive platform, and on-site investor research, enhancing the transparency of company information, and protecting interests of all shareholders, especially small and medium shareholders.

In 2023, the company held three conferences, five shareholder meetings, and 38 investor research sessions (1,195 investment institutions), showcasing performance and social responsibility

fulfillment to investors through video and text live broadcasts, graphical presentations, and ESG reports. Additionally, the newly established WeChat official account "Espressif Board Secretary" further improves the transparency of company information.

## Shareholder Returns

Since June 2022, the company has carried out four phases of share repurchase programs. As of this report disclosure, 2.53 million shares have been repurchased, accounting for 3.13% of the total share capital, with payment exceeding RMB 235.74 million. The company aims to provide long-term investment returns, with accumulated RMB 316.53 million in cash dividends distributed to shareholders. Since its listing in July 2019, the net funds raised were RMB 1.13 billion, with cash dividends and repurchase amounts cumulatively accounting for 48.8% of the net funds raised from the IPO.

**3**

Conferences

**5**

Shareholder meetings

**38**

Investor research sessions

**1,195**

Investment institutions

**48.8%**

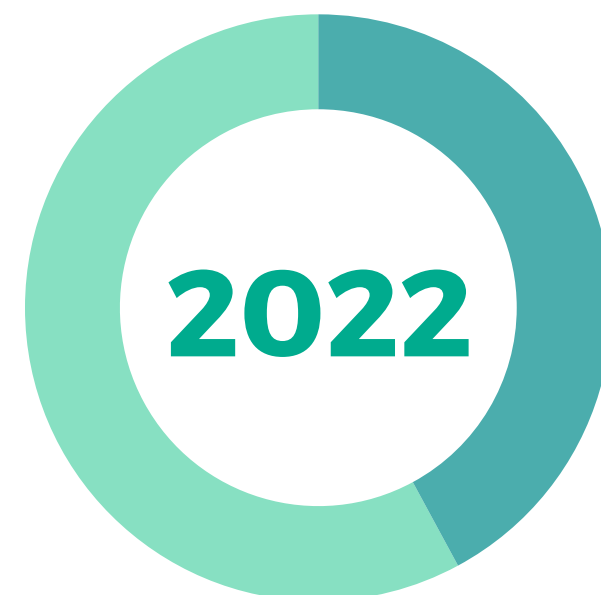
Ratio of cash dividend and repurchase amounts to raised funds

