



## **Executive Summary**

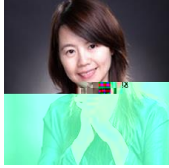
China has

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## **Part 1: Overview of the List and Measurement Items**

The world has witnessed the rise



guarantee quality and reliability, this index only includes items that we were able to reliably measure across all Chinese public firms.

	( )		
L	Leasing and commercial service industry ( )	5.21	1.13
C3	Manufacturing-petroleum, chemical, rubber, and plastic( )	5.17	1.47
K	Real estate industry ( )	4.99	1.69
F51	Wholesale industry ( )	4.89	1.67
B	Mining industry ( )	4.82	1.64
D	Industry of electric power, heat, gas and water production and supply ( )	4.81	1.76
G	Transport, storage and postal service industry ( )	4.73	1.74

Note: The ranking is not applicable to industries with less than ten firms.

The mean of the index score across industries range from 4.73 to 5.51 with similar intra-industry standard deviation. Because of this variation, as noted, we only consider intra-industrial scoring and ranking. Below we propose and discuss several reasons that could potentially account for the differences across industries.

a) Do some industries emphasize different types of sustainable activity?

The index system covers six broad domains of governance, economics, environment, employees, customers, and community, and



b) Are some industries more sustainable than others?

We observe from Table 3 that manufacturing industry, financial industry and service industry rank higher overall than the mining industry, energy industry and transportation industry. The latter industries are frequently criticized for their pollution issues, and are facing the challenge of transformation towards more sustainable production mode. The difference of mean score do not provide rigorous and strong support to the idea that some industries are more sustainable than others.

c) Do regulated industries have better sustainability performance?

The telecommunications, oil and gas, minerals, railway, and electricity industry in China are monopoly industries and are closely regulated by the government. Stronger governmental regulation may contribute to better sustainability performance. On the other hand, monopoly industries do not have much market competition and less public scrutiny, and hence may have more "freedom" in what they want to do while neglecting their social and environmental impacts. Table 3 shows that telecommunication industry ranks at the top while mining, electricity, and transportation industries rank at the bottom which suggests that the inter-industry differences is not a result of more governmental or regulatory oversight.

d) Do customer-oriented industries have better sustainability performance?

Extensive research has shown that Consumer-facing (as opposed to Business to business) firms are more concerned with corporate social responsibility and sustainability as these practices affect reputation in consumer markets. Table 3 shows that culture, sports and entertainment ranks 3<sup>rd</sup> place among 16 industries, while the retail industry only ranks in the middle suggesting that consumer facing may not be a strong factor that influences the industrial difference of mean score.

## Part 2: Index Construction

The index includes 35 items, covering the domains of governance, economics, environment, employees, customers, and community. To capture the broad nature of the concept of sustainability, and also account for areas specific to the China market, we weighted the governance, economics, environment, employees, customers, and community domains at 10%, 10%, 20%, 20%, 20%, and 20% respectively.

**Table 2. Sustainability Index System**

No	Items	Description of Content	Data Type
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<b>Governance (10%)</b>			
1	Transparency	Whether the firm discloses third party audit of the firm's operation.	I, dummy
2	CSR report	Whether the firm issues CSR report.	I, dummy

<b>Environment (20%)</b>		
12	Certified management system	Whether the firm has certified environment management system such as ISO14001 or QC080000. III

23	Democracy in management	Whether the firm has democratic management practices or mechanisms to guarantee bottom-up communication.	III
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34	Local procurement and recruitment	Whether the firm pays attention to community development by emphasizing local procurement and recruitment.	III
35	Organizing community activities and infrastructure development	Whether the firm helps organize community activities or invest in infrastructure development (e.g., road repairing).	III
<p><i>Notes on data type:</i>  Type I stands for action or actual figures.  Type II stands for continuous variable measured through searching key words.  Type III stands for dummy variable measured through searching key words.</p>			

## Part 3: Methodology

Firms are ranked based upon their aggregated score across the 35 indicators in 6 domains. Each companies score calculated within industry and then aggregated to form the final score.

