

# How to Improve ESG Management Efficiently in Chinese Enterprises

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## Abstract

Since 2014, the scale of ESG asset management has grown rapidly. Major stock exchanges around the world have laid out ESG. Therefore, ESG has become the darling of the current investment sectors. However, in China, there is a big gap between the ESG rating of listed companies and the global market. In Chinese A-share market, there are some listed companies that ignore ESG management and step on the thunder, which brings huge losses to the sustainable development of their companies and the interests of investors. Some leading enterprises are at the forefront of the industry and attach great importance to ESG investment management, such as Alibaba. In order to strengthen ESG management and investment philosophy, and better meet the needs of investors in managing financial performance and coping with social risks, primarily, ESG data should be clarified clearly in environmental, social and governance aspects. Secondly, Chinese listed companies should comply with the ESG information disclosure requirements introduced by global stock exchanges, and then establish an efficient management model from "data, tools, enterprises", and finally make good use of ESG data management tools (risk management tools, standardized data management tools, carbon information management tools). Due to the diversity of business types, lack of process monitoring, failure to timely and effectively identify and deal with potential ESG risks and management process differences, establishing an ESG data management collaboration framework of various departments to improve ESG management and upgrade ESG rating for Chinese enterprises is indispensable.

## Keywords

ESG Chinese listed companies, ESG information disclosure, ESG data management tools, ESG data management framework, ESG rating.

## 1. Introduction

ESG is a term in responsible investment. It is the acronym of three English words, namely environmental, social and corporate governance. The term ESG was first coined in 2005 in a landmark study entitled "Who Cares Wins." [1] At present, a growing number of companies, investors and even regulators have begun to pay attention to ESG, and major global stock exchanges have also laid out ESG. Since 2018, investments labeled as ESG or sustainable account for more than \$30 trillion in global assets under management (AUM). Investors saw a 34% increase in ESG investing from 2016 to 2018 alone.[2] Environmental, social and governance (ESG) criteria are a set of standards for a company's operations that socially conscious investors use to screen potential investments. Environmental criteria consider how a company performs as a steward of nature. Social criteria examine how it manages relationships with employees, suppliers, customers, and the communities where it operates. Governance deals with a company's leadership, executive pay, audits, internal controls, and shareholder rights.[3]

## 2. Why has ESG become a Favorite in the Investment Industry?

The Asian Infrastructure Investment Bank's board of directors has approved \$500 million for a managed credit portfolio, which aims to develop infrastructure as an asset class, develop debt capital markets for infrastructure, and promote the integration of Environmental, Social and Governance (ESG) standards in Asian capital markets.[4]

One of the main concerns of modern investment is how to get high returns from investment projects. Nevertheless, the risks in non-financial fields such as corporate ethics and environment have been as nonnegligible elements in investment. Nowadays, the mainstream view is that the practice of ESG investment can better avoid or eliminate high risk, flash collapse or "black swan" for companies, so that investors can get higher returns.

According to Morgan Stanley, investing in companies that lead in environmental, social and governance best practices is no longer niche—it's one of the strongest ways to help ensure long-term, sustainable returns. [5] Between 2019 and 2020, MSCI launched many fixed income ESGs and factor indexes aiming to meet the needs of investors to formulate strategies closely related to investment objectives. [6]

After sorting out the "black swan" events that have occurred repeatedly in listed companies, the 21st Century Capital Research Institute has found that it can search enterprise risk clues by capturing ESG signals and guide listed companies to attach importance to and strengthen the ESG concept.

For instance, the environmental pollution of Changxing base of Shanghai Zhenhua heavy industry (Group) Co., Ltd has been complained again and again by the surrounding residents for environmental problems in recent years. About 60% of the spray painting in the base is open-air operation, and there is no pollution prevention and control facilities in the open-air painting process, which is harmful to the environment and people's life. [7] The Changxing base of Zhenhua Group has been punished by the environmental department for many times. However, Zhenhua Group does not actively rectify and accuse some complaints as malicious reports. Because the company has not established an ESG management system, especially in environmental issues, it has weak legal awareness of environmental protection. Furthermore, it does not cooperate with local ecological and environmental departments, is indifferent to the demands of the surrounding people, and has ignored environmental protection for a long time.