**A**

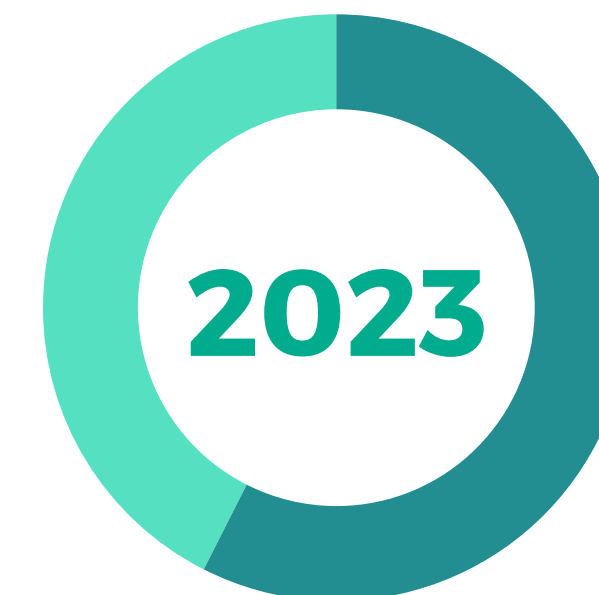
Information disclosure rating



**64.9%**  
Cash Dividend Ratio



**42.1%**  
Cash Dividend Ratio



**57.5%**  
Cash Dividend Ratio

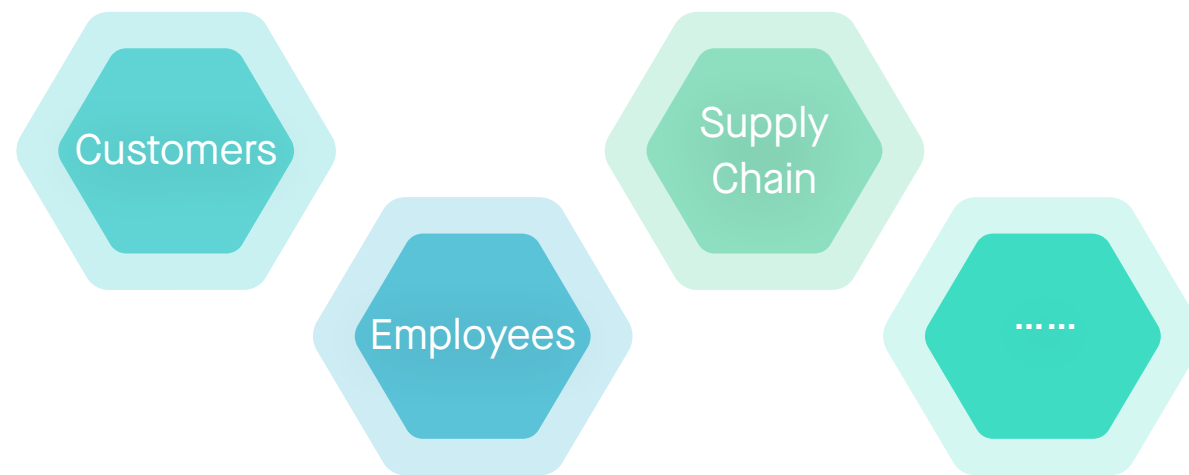
# Compliance & Ethics

## Compliance and Legality

Compliance and legality are the baseline for Espressif's development and growth. The company addresses environmental and social issues by adhering to laws, government, and customer requirements.

The Legal Department, Internal Audit Department, System Reliability Department, and Human Resources Department are responsible for the construction and operation of the company's compliance system. We aim to promote the institutionalization and standardization of company compliance management and create an organizational atmosphere.

The Quality Management and Supply Chain teams manage issues such as human rights, scrap recycling, hazardous substances, and conflict minerals in the supply chain. The legal and human resources teams regularly receive guidance on bribery, ethics, employment, and labor practices from legal advisors and industry associations. The Business team oversees customers' environmental, social, and ethical requirements. We conduct cross-functional work to ensure compliance for all related teams. The company's established compliance system prohibits employees and business partners from engaging in illegal or unethical conduct.



## Business Ethics

Espressif strives to reach the highest ethical behavior standards. Our Code of Business Conduct guides our professional relationships with customers, employees, suppliers, shareholders, regulatory agencies, and the community. Our long-term Code of Conduct outlines our core values and sets expectations for business conduct. This code applies to all employees, and we expect all third parties involved in business with us to follow our Code of Business Conduct.

## Supervision and Enforcement

The Internal Audit Department has developed systems for internal auditing, business integrity, anti-fraud, whistleblowing, and conflicts of interest.

Supervision is divided into regular and special oversight. The Internal Audit Department annually formulates an internal audit plan. It carries out regular supervision, conducting routine and continuous supervision and inspection of company operations and timely correcting identified issues. Special oversight is targeted internal inspection conducted based on changes in the internal environment and directives from the leadership. The department will propose corrective actions for issues found during audits and promptly report them to the company leadership and the audit committee.

Report Email: [tipoff@espressif.com](mailto:tipoff@espressif.com)

## Special Complaint Channel

Integrity is paramount. We encourage employees to speak up when they see something wrong, and a strict whistleblower protection policy ensures confidentiality. Anyone can use this channel to report bribery, corruption, conflicts of interest, or other concerns confidentially and anonymously. The Internal Audit Department is responsible for establishing and maintaining this particular complaint channel, authorized by the Board of Directors, treats received whistleblowing seriously, promptly addresses and investigates as necessary, and imposes disciplinary actions as appropriate.

## Training and Consulting

In 2023, Espressif continued implementing a new code of conduct training across the entire group. During the reporting period, the company conducted 19 professional ethics training sessions for new employees, promoting the company's values of integrity and specific regulatory requirements. By setting up consultation windows, we answered employees' questions about professional ethics.

**19**  
Ethics Training

**100%**  
New Employees  
Participation

# Internal Control and Risk Management

## Anti-corruption Policy

To regulate the behavior of all employees and prevent fraud, the company has issued the "Anti-Fraud and Complaint Management Measures". The audit department is designated as the permanent institution for the company's anti-fraud efforts. All employees are prohibited from accepting and paying bribes or kickbacks, illegally using company assets, embezzlement, misappropriation, or theft of company assets to obtain improper economic benefits.

