

# Ping An CN-ESG Methodology

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## Overview

Ping An built its own evaluation framework called CN-ESG, which incorporates key indicators from international framework as well as adopts Chinese market specific indicators to be aligned with Chinese government policies and Chinese market. The frame covers indicators from Environmental (E), Social (S) and Governance (G) dimensions and applies Shenwan sub-sectors for peer comparison. To further address the issue of low disclosure rate of Chinese market, CN-ESG data set offers three types of scores: disclosure score, performance score, and synthetic score.

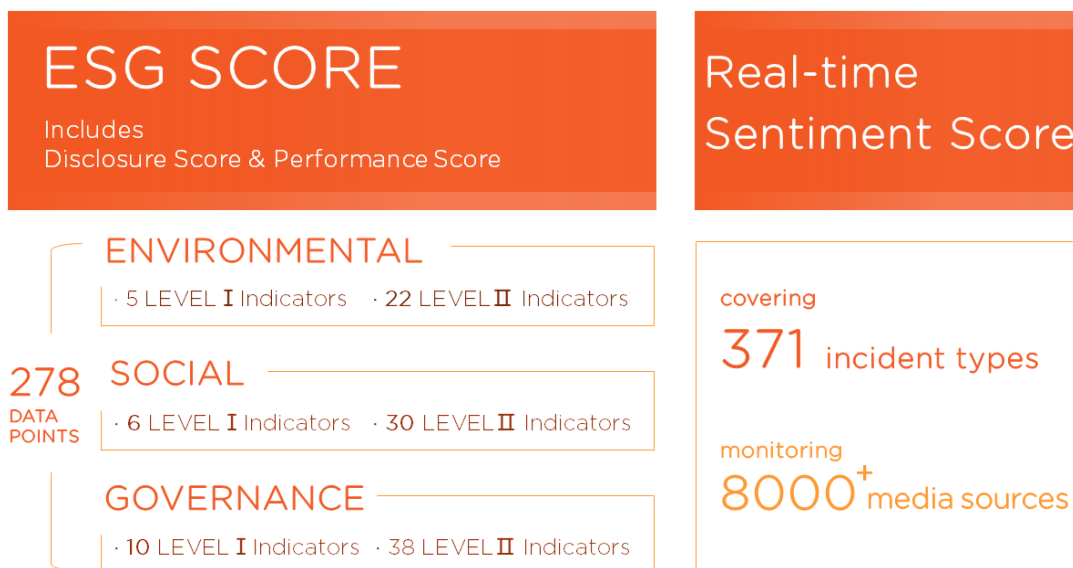
## Indicator Framework

CN-ESG framework was built based on international and domestic mainstream ESG evaluation frameworks as well as our research and experience on ESG investment. The main indicators of CN-ESG were developed by integrating and choosing the maximum intersection of indicators among the selected frameworks. Among them, 90 indicators were selected as core ESG issues, 13% of the indicators are specific indicators with Chinese characteristics, 87% of the indicators overlap with at least one international framework. The detailed mapping relationships are available for users to make flexible combinations for regulatory requirements and investment objectives.

CN-ESG sets indicators based on the core ESG issues, taking into full consideration of industry characteristics and government regulations to achieve a comprehensive evaluation of Chinese companies' ESG performance. The overall framework offers two types of scores.

1. ESG scores: CN-ESG gives a company a total score and the underlying scores at its all dimensions and granularities.
2. Sentiment scores: CN-ESG scores a company by its performance on public news by measuring incidents, authority level of news media sources, sentiment level, number of reprints and related news.





The following table lists the key issues covered by CN-ESG.

Dimensions	Level I Indicators	Examples of Level II Indicators
Environmental	Energy Consumption	Direct Energy Consumption; Indirect Energy Consumption
	Resources Inputs	Water Usage; Biodiversity Protection
	Pollutions and Emissions	Recycling of General Waste; Water Pollution; Air Pollution
	Climate Change	GHG Emissions; Climate Change Risk Management
	Green Development Opportunities	Green Transport; Investment in Environmental Protection; Green Business Income
Social	Employee Retention	Employees' Incentives; Occupational Injury and Health
	Supplier	Supplier Management; Suppliers' Information Disclosure
	Product Liability	Product Quality Management; Customer Relations
	Social Responsibility	Community Rights; Public Welfare Inputs
	Industrial Structure	Business Transformation; Strategic

Dimensions	Level I Indicators	Examples of Level II Indicators
		Business Issues
	Intellectual Property	Intellectual Property Protection; Patents; Awards
Governance	Strategic Management	ESG Risk Management; Strategic Concepts
	Business Ethics	Fair Competition; Communication & Feedback Mechanism
	Shareholders	Protection Measures of Minority Shareholders; Distribution of Top 10 shareholders
	Board of Directors	Percentage of Independent Directors; Term Distribution of Board of Directors
	Board of Supervisors	Percentage of Directors Having Management Background ;Percentage of Supervisors Having Management Background
	Executive Level	Percentage of Female Executives; Percentage of Executives Having Management Background
	Governance Abnormity	Equity Reduction of Major Shareholders; Equity Pledge; Penalties of Directors, Supervisors and Executives
	Compensation and Incentives	Compensation Rationality of Directors; Executives' Incentives
	External Supervision	Audit Results Of Internal Control; Audit Results Of Financial Statement
	Governance Results	Dividend Payout; Taxation Management

## Data Processing

Before scores can be calculated, raw data points need to be collected. We applied a variety of methods to collect raw data from a variety of data sources.