Taking Changchun Changsheng Bio-tech Co. as an example, a vaccine maker and a large producer has found to have made substandard vaccines. The company has been delisted at the end of November 2019 and officially bidding farewell to the A-share market. This company is investigated by the National Medical Products Administration and its GMP certificate was withdrawn, and then it was ordered to stop the production of rabies vaccine. Without ESG management system, Changchun Changsheng Bio-tech Co. has the following illegal facts: firstly, it failed to disclose the information about the substandard vaccine, and production suspension and recall as required. Secondly, there were misleading statements and major omissions in the announcement on the disclosure of the subsidiary's products. Thirdly, it did not disclose the information investigated by Jilin province food and Drug Administration; The fourth is the illegal disclosure of the situation that the GMP certificate of rabies vaccine is invalid, resulting in the main business suspension. The fifth is that the annual report and internal control self-evaluation report from 2015 to 2017 have false records. [8] As a result, the stock price of Changchun Changsheng Bio-tech Co. has fallen continuously, and the company has finally been forced to withdraw from the market. The share holders suffered heavy losses. The reason is that the company has not established a perfect ESG management system. There is a major problem in the company's social responsibility for the quality and safety of its vaccine products. The vaccine production enterprises have not guaranteed the authenticity, accuracy, completeness and traceability of the whole process.

In the case of \* ST KangDe, "100 billion white horse shares" have changed dramatically and become the "spokesperson" of capital market scandals. The reason is that a huge amount of funds have disappeared, and the problems in corporate governance are also the key reasons. The focus of this event is on the deposit of 12.2 billion Chinese Yuan. With regard to the deposit of 12.2 billion Chinese Yuan shown in the account of Xidan Branch of Beijing Bank, the major shareholder of Kangde Xin company signed a cash management cooperation agreement with Xidan Branch of Bank of Beijing, which caused confusion in the management and use of funds between the listed company and the controlling shareholder, therefore, the operation opened wide door for the controlling shareholder to occupy the funds of the listed company. KangDe Xin admitted in page 86 of the 2018 annual report that there is a significant difference between the actual situation of corporate governance and the normative documents required by the CSRC. The company has problems in financial aspects, such as "opening bank accounts in violation of regulations, which may lead to the situation that funds may be mixed up with the controlling shareholders". However, KangDeXin released the annual report in 2018 and the first quarter report in 2019. Ruihua Certified Public Accountants issued the audit report of "unable to express opinions" for the company. However, the accountant of KangDeXin stated in bold "to ensure the authenticity, accuracy and completeness of the financial statements in the quarterly report". [9] Obviously, KangDeXin has made major mistakes in the ESG management of company, especially in financial management. Since the actual balance or accrual balance can be selected for KangDeXin account, the accrual balance may be shown for the KangDeXin account when the audit is conducted, and the deposit balance is RMB 12.21 billion. At the same time, the presentation of the accrued balance also conceals the deposit and allocation between KangDeXin and its related accounts, According to this, the audit committee thought it was a normal account, in fact, the money was no longer in the KangDeXin account, but was moved.

However, looking at some leading enterprises such as Alibaba, they emphasize that ESG governance is one of the indispensable factors for sustainable development.

#### Environmental

Alibaba employs energy-efficient technology and methods in our data centers, with a focus on minimizing our energy consumption. To reduce carbon footprint and conserve energy, we focus on making pioneering changes to our infrastructure and buildings. The company has been focusing on making our data centers more environmentally-friendly by switching to cooling and water-efficient systems supported by intelligent management technology and the use of renewable energy. The Qiandao Lake Data Center adopts a state-of-the-art deep lake water cooling system which saves 300 million kWh of electricity and reduces CO2 emissions by 300,000 tons per year compared to other conventional data centers. Zhangbei Data Center is in a naturally cool region with great access to wind power, the Zhangbei Data Center is powered 100% by renewable energy including solar and wind. This increases the data center's energy efficiency by more than 4% while reducing construction and maintenance costs. [10]

#### Social

Alibaba's business should be guided and driven by mission and vision, social responsibility elements-eg. solving customer problems, earning consumer trust, helping small business and creating jobs. In 2011, the Alibaba Foundation is established, a private charity fund that focuses on supporting environmental protection in China and helping the disadvantaged. In fiscal year 2018, the Alibaba Foundation made approximately RMB230 million (US\$37 million) in donations. In addition, connect rural merchants and sellers to the global marketplace through our platform, giving them additional income channels and helping people who live in rural areas move out of poverty. To date, Rural Taobao program has established service centers in over 30,000 villages and 730 counties in China, including 300 state-designated impoverished counties. [11]

