

ZTE ESG Appraisal

TAKEAWAYS

ZTE Corporation is a Chinese multinational telecommunications equipment manufacturer and systems company headquartered in Shenzhen, Guangdong, China.

Compared to another Chinese ICT company, HUAWEI, which is also the biggest telecom equipment manufacturers worldwide(28%), ZTE still has a long way to go(8%).

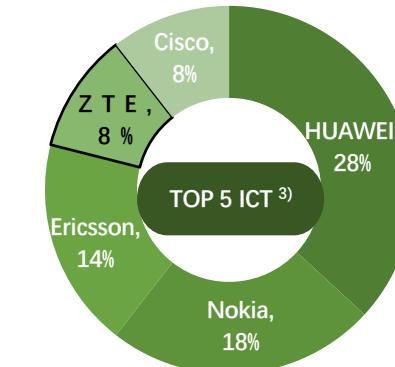
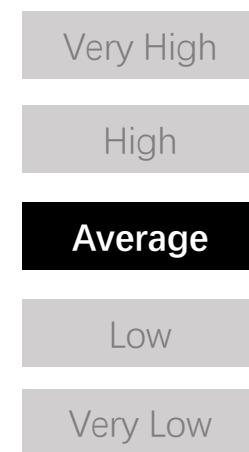
In ESG term, ZTE **lags** behind benchmark in most aspects, especially in **Information Security and Privacy**. Although ZTE's disclosure has started to be in line with international standards in 2018, improvements in **transparency, comparability** and **information adequacy** are required in the future.

Generally speaking, based on ZTE's limited data, it is difficult to draw a perfect conclusion about ZTE's overall performance, but ZTE has released good signals in **Employee Impact**, while big gap in **Supply Chain Management** and **Information Security and Privacy** can be seen between ZTE and reference benchmark.