The company aims to avoid corruption. The company's anti-corruption practices primarily involve steps taken by employees to conduct business ethically and maintain cooperation with customers and the government. Employees are not supposed to engage in bribery or insider trading, avoid conflicts of interest, compete ethically, and comply with international trade regulations. To protect the reputation of Espressif, the company has developed several policies and requires employees to adhere to them.

The company's anti-corruption risk management includes internal supervision and regular external third-party reviews. The internal audit team regularly audits the company's anti-corruption policies and procedures. Espressif hires an independent auditor to audit internal control plans, policies, and procedures annually. The results and suggestions for improvement are discussed with the company's Audit Committee and the Board of Directors. The company also expects our partners to comply with all laws and regulations related to anti-corruption. Before cooperating with them, we conduct anti-corruption screenings and regular, risk-based investigations.

## Internal Control System Construction

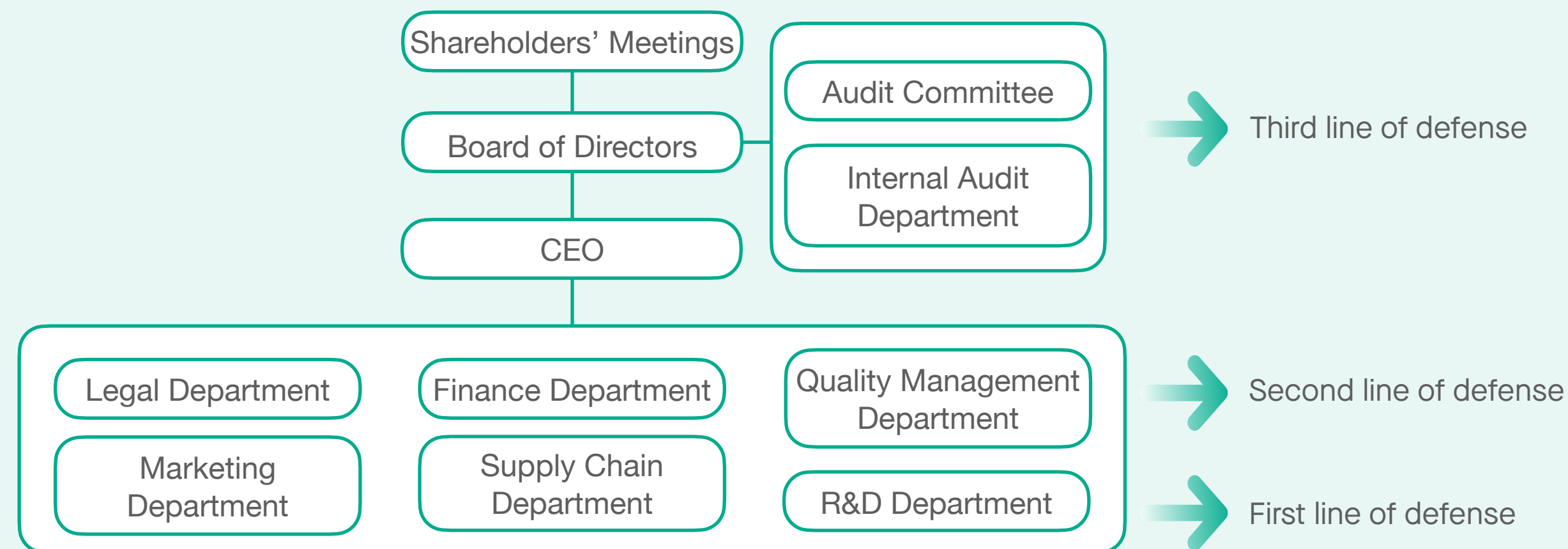
The company has established a robust internal control environment, ensuring the safety and integrity of the company's assets.

## Internal Control Organizational Structure

The company has established an internal control and risk management system, building three lines of defense against ethical risks and ensuring a healthy operation.

The organizational management system includes the Board of Directors, CEO, Internal Audit and Quality Assurance Departments, business units, and various functional departments.

The Board of Directors is the entity responsible for risk management. It is accountable for the shareholders' meeting for the effectiveness of the risk management work. Entrusted by the Board, the CEO is responsible for leadership and deployment of risk management work. The Internal Audit Department and Quality Assurance Department are the lead departments for risk management work. The Internal Audit Department should submit the annual internal audit work plan and the yearly internal audit work report to the Audit Committee before and after the end of each fiscal year respectively.