## Corporate governance

1. Alibaba's corporate governance policies encourage shareholders to engage with company and make their views known to the board or to the independent directors as a group, especially at the time of annual general meeting and by writing to Company Secretary. 2. Independent directors have the chance to meet in executive session with no management members present at all regularly scheduled board meetings. 3. Integrity Compliance Department has the power to conduct investigations of any suspected non-compliance with the law or Code of Ethics, and has authority over all directors, officers and employees. Alibaba conducts mandatory annual training to help prevent violations, and it is transparent about violations that have occurred. [12]

## 3. Conduct Categorical Data Analysis

Some market forces ignore the ESG signal, thus causing banks, securities companies, public funds, trust and other financial institutions to step on thunder, which is closely correlated to the domestic market's shortcomings such as information gathering in a variety of area, information analysis and research, and financial application of information. Formerly, it caused the continuously downward valuation which led to the fluctuation of net product value after the institutions stepped on the mine. With the popularization and attention of ESG investment ideas, the effect of "mine clearance" will be improved.

For meeting the needs of investors to better manage non-financial performance and cope with environmental and social risks, stock exchanges around the world have introduced the ESG information disclosure requirements of listed companies. In addition, the integrated reporting of the international integrated reporting Committee (IIRC) provides qualitative and quantitative information on performance, including quantitative indicators of objectives, risks and opportunities as well as demonstrating their importance and potential significance, the relationship between previous and current performance and the connection between current performance and institutional prospects. [13]

In order to effectively carry on ESG information disclose of listed companies, it is necessary to establish an efficient management path from three aspects of "data, tools and enterprises" At the first, data should be defined and clarified clearly.

Environmental	Social	Governance
Climate change	Human capital	Corporate governance
Natural resources	Product liability	Corporate behavior
Pollution & waste	Stakeholder opposition	
Environmental opportunities	Social opportunities	

**Figure 1.** Data definition and clarification [14]

## 4. Management of ESG Data

### 4.1. Manage Enterprise Core ESG Data

GRI Sustainability Reporting Guidelines (G4) provides that "materiality" is to measure whether a yardstick or an issue has reporting values. Hence, the core ESG information disclosure data should cover the following aspects of reflecting that the enterprise has an essential impact on the economy, environment and society and has a substantial influence on the evaluation and decision-making of stakeholders. Hence, enterprises should determine the core ESG data (such as climate change and carbon emission data) of 5 to 10 enterprises in combination with the key data of high disclosure rate and their own substantive issues. [15]

### 4.2. Comparing Enterprises' ESG Data

By comparing the excellent performance, median performance and backward performance of ESG data in the industry, enterprises can identify the level of their own ESG performance in the same industry and, formulate management objectives and policies to improve the ESG performance in accordance with their own position in the market.

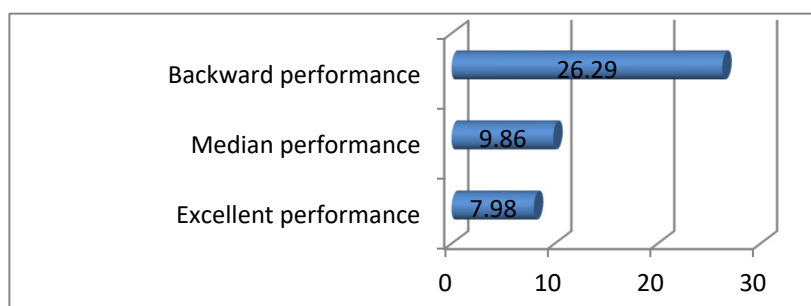
### 4.3. Set the Management Objectives of ESG Data

The ESG reporting (2015 Edition) guidelines of HKSE puts forward consistency and quantitative reporting principles for ESG data disclosure, so as to facilitate investors to understand the company's situation and help enterprise to compare their own ESG performance. Meanwhile, being aimed at the principle of quantitative reporting, the stock exchange suggests that besides disclosing the input of data, enterprises should also analyze the output, effectiveness and impact of disclosure, understand the input ratio and set the management objectives of ESG data for the purpose of showing the specific benefits to investors. There is an example that could evidently observe the deficiencies when ESG performance is introduced by listed companies. [16]