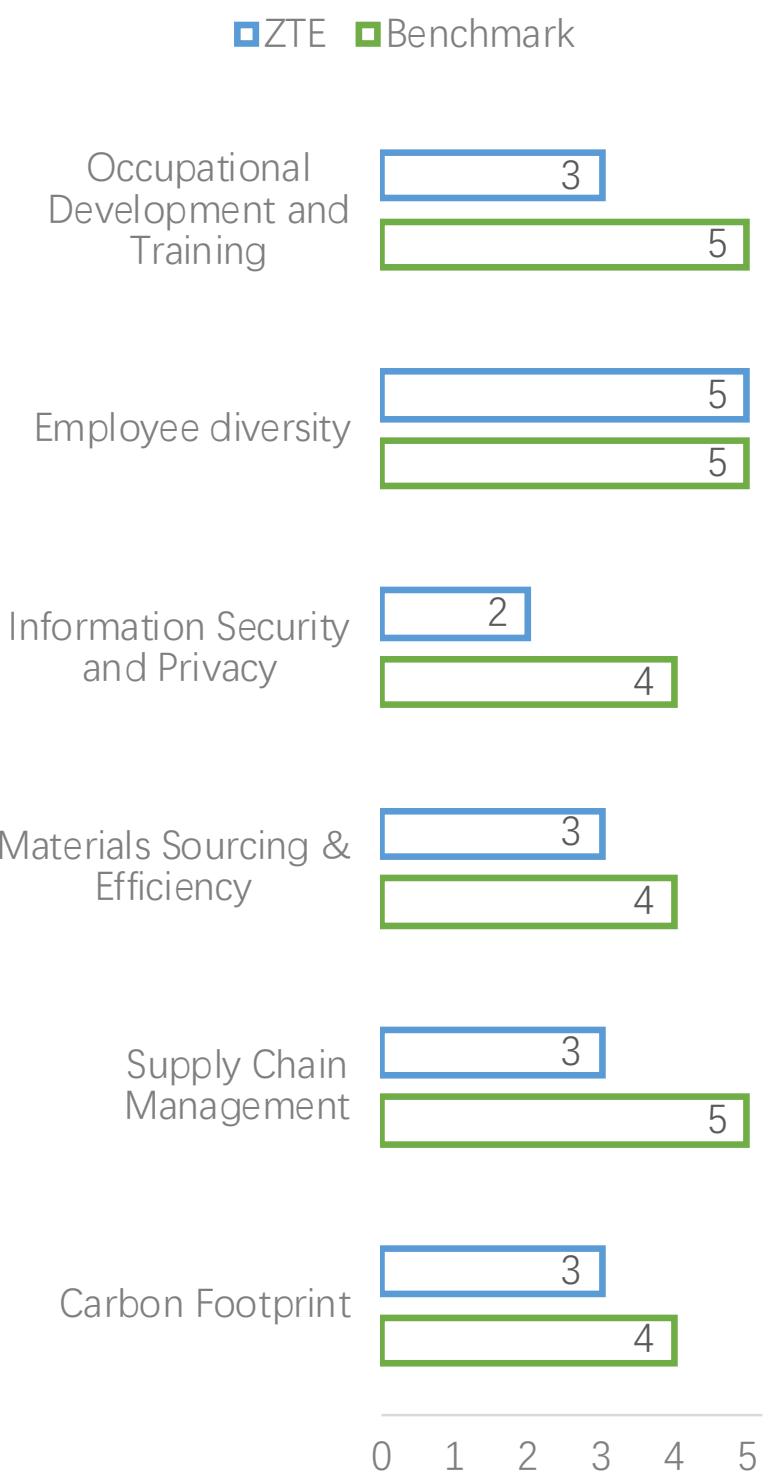
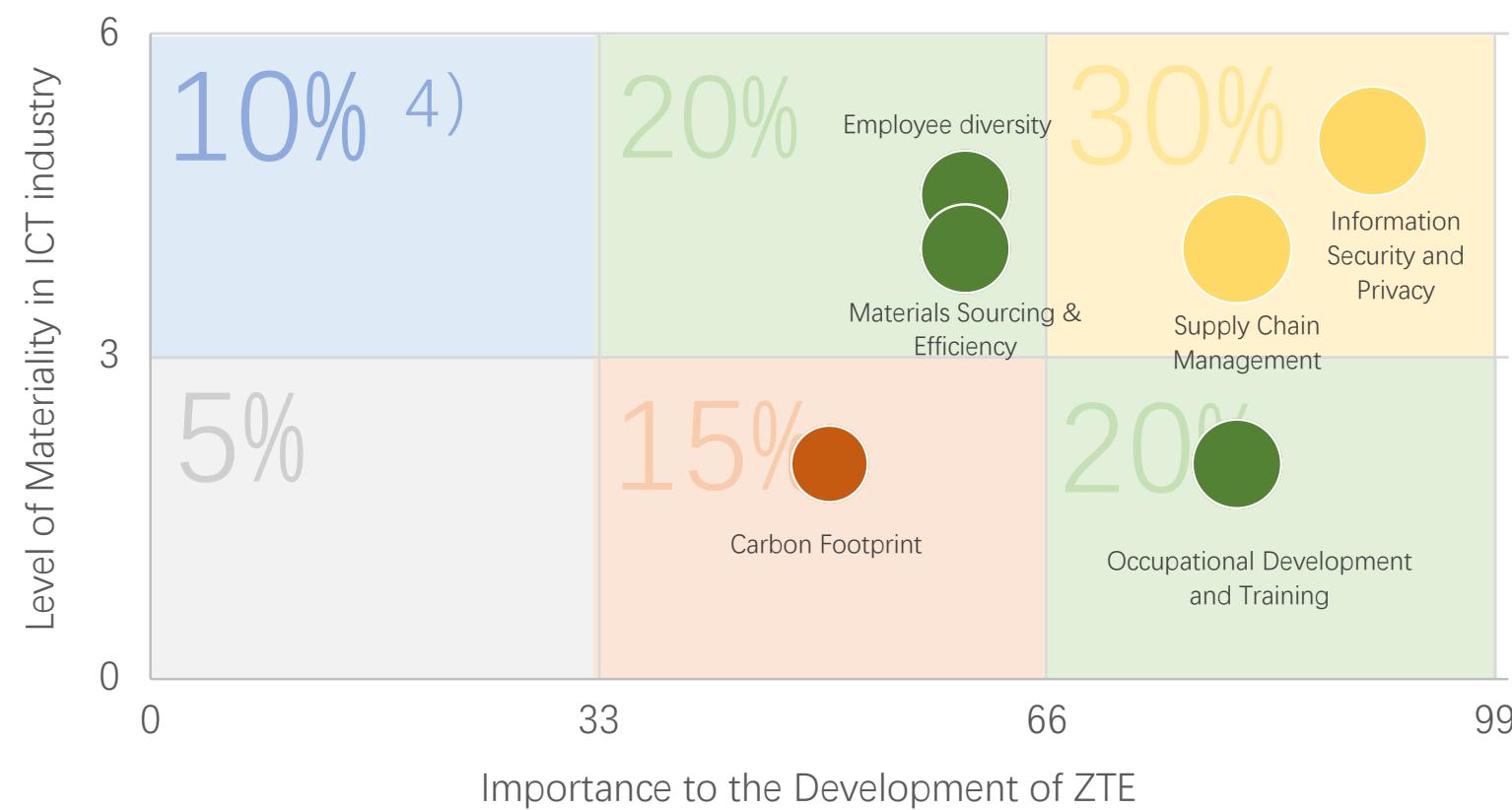
ESG Scoring

ZTE scored **3.08** out of 5 according to its previous records and potential impacts, which is of average level among the top 5 in ICT industry where the best practice rates 4.52 .

32% lower than reference benchmark¹⁾



The top five telecom equipment manufacturers were **Huawei, Nokia, Ericsson, Cisco**, and **ZTE** for the first nine months of 2018, all of which comprise about 75 percent of the worldwide service provider equipment market revenue.²⁾



1) Huawei & Ericsson

2) Jimmy Yu and Stefan Pongratz of Dell'Oro Group said.