## Three Defensive Lines of Risk Management

The first line of defense: Core business departments identify and assess strategic risks, operational risks, etc., during business operations, decide on management strategies or acceptance, and develop or adjust internal systems.

The second line of defense is that support function departments assist core business departments in risk control efforts, reducing risks in business activities.

The third line of defense: Governance function departments oversee the design and execution of various company risk management measures, identify potential loopholes in the risk management process, and urge relevant departments to make improvements.

### Risk Management Model

The Internal Audit Department annually prepares the RCM. It conducts self-assessments, covering ten cycles, including company-level controls, financial reporting, fund management, sales revenue, procurement, inventory management, asset management, human resources management, R&D management, and IT controls. The Quality Assurance Department assesses risks and opportunities, including macro and micro risks and opportunities and their mitigation measures, as well as risks and opportunities.



### Internal Control Management

The company's directors have issued the internal control evaluation report for the year 2023, and an external audit has produced a verification report on the company's internal controls.

According to the assessment, there were no significant deficiencies identified, leading the board of directors to conclude that the company has maintained effective internal controls over financial reporting in all major aspects, in accordance with the corporate

internal control standards system and relevant regulations.

Regarding the assessment of significant deficiencies in the internal controls over non-financial reporting as of the date of the internal control evaluation report, no significant deficiencies were identified.

No factors emerged between the date of the internal control evaluation report and the date the report was issued that affected the effectiveness of the internal control evaluation conclusion.

## Business Continuity Management (BCM)

Espressif plays a crucial role in chip development, necessitating extensive collaboration with various suppliers in the supply chain. Therefore, business continuity is of paramount importance.

In line with Espressif's business characteristics, we have established a comprehensive Business Continuity Plan (BCP) to ensure the rapid restoration and ongoing operation in the event of a disaster

causing disruption. Our principles include meticulous risk management, prioritizing preventative measures, and building an exceptional collaborative team. The execution is widely supported by various teams. Each functional department has a plan for identifying and addressing potential risks aimed at reducing the impact of unforeseen events, thereby ensuring the safety of our employees and customers.



# Information security

Espressif places great emphasis on corporate information security and data privacy confidentiality. The company has established an information security management system aligned with the ISO 27001 standard. This ensures that resources, technology, and management related to information security are controlled, protecting IT assets from unauthorized access or attacks, preventing various security incidents or human sabotage, and maintaining company information's confidentiality, integrity, and availability.

The company has refined its data compliance efforts according to legal requirements. It is committed to responsibly handling personal data and enhancing its security. Our cybersecurity and data privacy policies align with the principles and spirit of China's Personal Information Protection Law and the GDPR, providing information on the collection, use, processing, and transfer of personal data, such as:

- End-user privacy policies, primarily for ESP RainMaker products, designed to protect user privacy;
- Potential customer and developer privacy policies, mainly applicable to personal information collected during marketing activities;

- A collection of internal data privacy policies, including employee and applicant privacy policies, focusing on data retention, destruction, and encryption.

We conduct third-party penetration testing of company and customer-facing networks and routinely scan servers, applications, endpoints, and network devices for vulnerabilities at least once a year. All identified critical, high, or medium-risk issues are remedied promptly. The IT department checks facility usage monthly and regularly backs up relevant systems and databases to ensure uninterrupted essential processes of business or timely recovery, maintaining information availability. Additionally, the company periodically releases reminders to enhance employee awareness of illegal links, including phishing emails. In 2023, the company conducted 19 information security-related training sessions, and 100% of new employees completed the annual information security awareness activities.



# GRI Content Index

In compiling this report, Espressif referred to the GRI Standards (Core option). The following index information indicates which sections of the report respond to GRI disclosure categories.