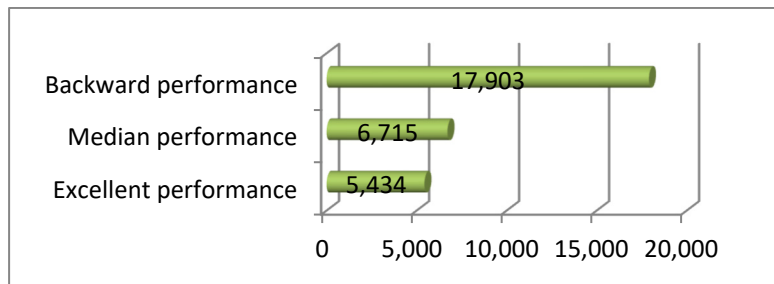
Through the management of ESG performance, it is expected that 65 million yuan of electricity costs can be reduced for pharmaceutical listed companies with revenue of 5.4 billion Yuan. [17]

⇒ For every 1 million yuan of operating income, the listed companies with backward performance in the medical industry pay 11,888 yuan more for electricity than those with median performance.

⇒ Based on the median operating revenue of 5.433 billion yuan, the listed companies with backward performance paid 65 million yuan electricity more than the median performance, accounting for 1.19% of the total revenue.



**Figure 2.** Power Consumption per Million Revenue (MWh)



Adopt: the electricity sales price of Shanghai large industrial power)

**Figure 3.** Electricity Expenditure per Million Revenue (Chinese Yuan)

## 5. Applying ESG Data Management Tools

### 5.1. Risk Management Tools

"We found that Hong Kong is ready for the ESG information disclosure, and we want ESG to be a risk management exploit," said Katherine Ng, chief operating officer and head of Policy and Secretariat Services of the Listing Division of HKEX.[18] In recent years, ESG risks of Chinese enterprises have been erupting constantly. For example, many listed companies such as ST Huifeng, Shanxi Road&Bridge and Luoping Zinc Power, have been publicly condemned by the stock exchange for the reasons of environmental information disclosure. The weakness of ESG data management ability of enterprises will affect information disclosure and investors' views, weaken risk prevention and decrease enterprise benefits. The adoption of risk management tools by enterprises is conducive to timely find, avoid risks and realize sustainable development. For ESG risk management, primarily, a more transparent ESG platform should be established, which can clearly present all ESG data and view different ESG risks from multiple angles. Secondly, the ESG database can be combined with the existing industrial chain data and knowledge map, and the hidden risks that were not easy to detect before can be found by looking at the correlation between companies. Using the standard data, investors could look at ESG risks from the perspective of the whole industry. Lastly, combined with natural language processing technology, the part of ESG risk extracted from social media was effectively integrated. Different from previous ESG risks and ratings, the ESG risks of enterprises can be updated better and faster through ESG Risk assessment platform.

### 5.2. Standardized Data Management Tools

Multinational enterprises adopt "group-department-subsidiary-country -supply chain data monitoring" to achieve the ESG data management goal of "standardization and automatic calculation".[19] Moreover, enterprises can use the integrated ESG data management platform to realize the unified management of pluralistic business groups and supply chain data, which will solve the problem of ESG information dispersion for enterprises, improve the quality and efficiency of ESG information disclosure, and promote enterprise lean management and ESG brand building.

### 5.3. Carbon Emission Data Management Tools

In the speech "Tragedy of Horizons" in 2015,[20] the Chairman of the Financial Stability Board (FSB) stated that climate change risk has not been linked with financial stability and long-term risks of financial institutions, which has brought obvious negative effects. The original intention of the establishment of TCFD (Task Force on Climate-related Financial Disclosures), a working group on climate-related financial information disclosure, is to change this phenomenon. TCFD proposes a series of suggestions to improve the disclosure and management of climate-related risks, including the requirements for enterprises to disclose scenario analysis.[21] Enterprises



should manage and disclose climate change information according to the standard framework, requirements and suggestions of TCFD.