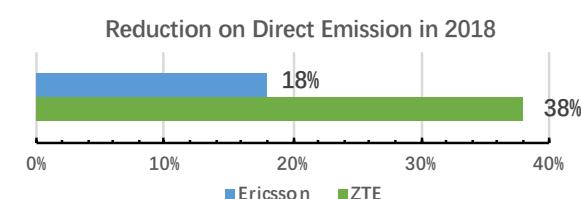
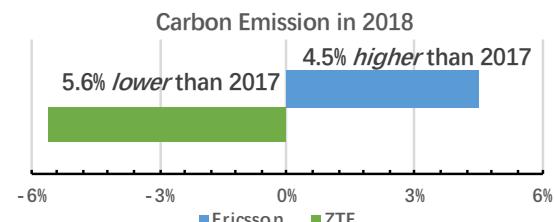
3) Information and Communication Technology

4) The key issue weights when scoring ESG performance. (See details in Appendix I)

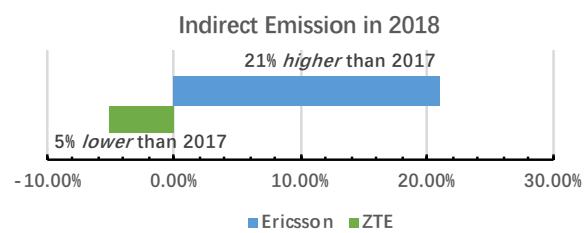
Carbon Footprint

5.6% lower carbon emissions

ZTE's total cut on carbon emission is better than our benchmark company Ericsson



Reduction on direct emission of ZTE is 20% more than that of Ericsson



Goals achieved through 3 approaches:

- Technology innovation
 - New cooling technology & Radio Remote Unit
- Cloud-based energy management system
 - 'PowerMaster ONE' ¹⁾
- Packing material and process

1) See details in the appendix 2
2) Certified Information Systems Security Professional
3) Certified Information Systems Auditor
4) Certified Information Security Assurance Worker
5) Certification of Cloud Security Knowledge
6) Data Protection Agreement

Supply Chain Management



25% less exposure to suppliers' status to the reference benchmark.

Supply chain crisis

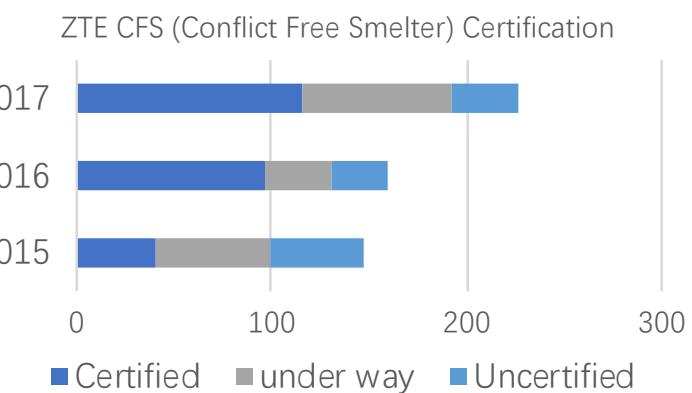
In April 2018, ZTE had its entire supply chain shut down under a trade ban lifted by US government.

ZTE is bound to shrink in the global market due to the U.S. ban and the African countries may abandon ZTE for its bad reputation spread by its western mainstream media. The main reason is that Chinese IC have a low market share in the international market and the technology level is backward

World market share of Chinese IC



Materials Sourcing & Efficiency



ZTE upgraded the conflict mineral management system in accordance with international standards.

Information Security and Privacy



ZTE lags industry leader in terms of risk management in ISP.

1、International Privacy Law

ZTE abides by **General Data Protection Regulation (EU)**

2、Security Certificate



3、Staff Management

- 1400+ times of cyber security training
- ZTE currently has **CISSP**²⁾, **CISA**³⁾, **CISAW**⁴⁾, **CCSK**⁵⁾ and other qualified security experts to ensure security.

4、Customer Service

The ratio of cooperate responses to customer complaints kept **rising**.

Year	Ratio (%)
2016	95.00%
2017	96.00%
2018	98.00%

5、Suppliers' Information Security

- HUAWEI : Focus on risk assessment & DPA⁶⁾ signing of suppliers.
- ZTE : **NO disclosure** in this area

Employee Impact

Employee diversity



In 2017, 8.3% of top managers in ZTE are female, while 7.32% in HUAWEI (benchmark).

* The statistics are from the *ZTE CSR report(2017&2018)* and *HUAWEI CSR report(2017)*.

ZTE focuses on employee diversity. The statistics of ZTE are closed to those in HUAWEI. It shows that ZTE has reaches a high standard in the industry.

Occupational Development and Training

ZTE University

- It is a international talent training institute.
- 35 professional majors are found in the school.
- 19 abroad training centers.

e-University

- It is a network platform for global employees to study online
- It can be study on computers or mobile phones.