GRI Standards	Description of standards	Location of information disclosure in the report
<b>The organization and its reporting practices</b>		
2-1	Organizational details	About Espressif, About This Report
2-2	Entities included in the organization’s sustainability reporting	About This Report
2-3	Reporting period, frequency and contact point	About This Report
2-4	Restatements of information	About This Report
<b>Activities and workers</b>		
2-6	Activities, value chain and other business relationships	About Espressif, Innovation, Supply Chain Sustainable Development
2-7	Employees	Talent
2-8	Workers who are not employees	There are no workers other than employees during the reporting period.
<b>Governance</b>		
2-9	Governance structure and composition	About Espressif – ESG Management, Governance
2-10	Nomination and selection of the highest governance body	Governance
2-11	Chair of the highest governance body	Governance, Espressif 2023 Annual Report
2-12	Role of the highest governance body in overseeing the management of impacts	About Espressif – Identifying and responding to stakeholder concerns, Governance, Espressif 2023 Annual Report
2-13	Delegation of responsibility for managing impacts	About Espressif – ESG Management
2-14	Role of the highest governance body in sustainability reporting	About Espressif – ESG Management
2-15	Conflicts of interest	Espressif 2023 Annual Report

GRI Standards	Description of standards	Location of information disclosure in the report
2-16	Communication of critical concerns	About Espressif — Identifying and responding to stakeholder concerns、 About This Report
2-17	Collective knowledge of the highest governance body	About Espressif — ESG Management
2-18	Evaluation of the performance of the highest governance body	Governance — Governance Structure、 Espressif 2023 Annual Report
2-19	Remuneration policies	Talent — Employee Rights、 Espressif 2023 Annual Report
2-20	Process to determine remuneration	Talent — Employee Rights、 Espressif 2023 Annual Report
2-21	Annual total compensation ratio	Espressif 2023 Annual Report
<b>Strategy, policies and practices</b>		
2-22	Statement on sustainable development strategy	About Espressif — ESG Goals、 Environmental Protection
2-23	Policy commitments	Environmental Protection、 Innovation、 Talent、 Products and Service、 Supply Chain Sustainable Development、 Governance
2-24	Embedding policy commitments	Environmental Protection、 Innovation、 Talent、 Products and Service、 Supply Chain Sustainable Development、 Governance
2-25	Processes to remediate negative impacts	Governance — Moral and legal compliance
2-26	Mechanisms for seeking advice and raising concerns	Governance — Moral and legal compliance
2-27	Compliance with laws and regulations	The Company had no major violations during the reporting period.
2-28	Membership associations	Innovation — Association Participation
<b>Stakeholder engagement</b>		
2-29	Approach to stakeholder engagement	About Espressif — Identifying and responding to stakeholder concerns
2-30	Collective bargaining agreements	No collective bargaining incident occurred in the Company during the reporting period.
<b>Biodiversity</b>		
101-1	Policies to halt and reverse biodiversity loss	Environmental Protection — Protecting Biodiversity
101-2	Management of biodiversity impacts	Environmental Protection — Protecting Biodiversity
101-3	Access and benefit-sharing	Environmental Protection — Protecting Biodiversity
101-4	Identification of biodiversity impacts	Environmental Protection — Protecting Biodiversity

GRI Standards	Description of standards	Location of information disclosure in the report
<b>Economic Performance</b>		
201-1	Direct economic value generated and distributed	About Espressif — Economic Performance、Espressif 2023 Annual Report
201-2	Financial implications and other risks and opportunities due to climate change	Environmental Protection — Climate Risks and Opportunities
201-3	Defined benefit plan obligations and other retirement plans	Talent — Employee Rights
201-4	Financial assistance received from government	Espressif 2023 Annual Report
<b>Market Presence</b>		
202-2	Proportion of senior management hired from the local community	100%
<b>Indirect Economic Impacts</b>		
203-1	Infrastructure investments and services supported	Community Symbiosis
203-2	Significant indirect economic impacts	Community Symbiosis
<b>Anti-corruption</b>		
205-1	Operations assessed for risks related to corruption	Governance — Moral and legal compliance、Governance — Internal Control and Risk Management
205-2	Communication and training about anti-corruption policies and procedures	Governance — Moral and legal compliance、Governance — Internal Control and Risk Management
205-3	Confirmed incidents of corruption and actions taken	No corruption occurred in the Company during the reporting period.
<b>Anti-competitive Behavior</b>		
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	There were no legal proceedings against improper competitive conduct, antitrust and anti-trust practices during the reporting period.
<b>Tax</b>		
207-1	Approach to tax	Espressif 2023 Annual Report
207-2	Tax governance, control, and risk management	Espressif 2023 Annual Report
207-3	Stakeholder engagement and management of concerns related to tax	About Espressif — Identifying and responding to stakeholder concerns
207-4	Country-by-country reporting	Espressif 2023 Annual Report