Consequently, in order to better manage and disclose climate changes, some products for carbon management have been developed. For instance, carbon accounting and management platform (CAMP) invented by Carbonstop, which is the one of advanced software in China.[22]CAMP can be used to quantify, analyze, manage and report carbon emissions of enterprises. Compared with Excel, the software allows users to input, analyze and manage carbon emissions at anytime and anywhere conveniently. Further, it helps enterprises to establish top-down organizational structure, so that the superior departments can comprehensively and directly supervise the carbon emission information of the lower level. Lastly, it also has the function of data audit which records the data source and chart analysis, realizing scenario analysis, merger and comparison of emission sources and carbon emission information disclosure.

## **6. Establish Platform for ESG Data Uniformity and Normalization in Enterprise**

The data required to be disclosed in ESG report should cover production, procurement, human resources, sales and other fields. Nevertheless, some data are difficult to cross the boundaries between various departments within an enterprise. The main reasons are as follows:

### **6.1. Due to the Diversity of Business, ESG Information are Scattered in Different Procedures and Operation Links**

The definition and scope of ESG information are quite different. With the expansion of business, this problem is more prominent than ever. Taking the carbon emission data as an example, it varies in statistics and calculation methods, which will weaken the information value and then affect the follow-up ESG management.

There may be complex in the management of different regions, businesses and projects, and the manual data verification is tedious, and easy to make mistakes. Within the enterprises, the discrepancy in kinds of reports will also bring great challenges to the accuracy of ESG data.

Lack of process monitoring, failure to identify and deal with potential ESG risks timely and effectively. Enterprise's ESG information is often collected annually, and there is with a large lag, no real-time and traceable ESG information management system for the whole process. As a result, enterprises can't make corresponding improvement measures according to ESG performance in time, which brings potential ESG risks and misses the opportunity to turn risks into business opportunities.

Despite the disparity of methodologies and confusion caused by rating inconsistencies, the field of ESG will (and must) continue to evolve. Data abundance, despite the lack of standardization, is a great problem to have, so long as investors and enterprises are willing and able to pick what matters to them and move forward[23].

### **6.2. Establishing ESG Data Management Platform**

#### **6.2.1. ESG Platform Management**

The system is customized according to the current situation and challenges of enterprise ESG management, so as to fully meet the personalized and differentiated needs for the enterprises improvement. Secondly, it facilitates enterprises to develop a unified ESG online information collection method, set up reasonable path, and output data and charts to achieve the visual monitoring of ESG performance, aiming to provide high-quality ESG data for management decision-making.

### 6.2.2. RPA (Robotic Process Automation)

Robotic process automation is a technique that uses technology and software to automate structured and repetitive business processes. Computer software is configured to mimic the actions of humans in a bot-like fashion, enabling rapid interaction and transmission of data from source to destination based on established business processes and their underlying data flows. [24 ] The introduction of robots as labor force can effectively complete the repetitive work in the ESG information management, greatly reduce the labor and time cost, reduce the probability of errors, and ensure the quality of information output. At the same time, enterprises are free from worries about the loss and change of project management or information management personnel. All kinds of information interfaces and databases established or to be established by the enterprise can be seamlessly connected, the existing reports can be automatically imported, and the scattered ESG data can be captured, so as to realize the interconnection of various ESG information databases within the enterprise.

### 6.3. Communicating with External Consulting Agencies

The ESG database is established according to the requirements of professional rating agencies such as MSCI and DJSI, using measurement index and model to improve the content of the report to ensure the professionalism and integrity of disclosure information.

## 7. ESG Rating

ESG information is transformed into performance of sustainable development that investors can use conveniently. For listed companies, better ESG performance and higher ESG rating directly affect investors' attention and long-term economic returns. MSCI index is the most widely used investment target for global portfolio managers, and its ESG rating results have become an important basis for decision-making of major investment institutions around the world. The MSCI rating process integrates risk exposure with management practice and management performance, which is regarded as an important basis for measuring key performance.