We adopt two main data sources: the CSMAR database and firm annual reports. To extract related information from annual reports, we employed data mining techniques to collect all annual reports from an online finance website and saved them in text formats. We then created a database and a search engine that allow us to search key words in all annual reports.

As shown in Table 2, our measurement includes three types of variable. Type I stands for action or actual figures, such as financial results. Most of the Type I variables are collected from the CSMAR database. Type II and Type III variables are measured through searching keywords in companies' disclosures. We developed a series of dictionaries to generate related variables from text information. We utilize text information from both annual reports and variables in the CSMAR database. To construct the dictionary, we went through all the detailed CSR activity which are extracted from CSR report and recorded in CSMAR CCSR database. Then, we summarized keywords that appear in the texts and capture the core meaning of the target variables. We also checked the frequency of each key word as well as the distribution of each Type II and Type III variable to see the variations. The dictionary is designed to be exhaustive, reliable, and valid.

## Measurement of Index Variables

### Governance (10%)

Items in governance domain assess the degree to which the system construction and operation of a firm is sustainable.

É (V1) Transparency.

We checked in the CSMAR database to find out whether the firm has third party's audit of the hkt o ðu operation.

É (V2) CSR report

We checked in the CSMAR database to find out whether the firm issues CSR report.

É (V3) Anti-corruption and fair competition.

We checked in firms CSR reports and annual reports to find out whether the firm provides trainings or has policies related to anti-corruption or fair competition.

Dictionary:

Corruption	Anti-corruption	Honesty	Righteous	Advocacy of honesty
Bribery	Embezzlement	Money laundering	Unfair competition	Anti-competition

É (V4) TMT involvement

We checked the bios of firm's top executives to identify whether they are involved in or awarded for CSR activities.

Dictionary:

Philanthropy	Charity	Foundation	Social responsibility
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É (V5) Employee involvement

We checked in CSR reports and annual reports to find out whether the firm involves employees in CSR training and activities.

Dictionary:

CSR training	Volunteer training	Volunteer activity	Volunteer team	Volunteers participate
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É (V6) Small shareholders protection

We checked in CSR report and annual report to identify whether the firm pays special attention to the interest of small shareholders.

Dictionary:

Small shareholder
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### **Economics (10%)**

Items in the economics domain assess the financial as well as innovation performance of the firm from corporate financial statements, including indicators of (V7) ROA, (V8) total revenue, (V9) net profit, (V10) main product sales, and (V11) R&D investment.

**Environment (20%)**

Items in environment domain assess the degree to which a firm is devoted to constructing an environment management system, and carrying out practices to save energy and reduce pollution.

É (V12) Certified management system

We checked in the CSR report and annual report to find out whether the firm has adopted certified environment management system.

Dictionary:

ISO14            QC080000

É (V13) Contingency plan

We checked in the CSR



& &  
Energy & Decrease Energy & Reduce Energy Saving Afterheat

É (V16) Water saving

We checked in the CSR report and annual report to find out whether the firm has policies and practices to save water.

Dictionary:

Water saving Water saving Water reuse Reuse water

É (V17) Renewable energy

We checked in the CSR report and annual report to find out whether the firm has policies and practices to use renewable energy.

Dictionary:

Renewable energy

É (V18) Recycling

We checked in the CSR report and annual report to find out whether the firm has policies and practices to support recycling.

Dictionary:

Recycle Reuse Reutilization

É (V19) Green operation

We checked in the CSR report and annual report to find out whether

LED & LED &  
LED lighting & LED lighting &  
substitution promote

Additional dictionary for CSR report only:

Video meeting    Electronic bill    Business trip

É (V20) Exhaust fumes reduction

We checked in the CSR report and annual report to find out whether the firm has practices, policies and technology to reduce exhaust fumes in production.