ZTE ICT University

- It is a cooperation system with Chinese and overseas' colleges to train the ICT talents.

Like HUAWEI, ZTE focus on global employees' training. Both of them have their own institute and website platform (iLearningX, HUAWEI), and the courses are followed the technical tendency, as 5G and big data. Every employee can learn about them.

50% of ZTE's total income is from international business. Having international talents is significant for ZTE development. As a result that ZTE makes talent strategy one of the main company strategies and provides various training ways and even publish books for the better global talent training.

Appendix I-II—ESG scoring

Step 1: Determining ZTE-related ESG key issue hierarchy

3 Pillars	4 Themes	6 ESG Key Issues
Environment	Climate Change	Carbon Footprint
	Social Capital	Privacy & Data Security
Social	Human Capital	Employee Diversity
		Occupational Development and Training
Governance	Business Model & Innovation	Supply Chain Management
		Materials Sourcing & Efficiency

As a company in ICT industry, ZTE is facing the general risks in this industry. First is ‘Carbon Footprint’ , which is implied by the SDGs¹⁾, followed by ‘Privacy & Data Security’ , ‘Employee Engagement, Diversity & Inclusion’ , ‘Occupational Development and Training’ , ‘Supply Chain Management’ and ‘Materials Sourcing & Efficiency’ , most of which are decided according to *SASB’s Materiality Map®*²⁾ except for ‘Occupational Development and Training’ , which is decided specifically according to ZTE’s case.

Step 2: Setting Key Issue Weighing Standard

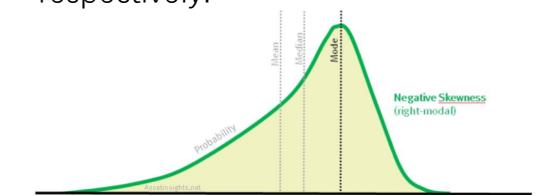
In order to weigh the proportion of those issues in ESG scoring, those key issues are measured by 2 metrics, namely the ‘Level of Materiality in ICT industry’ (representing the importance to stakeholders) and ‘Importance to the Development of ZTE’ .

		Importance to the Development of ZTE		
		Little	Growing	Vital
Level of Materiality in ICT industry	ICT industry considers it as a <u>material</u> issue	10%	20%	30%
	ICT industry considers it as a <u>secondary</u> issue	5%	15%	20%

According to *MSCI ESG Ratings Methodology*⁴⁾, the range of the proportion is decided to be 5%-30% and then be categorized to 5 level, namely 5%, 10%, 15%, 20%, 30%. ³⁾

- 1) SUSTAINABLE DEVELOPMENT GOAL
- 2) *SASB’s Materiality Map®* identifies sustainability issues that are likely to affect the financial condition or operating performance of companies within an industry. SASB identifies 26 sustainability-related business issues, or General Issue Categories, which encompass a range of Disclosure Topics and their associated Accounting Metrics that vary by industry.

- 3) The average level(μ) is calculated by 100% divided by 5, namely 20%. Then considers the proportion distribution to be a **negative skewness** and μ is set at **3/5** of the range(5%-30%) through calculating. In order to highlight the impact of maximum level and divide the whole range into **5 levels**, then other three level is gotten from 1/5, 2/5 and 3/5 of the range, namely 10%, 15%, 20% respectively.



- 4) FROM MSCI ESG RESEARCH LLC

Appendix I-2—ESG scoring

Step 3: Setting Key Issue Weights

3 Pillars	4 Themes	6 ESG Key Issues	Weights	Revised Weights
Environment	Climate Change	Carbon Footprint	15%	11%
Social	Social Capital	Privacy & Data Security	30%	22%
	Human Capital	Employee Diversity	20%	15%
Governance	Business Model & Innovation	Occupational Development and Training	20%	15%
		Supply Chain Management	30%	22%
		Materials Sourcing & Efficiency	20%	15%
			Total 135%	100%

Different key issues weigh differently according the weighing standard in step 2. To explain the reason behind these weights, the *SASB's Materiality Map®*¹⁾, SDGs¹⁾ and the information in *ZTE's Sustainability Report*²⁾ are applied.

- 1) Considering the Level of Materiality in ICT industry, the *SASB's Materiality Map®* says 'Privacy & Data Security', 'Employee Engagement, Diversity & Inclusion', 'Supply Chain Management' and 'Materials Sourcing & Efficiency' are all **material** issues in ICT industry. SDGs confirms that 'Carbon Footprint' is also material in terms of the global sustainability but under the case of ICT industry, 'Carbon Footprint' is considered as **secondary**.
- 2) According to *ZTE's Sustainability Report in 2018* (P11). ZTE regards 'Carbon Footprint', 'Employee Engagement, Diversity & Inclusion' and 'Materials Sourcing & Efficiency' as issues of **growing** importance to development of ZTE and all the other issues are suggested as **vitally** important.

Appendix 1-3—ESG scoring

Step 4: Scoring by Combining Exposure and Management (1-5: worst to best)

Scoring base: combining exposure ¹⁾ and management ²⁾. The scoring standard ³⁾ is as follows.