### Traditional Structural Financial Data

Companies usually publish annual reports with financial data in a fixed format and these data are available in structured format in databases, such as revenue, number of employees, names of



executives, etc. We will use and re-organize these type of data for ESG scenarios.

### Extracts qualitative data with NLP (Natural Language Processing)

Companies usually publish ESG reports with high level policy statements, strategy planning, goals, actions, etc. These metrics are qualitative data in text format. To capture such qualitative data, we developed a series of NLP models. These models are used to extract text, classifying text, and recognizing the levels of the statement.

### Enhances quantitative data extraction with tools

ESG reports are usually published in flexible format. Other than financial data which typically exist in fixed table, ESG numbers could be found in text, tables, or even diagrams with many different ways of display. We developed a data extraction tool that identifies and extracts quantitative data disclosed in ESG or sustainability reports. Extracted data can be traced back at a page-level. It significantly improves the efficiency and accuracy of data extraction.



Each number extracted from a report will be confirmed by a data verifier to ensure data quality.



### Incorporates official government lists

Chinese central government or local governments will announce lists of companies who are officially verified to satisfy certain standard, such as green factory. Such lists will be collected as the base data points for our ESG scoring.

Adopts analysis results from other AI techniques

We also collect analysis result from other AI techniques/tools such as financial whitewash result using machine learning models, remote-sensing analysis result from image recognition models.

Filling missing data

CN-ESG use a certain of methods to make the best estimation for missing data.

1. Calculation from other indicators: for example, if a company does not disclose its own carbon emission data, we can estimate carbon emission data from its direct and indirect energy consumption.
2. Estimation from previous years: If a company misses one year of disclosure, we can estimate the data from previous years with a certain level of punishment for non-disclosure.
3. Estimation using industry or market average: If a company has never disclosed certain data, we can borrow data from the same industry or the market average for making a best estimation.

## Scoring Methodology

From Data Points to Scores

The scoring rules for level II indicators include the following 3 types:

- **Quantitative data**
  1. Relative scoring: Scores are calculated based on peer comparison. For example, E0102 Electricity Intensity is calculated based on its relative ranking with other companies in the same industry sector.
  2. Absolute scoring: Scores are calculated based on the underlying data by giving fixed threshold. For example, for S0101 “the proportion of employees”, different scores are given to different percentages. It does not compare with its peer companies when calculating the score.
- **Qualitative data**

Item scoring: Scores are calculated based on how many items are matched. For example, for G0102 “ESG risk management”, 1 point is given if the company has disclosed to have ESG risk management system.

CN-ESG is designed to give a disclosure score and a performance score at all levels. The disclosure score examines the quality and completeness of the ESG information disclosure of a company, mainly from their ESG data sources (ESG reports/annual/quarterly reports, etc.) and the score is primarily calculated using qualitative indicators. The performance score focuses on measuring the ESG performance of companies in the specific industries and is primarily calculated based on quantitative indicators. The following table gives two examples of how a disclosure score and a performance score is calculated.

Score Type	Examples of Indicators
<b>Disclosure Score</b>	<p>Social- Employee Retention- Employee Career Development</p> <p>The more complete and sufficient the disclosure, the higher the indicator score.</p> <p>Scoring rules:</p> <p>0 No disclosure of relevant issues</p> <p>+1 Disclosed issues related to employee development and promotion</p> <p>+1 Actions for employee development and promotion (including trainings) are disclosed</p> <p>+1 Diversities in employee development and promotion (gender, age, rank, content, form, etc.)</p> <p>+1 Disclosure of quantitative data on employee development and promotion</p>
<b>Performance Score</b>	<p>Environmental - Energy consumption - Indirect Energy Consumption</p> <p>Unified Formula: <math>\text{electricity consumption density} = \text{electricity consumption} / \text{business income}</math> (unit is degrees per million or degrees per person)</p> <p>Scoring Rules: according to industry quartiles</p> <p>1 point: The worst performance of the 1-25th percentile</p> <p>2 points: 25-50th percentile</p> <p>3 points: 50-75th percentile</p> <p>4 points: 75-100th percentile for the best performance</p>

A 2nd level indicator may have a performance score, or a disclosure score, or both. Based on that, a synthetic score is calculated by giving performance score and disclosure score certain weights.

### Constructing Higher Level Scores

Based on the scores of level II indicators, a higher level indicator can be calculated by given a weight to each sub-component. A weighting system is designed at each level of CN-ESG.

The weight for each subcomponent is given based on the importance of this issue and the actual weight distribution among issues were designed by reference to other primary guidelines. We also consulted ESG and investment expert in China for their weight suggestions.