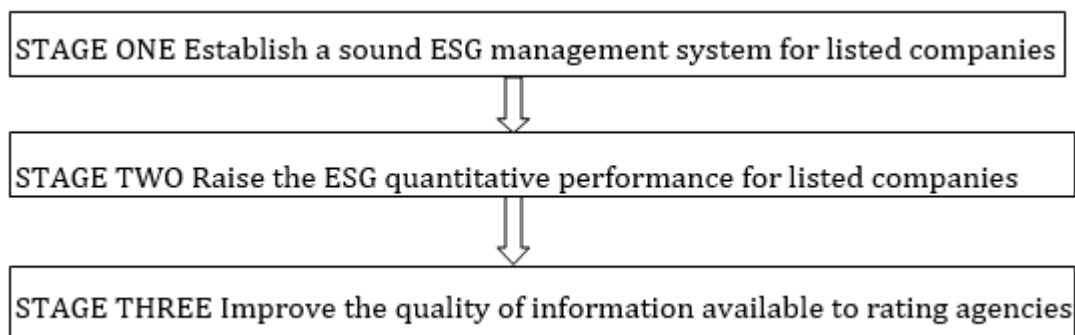
The difference between ESG rating of Chinese listed companies and the global market stems from internal and external factors. Generally speaking, Chinese listed companies have a short time to participate in ESG information disclosure, are not familiar with ESG information disclosure standards in the capital market, which affect their performance in ESG rating.[25]

**Table 1.** ESG Rating Difference

Internal factors	External factors
A gap in professional internal information disclosure and tool use	Less communication between listed companies and rating agencies
A gap in ESG management model	Differences in the perception of ESG between rating agencies and Listed Companies in China
The management of listed companies does not take seriously in ESG rating	Chinese listing companies are not familiar with scoring model



**Table 2.** The ESG rating of Chinese listed companies has been upgraded in three stages



In conclusion, ESG management will not only be reflected in the company's financial report, but it is related to the sustainable development of the enterprise. It also shows that enterprises with good ESG data have stronger anti-risk ability and tend to have long-term stable development, so efficient ESG governance has gradually enhanced the positive impact of the company's reputation, business sustainability and investor confidence. It is not an easy task for enterprises to put effective ESG governance into practice. On the basis of effective stakeholder participation, enterprises in the future will hopefully establish a comprehensive sustainable development strategy, an effective ESG risk management and internal control system on important issues. Otherwise, it is hard to bring the sustainability of corporate growth into reality.

## Acknowledgements

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## References

- [1] Forbes, The Remarkable Rise Of ESG, available at: <https://www.forbes.com/sites/georgkell/2018/07/11/the-remarkable-rise-of-ESG/> (Visited on 15th, March, 2020).
- [2] Factset, Solving the ESG Data Challenge, available at: <https://insight.factset.com/topic/ESG> (Visited on 21st, March, 2020).
- [3] Investopedia, Environmental, Social, and Governance (ESG) Criteria, available at: <https://www.investopedia.com/terms/e/environmental-social-and-governance-ESG-criteria.asp> (Visited on 21st, March, 2020).
- [4] China Daily, AIIB sets up managed credit portfolio to boost ESG standards, available at: <https://www.chinadaily.com.cn/a/201901/10/WS5c36a9fba3106c65c34e3a5e.html> (Visited on 25th, March, 2020).
- [5] Morgan Stanley, the ESG Advantage in Long-term Investing, available at: <https://www.morganstanley.com/ideas/the-ESG-advantage-in-long-term-investing/> (Visited on 2nd, April, 2020).
- [6] MSCI, Bloomberg Barclays MSCI ESG Fixed Income Indexes, available at: <https://www.msci.com/bloomberg-barclays-msci-ESG-fixed-income-indexes> (Visited on 7th April, 2020).
- [7] Infzm, available at: <http://www.infzm.com/contents/157787>, (Visited on 9th, April 2020).
- [8] China Daily, Experts say transparency needed for oversight of vaccine-makers, available at: <https://www.chinadaily.com.cn/a/201811/22/WS5bf603f6a310eff30328a4d7.html> (Visited on 16th, April, 2020).
- [9] Infzm, available at: <http://www.infzm.com/contents/150967> (Visited on 24th, April 2020).
- [10] Alibaba Group, Environment, available at: <https://ESG.alibabagroup.com/ui/pdfs/Alibaba-ESG-Report-2018-Environment.pdf> (Visited on 4th, May 2020).