		Management Scores				In terms of employee impact, the scoring method is to assume that benchmark rates full score(5) and the impacts is measured through the difference between ZTE and benchmark.
		no control measures	defective control measures	sound control measures	highest-level measures ever	
Exposure Scores		slightly exposed	2	3	4	
Exposure Scores		moderately exposed (average level in industry)	1	2	3	4
Exposure Scores		highly exposed	0	1	2	3

Scores in each aspects and the weighted score. (See scoring details in **Appendix 2-5**)

3 Pillars	4 Themes	6 ESG Key Issues	Revised Weights	Scores	Benchmark Scores
Environment	Climate Change	Carbon Footprint	11%	3	4
Social	Social Capital	Privacy & Data Security	22%	2	4
		Employee Diversity	15%	5	5
	Human Capital	Occupational Development and Training	15%	3	5
Governance	Business Model & Innovation	Supply Chain Management	22%	3	5
		Materials Sourcing & Efficiency	15%	3	4
Weighted Scores			3.08	4.52	

1) 'Exposure' means how the risk of these key issue are exposed in the case of ZTE. Under the same control level, higher the exposure is, lower score ZTE gets as this means overall poorer performance in this area. The exposure is classified into 3 levels: slightly, moderately and highly.

2) 'Management' measure the performance of ZTE in terms of controlling these risk, which can be illustrated by its company governance, organizational structure, specific control mechanism, etc. Higher the level of control measures taken, higher score ZTE will get in this area as better control measures will lower the risk and so improve the overall performance. The management is classified into 4 levels: no control measures, defective, sound and highest-level ever.

3) The score is categorized into 6 levels, from 0-5. The areas of highest score are those which use the highest-level control measures ever where the exposure is slight. On the contrary, those which take no control measures in the highly exposed situation rate worst, namely 0.

Appendix 2—Carbon Footprint

Goals achieved through 3 approaches:

1. Technology innovation

- In 2018, ZTE launched a new series of RRU (Radio Remote Unit) which could significantly reduce energy consumption and carbon emission from base station by using natural cooling system.
- Last year, ZTE's self-developed evaporative cooling technology was implemented at several data centers. The technology can remove the heat of the machine through water mist according to the humidity of the area.

2. Cloud-based energy management system

- 'PowerMaster ONE' is an integrated system which support a variety of energy inputs and management. With iEnergy software installed, a lean management on energy can be achieved.

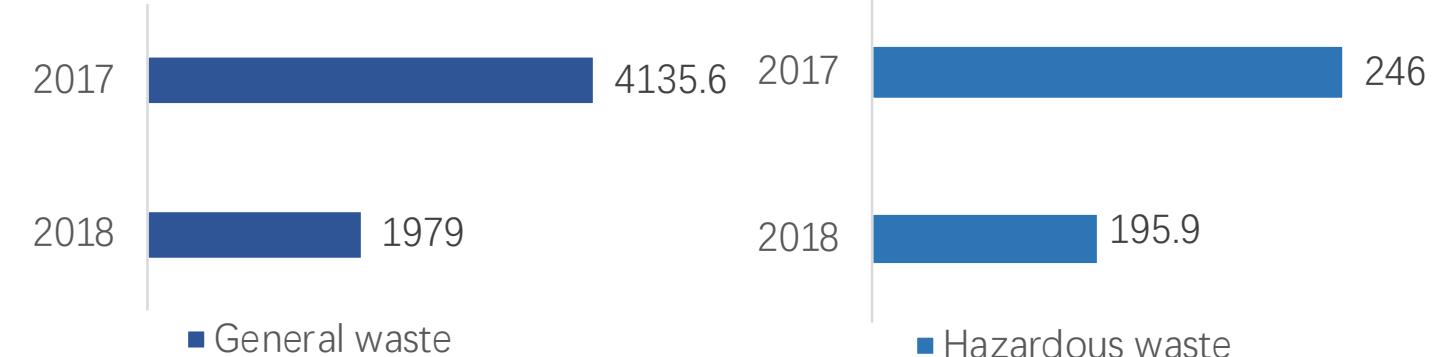
3. Packing material and process

- In 2018, ZTE has required to replace all the package with a biodegradable and recyclable one.
- The total of 179,597 boxes reduced in whole year.
- The packing material consumption has been reduced for three consecutive years.