### Public opinion scoring

The sentiment scoring process includes the following steps:

1. Use NLP models to identify key information such as incidents and companies in news.



2. Calculate sentiment score, considering the positive and negative levels of news and influential level of media source.
3. Calculate the heat score, considering the number of reprints and the number of similar news.
4. Calculate the event score, consider all events in the past six months, and give the corresponding attenuation coefficient considering the occurrence time of the event. The event score is finally calculated by multiplying the emotion score, heat score and attenuation coefficient.
5. Normalize the total score to -100 to 100.

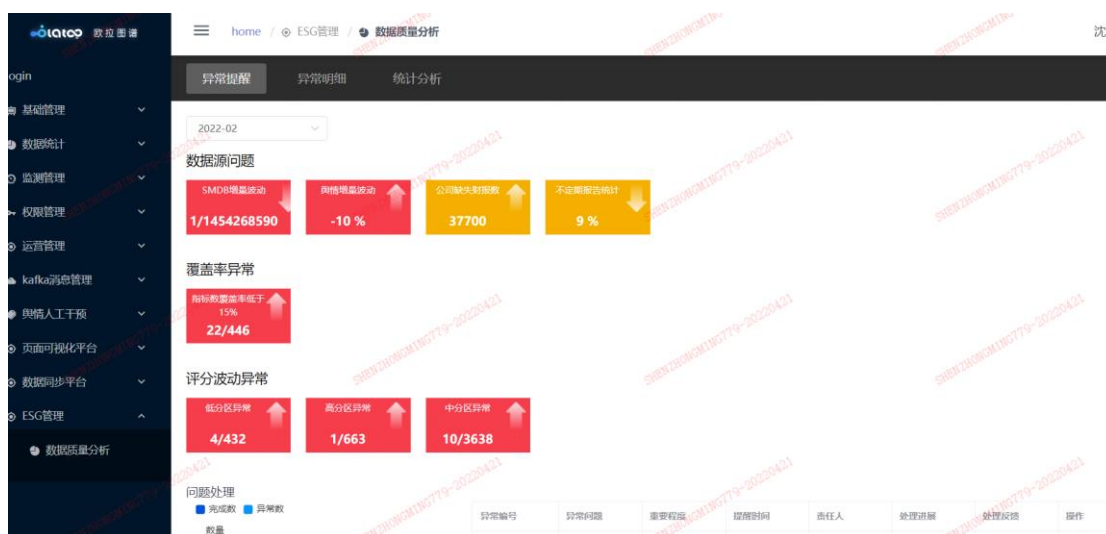
The following table lists examples of mapping from news events to ESG indicators.

Dimensions	Event category	Event mapping
<b>Environmental</b>	Energy consumption	Energy consumption, energy saving
	Green Development Opportunities	Green technology innovation, roll out green technology, green certification, renewable energy investment
	Pollutions and Emissions	Environmental protection violation, illegal discharge, waste gas emission reduction, waste water emission reduction
<b>Social</b>	Product Liability	Information leakage, insufficient capacity, centralized dependence, product quality, fake products, customer complaints, production suspension for rectification, product recall, product sales
	Supplier	Centralized dependence, supplier situation
	Social Responsibility	Public welfare, brand awareness.
	Employee Retention	Equity incentive, brain drain, layoffs, strikes, personnel changes, personnel violations of discipline, salary
	Intellectual Property	Technological innovation, intellectual property rights, honors and awards
<b>Governance</b>	External Supervision	Audit report, debt rating, principal
	Compensation and Incentives	Rating executive pay drop
	Strategic	Business cooperation,

Dimensions	Event category	Event mapping
	Management	development adjustment, corporate strategy
	Governance Results	Financial fraud, business fraud, income profit fraud, bill fraud, expense fraud, accounting treatment violations, assets fraud, debt fraud, cash fraud
	Governance Abnormity	Company liquidation, operation accident, abnormal operation, radical behavior, special treatment, delisting, suspension of listing, bankruptcy liquidation, bankruptcy reorganization, bankruptcy closing, internal control loopholes, internal control rectification, business shutdown, set off, dumping, capital problems, risk announcement

## Data Quality Control

We have a specific data quality control tool to monitor the key issues of data generation process. Every month when a new set of data is collected and calculated, we will use the tool to monitor issues such as data source coverage, indicator coverage, industry coverage, abnormal fluctuations in scores and other important data check points to ensure data quality. Once an issue is found, developers will deep dive to diagnose the root cause and fix it on a timely basis.



## Production delivery

### Data Coverage and Update Frequency

Currently, CN-ESG data set being applied to FTSE index primarily covers A-share listed companies. More broadly, CN-ESG data series cover:

- CN-ESG score for A-share market: monthly
- CN-ESG sentiment scores for A-share market: monthly
- CN-ESG score Hong Kong stock market: monthly
- ESG score for Chinese bond issuers: monthly



- ESG score for Chinese public offering funds: semi-annual
- Share Emerging Strategic Industries Mapping: semi-annual
- Share green revenue: semi-annual
- Green funds: semi-annual
- Green bonds: monthly