GRI Standards	Description of standards	Location of information disclosure in the report
<b>Materials</b>		
301-2	Recycled input materials used	Environmental Protection — Circular Economy Throughout the Lifecycle
301-3	Reclaimed products and their packaging materials	Environmental Protection — Circular Economy Throughout the Lifecycle
<b>Energy</b>		
302-1	Energy consumption within the organization	Environmental Protection — GHG Emissions Management
302-2	Energy consumption outside of the organization	Environmental Protection — GHG Emissions Management
302-3	Energy intensity	Environmental Protection — GHG Emissions Management
302-4	Reduction of energy consumption	Environmental Protection — Energy Saving and Emission Reduction
302-5	Reductions in energy requirements of products and services	Environmental Protection — Energy Saving and Emission Reduction
<b>Water and Effluents</b>		
303-1	Interactions with water as a shared resource	Environmental Protection — Circular Economy Throughout the Lifecycle
303-2	Management of water discharge-related impacts	The company has no factories and does not involve water discharge.
303-3	Water withdrawal	Environmental Protection — Circular Economy Throughout the Lifecycle
303-4	Water discharge	The company has no factories and does not involve water discharge.
303-5	Water consumption	Environmental Protection — Circular Economy Throughout the Lifecycle
<b>Biodiversity</b>		
304-2	Significant impacts of activities, products and services on biodiversity	Environmental Protection — Protecting Biodiversity
<b>Emissions</b>		
305-1	Direct (Scope 1) GHG emissions	Environmental Protection — GHG Emissions Management
305-2	Energy indirect (Scope 2) GHG emissions	Environmental Protection — GHG Emissions Management
305-3	Other indirect (Scope 3) GHG emissions	Environmental Protection — GHG Emissions Management
305-4	GHG emissions intensity	Environmental Protection — GHG Emissions Management

GRI Standards	Description of standards	Location of information disclosure in the report
305-5	Reduction of GHG emissions	Environmental Protection — Energy Saving and Emission Reduction
<b>Waste</b>		
306-1	Waste generation and significant waste-related impacts	Environmental Protection — Circular Economy Throughout the Lifecycle
306-2	Management of significant waste-related impacts	Environmental Protection — Circular Economy Throughout the Lifecycle
306-3	Waste generated	Environmental Protection — Circular Economy Throughout the Lifecycle
306-5	Waste directed to disposal	Environmental Protection — Circular Economy Throughout the Lifecycle
<b>Supplier Environmental Assessment</b>		
308-1	New suppliers that were screened using environmental criteria	Supply Chain Sustainable Development
308-2	Negative environmental impacts in the supply chain and actions taken	Supply Chain Sustainable Development
<b>Employment</b>		
401-1	New employee hires and employee turnover	Talent
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	Talent — Employee Rights
401-3	Parental leave	Talent — Employee Rights
<b>Occupational Health and Safety</b>		
403-1	Occupational health and safety management system	Talent — Occupational Health and Safety
403-2	Hazard identification, risk assessment, and incident investigation	Talent — Occupational Health and Safety
403-3	Occupational health services	Talent — Occupational Health and Safety
403-4	Worker participation, consultation, and communication on occupational health and safety	Talent — Occupational Health and Safety
403-5	Worker training on occupational health and safety	Talent — Occupational Health and Safety
403-6	Promotion of worker health	Talent — Occupational Health and Safety
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	Talent — Occupational Health and Safety
403-8	Workers covered by an occupational health and safety management system	Talent — Occupational Health and Safety

GRI Standards	Description of standards	Location of information disclosure in the report
403-9	Work-related injuries	Talent — Occupational Health and Safety
403-10	Work-related ill health	Talent — Occupational Health and Safety
<b>Training and Education</b>		
404-1	Average hours of training per year per employee	Talent — Career Development
404-2	Programs for upgrading employee skills and transition assistance programs	Talent — Career Development
404-3	Percentage of employees receiving regular performance and career development reviews	Talent — Career Development
<b>Diversity and Equal Opportunity</b>		
405-1	Diversity of governance bodies and employees	Talent, Governance — Governance Structure
<b>Non-discrimination</b>		
406-1	Incidents of discrimination and corrective actions taken	No discrimination incidents occurred in the Company during the reporting period, Talent
<b>Local Communities</b>		
413-1	Operations with local community engagement, impact assessments, and development programs	Community Symbiosis, Espressif encourages our employees to participate in local community volunteer activities.
<b>Supplier Social Assessment</b>		
414-1	New suppliers that were screened using social criteria	Supply Chain Sustainable Development
<b>Customer Health and Safety</b>		
416-1	Assessment of the health and safety impacts of product and service categories	Products and Service —Products Quality Management
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	There were no violations related to the health and safety impact of products and services during the reporting period.
<b>Customer Privacy</b>		
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	As of the end of the reporting period, the Company had received no confirmed complaints related to invasion of customer privacy and loss of customer data.