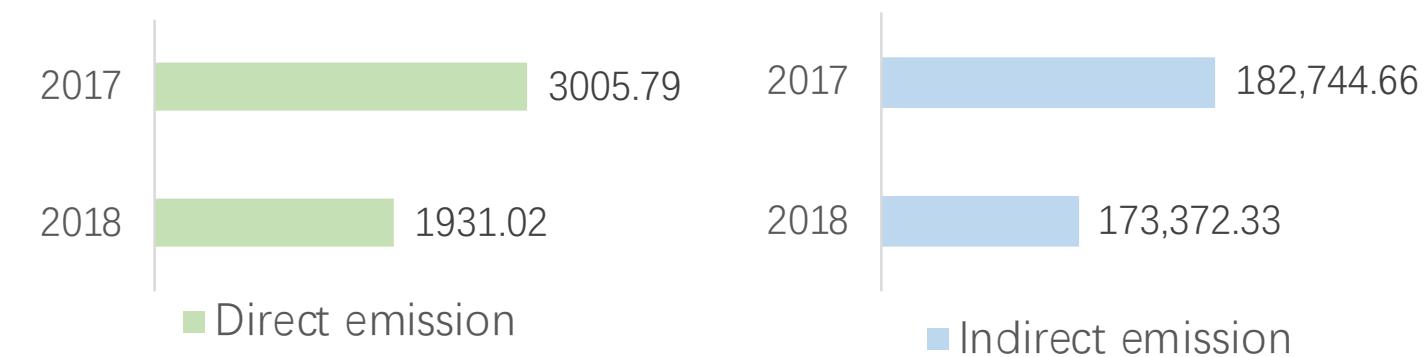
Packing material consumption over past 3 years

	2016	2017	2018
Consumption (Tons)	30,782	25,500	17,756

Solid Wastes Comparison (Tons)



Direct & Indirect Emission (Tons)

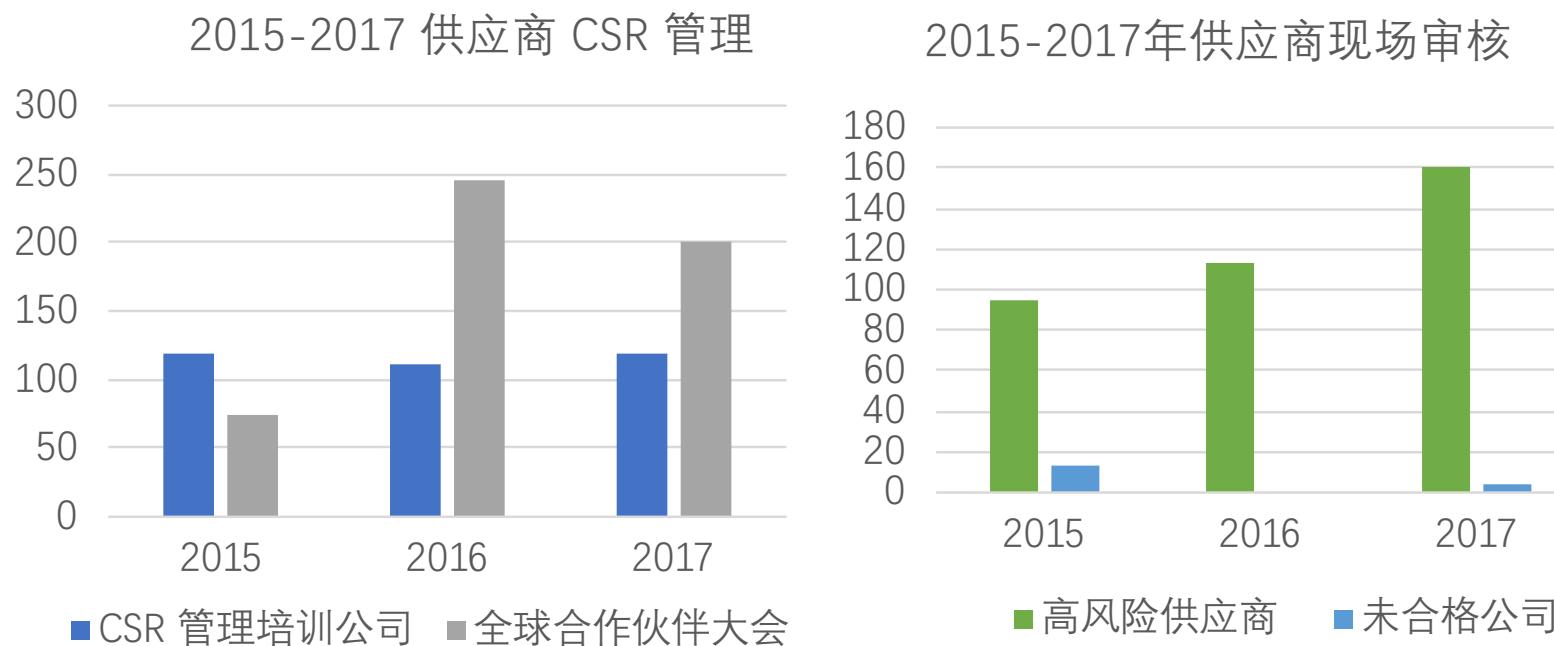


What ZTE can do better if compare to benchmark company Ericsson?

- ZTE's report should be more informative in terms of charts and data that stick to the same format and standard of previous years.
- ZTE should cooperate with universities and institutions worldwide to strengthen their effort on reducing carbon emission and meet international standards.
- ZTE should set targets for its reduction that approved by the relative committee every year.
- Increase the weights of renewable energy used in ZTE's operation is vital for reduction.