- [11] Alibaba Group, Social, Social Impact, available at: [https:// ESG. alibabagroup. com/ ui/ pdfs /Alibaba-ESG-Report-2018-Social.pdf](https://ESG.alibabagroup.com/ui/pdfs/Alibaba-ESG-Report-2018-Social.pdf) (Visited on 4th, May 2020).
- [12] Alibaba Group, Corporate Governance, The role of Alibaba partnership, available at: [https://ESG. alibabagroup.com/ui/pdfs/Alibaba-ESG-Report-2018-Corporate-Governance.pdf](https://ESG.alibabagroup.com/ui/pdfs/Alibaba-ESG-Report-2018-Corporate-Governance.pdf) (Visited on 17th, May, 2020).
- [13] IntegratedReporting, IIRC responds to FSB Task Force on Climate-related Financial Disclosures, available at: [https:// integratedreporting. Org / news / iirc-responds-to-fsb-task-force-on-climate-related-financial-disclosures/](https://integratedreporting.org/news/iirc-responds-to-fsb-task-force-on-climate-related-financial-disclosures/)(Visited on 19th, May, 2020).
- [14] MSCI , What do we measure? available at: <https://www.msci.com/ESG-ratings> (Visited on 20th, May, 2020).
- [15] GRI Sustainability Reporting Guidelines (G4), available at [https://www. ey.com /Publication / vwLUAssets/G4-Sustainability-Reporting-Guidelines/%24FILE/G4-Sustainability-Reporting-Guidelines. pdf](https://www.ey.com/Publication/vwLUAssets/G4-Sustainability-Reporting-Guidelines/%24FILE/G4-Sustainability-Reporting-Guidelines.pdf) (Visited on 28th, May, 2020).
- [16] HKEX, Consultation Paper Review of The Environmental, social and Governance Reporting Guide, available at: [https://www.hkex.com.hk/-/media/HKEX-Market/News/Market-Consultations / 2011-to-2015/July-2015-Consultation-Pape/Consultation-paper/cp201507.pdf](https://www.hkex.com.hk/-/media/HKEX-Market/News/Market-Consultations/2011-to-2015/July-2015-Consultation-Paper/Consultation-paper/cp201507.pdf) (Visited on 28th, May, 2020).
- [17] SynTao, Manage ESG performance, available at: [https:// c117300931sew. scd. wezhan. cn/ newsin fo / 2110771.html](https://c117300931sew.scd.wezhan.cn/newsinfo/2110771.html) (Visited on 29th, May 2020).
- [18] China Daily, Listed companies embrace green, social role, available at: [https:// www. chinadaily. com. cn/a/202008/03/WS5f2767e0a31083481725db93.html](https://www.chinadaily.com.cn/a/202008/03/WS5f2767e0a31083481725db93.html) (Visited on 29th, May, 2020).
- [19] SynTao, HiESG, available at: <http://new.syntao.com/syntao/index.php/web/article/detail?id=938> (Visited on 29th, May, 2020).
- [20] Tragedy of the Horizon, The Climate Change Example, available at: [http:// www. Tragedy of the horizon. com/](http://www.Tragedyofthehorizon.com/) (Visited on 2nd, June 2020).
- [21] TCFD, Recommendations of the Task Force on Climate-related Financial Disclosures, [https:// www. fsb- tcfd.org/tcfd-knowledge-hub/](https://www.fsb-tcfd.org/tcfd-knowledge-hub/)(Visited on 4th, June, 2020).
- [22] Carbonstop, Carbon Account Platform, available at: [http://en. carbonstop. net/ carbon account platform /](http://en.carbonstop.net/carbon-account-platform/) (Visited on 7th, June 2020).
- [23] Novus, Guide to ESG Data, available at: <https://www.novus.com/blog/guide-to-ESG-data> (Visited on 9th, June 2020).
- [24] ESG, ESG Brief: Robotic Process Automation Adoption Trends, available at: [https://www.ESG-global.com/hubfs/ESG-Brief-Robotic-Process-Automation-Trends-May-2020. pdf? hsCtaTracking =d53262c3-bab1-4b38-8984-fe79313c1d15%7C423f1186-7379-4167-ada3-1434a97c3b8c](https://www.ESG-global.com/hubfs/ESG-Brief-Robotic-Process-Automation-Trends-May-2020.pdf?hsCtaTracking=d53262c3-bab1-4b38-8984-fe79313c1d15%7C423f1186-7379-4167-ada3-1434a97c3b8c) (Visited on 12th, June 2020).
- [25] MSCI, ESG Rating, available at: [https://www.msci.com/search?keywords=%5C\"ESG%5C](https://www.msci.com/search?keywords=%5C\) (Visited on 17th, June 2020).