# About This Report

## Report Introduction

This report is the third ESG report publicly released by Espressif Systems (Shanghai) Co., Ltd. Based on the principles of objectivity, standardization, transparency, and comprehensiveness, it discloses Espressif's ESG philosophy, practices, and the main progress of the reporting year.

## Report Time Range

The time range of this report is from January 1, 2023, to December 31, 2023.

To enhance the readability of the report, some contents or data trace back to previous or subsequent years.

## Report Organizational Scope

The organizational scope of this report includes Espressif Systems (Shanghai) Co., Ltd. and its subsidiaries. In the report, "Espressif Systems (Shanghai) Co., Ltd." is referred to as "Espressif Technology", "Espressif", "the Group", "we", or "the Company", as needed.

## Report Reference Standard

The Chinese Academy of Social Sciences "Guidelines for Writing Corporate Social Responsibility Reports" (CASS-CSR4.0), Global Sustainability Standards Board "Sustainability Reporting Standards" (GRI Standards), National Standard of China "Guidelines for Writing Social Responsibility Reports" (GB/T36001-2015), "Sustainable Development Goals (SDGs) Enterprise Action Guide", and Shanghai Stock Exchange "Notice on Strengthening Listed Companies' Social Responsibility and Issuing the Shanghai Stock Exchange Listed Companies Environmental Information Disclosure Guidelines".

## Report Data Source

The information, data, and cases used in this report come from the company's formal documents, statistical reports, financial reports, or public documents, as well as corporate social responsibility practice information compiled and summarized by the company's various functional departments.

## Form of report release

Copyright © 2024 Espressif Systems (Shanghai) Co., Ltd. All rights reserved. All trade names, trademarks and registered trademarks mentioned in this document are the property of their respective owners, and are hereby acknowledged. The term "Espressif" refers to Espressif Systems (Shanghai) Co., Ltd. and/or its subsidiaries. This report is written in both Chinese and English. In case of any discrepancies between Chinese and foreign interpretations, the Chinese version shall prevail.

## Report Release Cycle

This report is an annual report.

## Contact Information

If you have any questions or suggestions about the content of this report, please contact us using the following details.

Contact Address: Room 304, Building 2, No. 690 Bibi Road, Pudong New District, Shanghai

Contact Phone: 021-61065218

Email: ir@espressif.com

# Report Feedback and Comments

Dear Reader:

Hello! Thank you very much for reading the "Espressif Information Technology (Shanghai) Co., Ltd. 2023 Environmental, Social, and Governance (ESG) Report". We value and look forward to your feedback on Espressif Technology's social responsibility management, practices, and reporting. Your opinions and suggestions are an essential basis for us to advance corporate social responsibility management and practices continuously.

We look forward to your response!

Multiple Choice Questions (Please check the corresponding option)

1. Which of the following stakeholders do you belong to?

- Government personnel Regulatory authorities Shareholders and investors Employees  
Customers Suppliers and partners Community residents CSR practitioners  
Peer companies Others

2. What is your overall assessment of this report?

- Good Fairly good Average Below average Poor

3. How do you rate the quality of social responsibility information disclosed in this report?

- High Fairly high Average Fairly low Low

4. How clear, accurate, and complete do you find the information, data, and indicators disclosed in this report?

- High Fairly high Average Fairly low Low

5. Do you think the information provided in this report is readable?

- High Fairly high Average Fairly low Low

6. Which topics in the report are you most interested in?

- Innovation and development Customer communication and satisfaction Finance  
Corporate governance Environmental protection Employee development and training  
Employee health and safety Risk management Compliance management Anti-corruption  
Others\_\_\_\_\_

7. Do you think this report reflects Espressif's significant impact on the economy, society, and the environment?

- Yes Somewhat No Not sure

Please provide your opinions and suggestions for Espressif Technology's environmental, social, and corporate governance (ESG) efforts and this report:



Scan the QR code  
Provide your feedback  
and suggestions