Appendix 3—Supply Chain Management

supply-chain management (SCM), the management of the flow of goods and services, involves the movement and storage of raw materials, of work-in-process inventory, and of finished goods from point of origin to point of consumption. Interconnected or interlinked networks, channels and node businesses combine in the provision of products and services required by end customers in a supply chain. As a responsible company, pay more attention to the impact of its supply chain on society, economy and environment, focus on supply security and supply risks, and focus on supply chain compliance and sustainability.



ZTE organizes regular supplier training every half year to enhance the regular training of suppliers' CSR capacity suppliers, including quality management, network security and corporate social responsibility. Global Partner Conference, calling on partners to work together efficiently to create a superior smart supply chain that delivers and shares value

2018绿色供应链CITI指数报告(IT行业)

品牌	CITI得分	排名
Samsung	62.5	7
Huawei	46	22
TCL	29.5	36
Ericsson	19.5	48
ZTE	13	64
Nokia	8	84

According to the 2018 Green Supply Chain CITI Index Report, we can find that ZTE's green supply chain still has a gap with other companies in the same industry.

Conflict minerals, mining activities in parts of Africa are associated with conflicting armed groups, leading to long-term instability in the region, known as "conflict minerals". As a manufacturer of integrated communication equipment, ZTE actively advocates not using minerals from conflict zones or high-risk areas, and hopes to promote the conflict-free operation of the entire supply chain by leveraging ZTE's dominant position in the supply chain. Conducting a conflict metal survey of suppliers using the EICC-GeSI survey template

ZTE released : 《中兴通讯对自然资源的非法贸易方针》

https://reswww.zte.com.cn/mediares/zte/Files/PDF/white_book/20180820CTKC.pdf?la=zh-CN

Appendix 4—Information security and Privacy

Information security and the protection of personal data focus primarily on maintaining the confidentiality, integrity and availability of information, while not hindering an organization's operations. As both the value of information and the capabilities of threat actors increase, information security and privacy have become issues of national importance globally and a key consideration for operations in Information and Communication Technology (ICT).



ZTE's information security management system is a poorly targeted management structure without specific solutions. Compared with benchmark, the structure lacks contents of clients and products, which need further improvement.

In accordance with *ZTE event*, we can easily find that some problems exist in ZTE's data security management during the U.S. investigation.

Information control flaws: Enterprise's top secrets becomes public information

1. Sensitive information stored on executives' computers was accessed.
2. Foreign consultants and internal staffs are free to download the company's confidential documents in the company's Intranet.

Comparative analysis with benchmark

1. Laws: ZTE&HUAWEI EU<General data protection regulations>

<Cyber security law of the People's Republic of China>

2. Security technologies and standards: HUAWEI has a **better performance** on it.

In certifications, HUAWEI actively participated in the industry's mainstream security certifications. Its major products received **11** international mainstream security certifications, including:

- Network Device collaborative Protection Profile (NDcPP) certification
- Common Criteria (CC) EAL2 certification
- EMVCo certification in the finance industry
- Authoritative security certifications including ISO 27018, SOC1/2, and Payment Card Industry Data Security Standard (PCI DSS) for Huawei Cloud

3. Staff management

HUAWEI has paid more attention to **staff certificate** compared with ZTE. A total of 97 Huawei employees received **International Association of Privacy Professionals (IAPP)** certification.

4. Customer service: No information about it in HUAWEI report.

5. Suppliers' Network Security of HUAWEI

evaluated 2,778 of our mainstream suppliers for cyber security risks

signed a Data Protection Agreement (DPA) with 582 suppliers for privacy protection

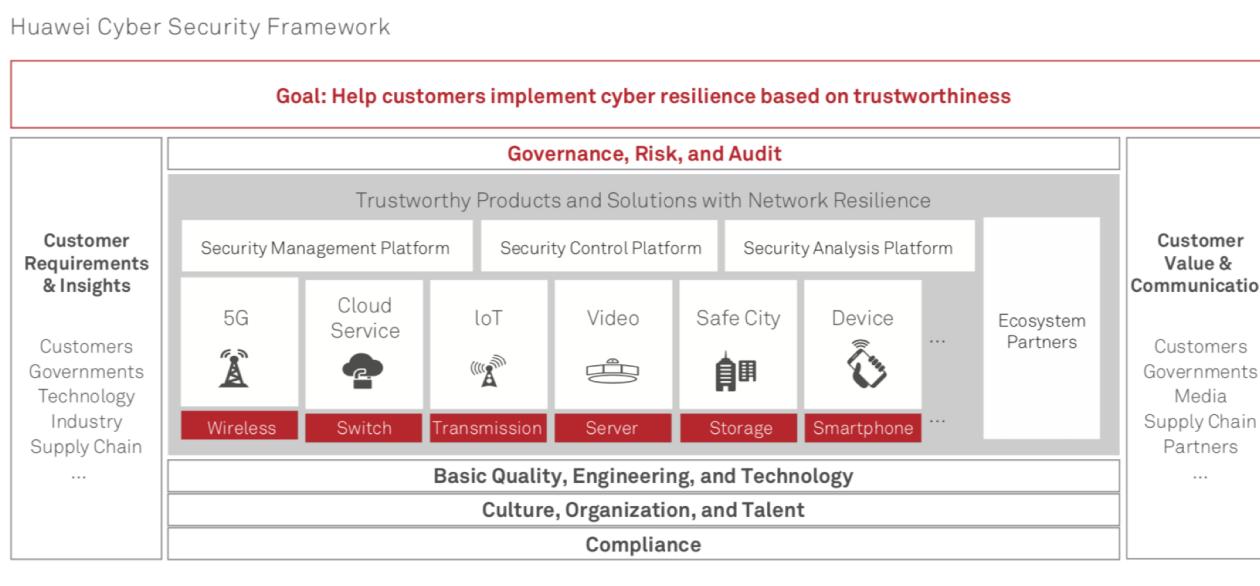
Suppliers' network security (HUAWEI)