Dictionary:

/ / / & /O2/ / /  
Reduce/Decrease/Lessen/Cut & dioxide/O2/carbon emission/exhaust fumes    Carbon emission  
reduction

É (V21) Waste water reduction

We checked in the CSR report and annual report to find out whether the firm has practices, policies and technology to reduce waste water.

Dictionary:

&  
Reduce & Waste water    / / &COD    Sewage disposal  
Reduce/decrease/pass & COD

É (V22) Waste materials reduction

We checked in the CSR report and annual report to find out whether the firm has practices, policies and technology to reduce waste materials.

Dictionary:

Waste reduction    Waste sorting    Waste disposal    Waste treatment    Waste materials

**Employee (20%)**

Items in the employee domain assess the degree to which a firm is engaged in labor rights protection and employee career development.

É (V23) Democracy in management

We checked in the CSR report and annual report to find out whether the firm has democratic management practices or mechanisms to guarantee bottom-up communication.

Dictionary:

Voice          Democracy

É (V24) Work condition

We checked in the CSR report and annual report to find out whether the firm pays attention to or has practices for guaranteeing decent work condition.

Dictionary:

Work condition

É (V25) Gender equality

We checked the management bios in annual report and calculated the percentage of females in TMT.

É (V26) Employee health and safety

We checked in the CSR report and annual report to find out whether the firm has trainings and education related to occupational safety and occupational disease.

Dictionary:

Safety training

We checked in the CSR report and annual report to find out whether the firm provides employees with regular physical examination.

Dictionary:

Physical examination

É (V28) Training and career development

We checked in the CSR report and annual report to find out whether the firm provides employees with skills enhancement and career development trainings.

Dictionary:

\*

Training

Note: Trainings besides



/ & / / /  
Local/ in the locality & recruitment/hiring/job/procurement

É (V35) Organizing community activities and infrastructure development

We checked in the CSR report and annual report to find out whether the firm helps organize community activities or invest in infrastructure development (e.g., road repairing).

Dictionary:  
+ + +  
Community & activity    Community & Environment    Community & Culture

### Scoring Method

The data includes both quantitative and qualitative indicators. For quantitative indicators, we generate the percentile of each quantitative indicator by industry and convert the percentile to a continuously score on a scale from zero to ten. For domains with only qualitative indicators, we generate the score of the domain.

Qualitative indicators include dummy indicators as well as zero-to-one scores converted from count indicators. For qualitative indicators, we firstly summed the qualitative indicators within each domain, then generate the percentile by industry, and finally convert the percentile to a score on a scale from one to ten. This score is also the score of the domain with only qualitative indicators. For domains with both quantitative and qualitative indicators, both parties account for 50% in the score.

firms. Below is the industry classification we established for the index based on both the official industry classification and industrial distribution of the largest 1000 listed firms.

**Table 3. Industry Classification for the Index**

A	Agriculture, forestry, animal husbandry and fishery
B	Mining industry
C1	Food and beverage manufacturing industry
C2	Textile, garment, and leathers manufacturing industry
C3	Wood and furniture manufacturing industry
C4	Papermaking and paper product manufacturing industry
C5	Petroleum, chemical, rubber, and plastic manufacturing industry
C6	Metal and non-metal manufacturing industry
C7	Machine, equipment, and meter manufacturing industry
C8	Other manufacturing industry
D	Industry of electric power, heat, gas and water production and supply
E	Construction industry
F51	Wholesale industry
F52	Retail industry
G	Transport, storage and postal service industry
H	Accommodation and catering industry
I	Industry of information transmission, software and information technology services
J	Financial industry
K	Real estate industry
L	Leasing and commercial service industry
M	Scientific research and technical service industry
N	Water conservancy, environment and public facility management industry
P	Education

Q	Health and social work
R	Industry of culture, sports and entertainment
S	Diversified industries