risk assessment



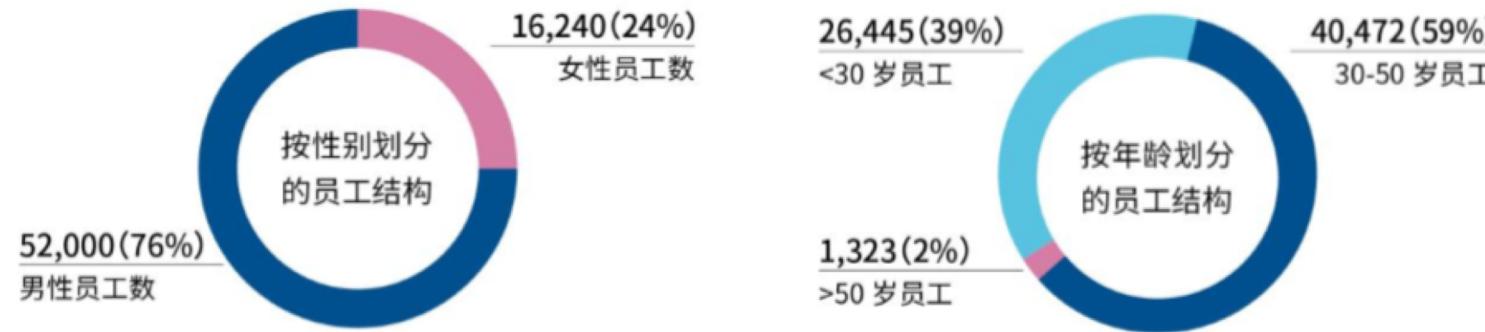
sign DPA



Huawei's Cyber Security Framework, released by Global Cyber Security & Privacy Officer John Suffolk at HUAWEI CONNECT in October 2018

Appendix 5—Employee Impact

Employee diversity



• 8.3% of female in ZTE are the top managers in 2018 while 7.32% in HUAWEI (benchmark) in 2017.

• The training proportion of female and male in ZTE University is the same as the figure of the female and male in the company.

Occupational Development and Training

—Vocational training institutes

1. ZTE University: It provides **employees, customers and cooperation partners** with **professional knowledge service**, which includes **CTS, MTS, ECS and LTs**. There are **3 training centers in Africa**, which are located in **South Africa, Ethiopia and Algeria**. Providing professional training for **50,000** engineers till 2015.

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“中兴学习云”网络大学

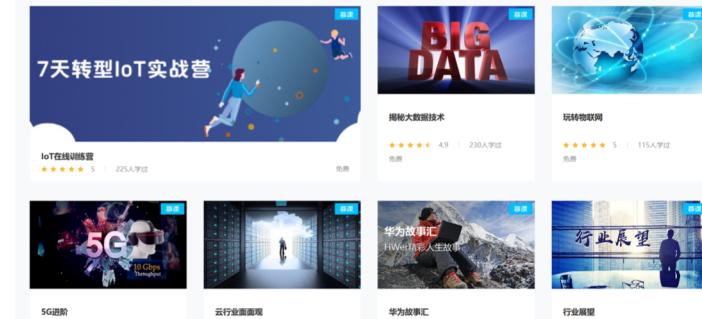
仿真软件

2、e-University

It provides many latest courses to the ZTE global employees, and each one can find the direct programme for their posts. There are **Chinese version** and **English version** of the website. It can find that the English version has less updated courses compared with benchmark.



Chinese version



English version

ZTE(left) and HUAWEI(right)

3、ZTE ICT University

It has set up the ICT innovation base in almost **30 Chinese collages**. Until 2016, there are **49 ICT bases** in total in Chinese. It also cooperates with France and Germany institutes to found the oversea base. Different to ZTE, HUAWEI sets up **45 training centers** in the world, provides more than **3000 courses** and **1200 professional teachers** for trainers. ZTE lacks of the latest reports and updated news about the ICT University, which needs further improvement.