



About YoujiVest

Founding

Founded in 2017 with four offices in Hong Kong, Beijing, Shanghai, and New York to support responsible investment and climate solutions in China

Team

Core team consisted of engineers and finance practitioners from Chinese Academy of Sciences, Tsinghua Univ., Fudan Univ., UC Berkeley with decades of ESG product experience serving BlackRock, State Street, Nomura, Allianz and more

Expertise

Combining AI and deep learning techniques to build ESG Ratings, Carbon/Environmental Metrics, and Climate Models native to Greater China

Solutions

Methodologies and data products co-developed with Cross-strait Tsinghua Research Institute to address China's most pressing sustainability issues for investors, corporates and state agencies

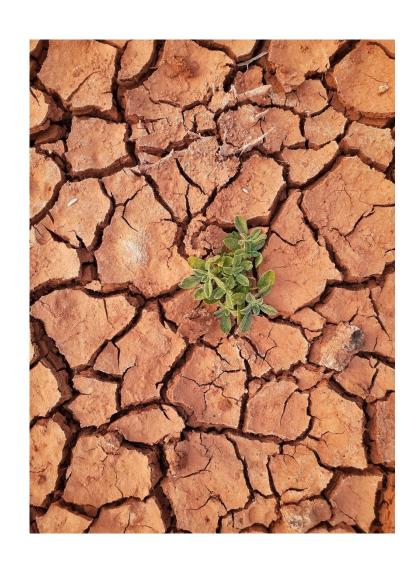
Signatory of:



Signatory to United Nations Principles for Responsible Investment (PRI)



Declaration to support Task Force on Climate-Related Financial Disclosures





Our Mission





We believe companies' ESG behaviors not only impact their own performance, but also contribute to the well-being of the economy and the overall sustainability of society.

We are founded to provide the most trusted, bias-free, and innovative data solutions tailored to China's ESG and climate applications for investors, corporates, and policy makers.





Partnership with Leading ESG solution providers

Strategic partnerships established with YoujiVest to provide a full suite of ESG and climate carbon solutions including data, fund product design, investment framework construction and more!





















A series of co-branded China Carbon-focused and ESG indices will be launching soon













YoujiVest Sentiment Analysis General Flow

Data Processing

NLP employed to extract relevant ESG information from those unstructured data

Sentiment Analysis

Al-driven sentiment analysis to assess the tone and context of ESG-related information



Data Collection

Gathering information from various public domain sources, AI and NLP algorithms scanned sources in real-time, ensuring comprehensive and up-to-date data.

Risk Assessment

Rule-based methodology, evaluating the **Frequency**, **Severity** and the **Source** of ESG incidents or controversies

Calculating YoujiVest ESG Score

The ESG score is calculated based on a weighted average of ESG risk factors identified in the previous steps and over a period of time with dampening effect adjustment.



China ESG Risk Scores (CERS)

ESG Risk Scores calculation are based on deploying NLP)/ML techniques to over 10000+ sources of mainstream news, annual reports, NGO reports, CSR, social media, regulatory disclosures, penalties announcement, etc.

Documents are parsed, processed, and analyzed to detect ESG relevancy; then decomposed and flagged to various ESG subissues and topics for further scoring. Our focus is on the "negative" of events and sentiments to optimize risk signals and minimize "greenwashing."

Advantage

- Unmatched comprehensive China coverage; granular ratings scale at 9 risk categories
- Data focused on real-world investment applications, with close to real-time update
- Able to flag "most risky" stocks before major blow up
- Objective and quantitative metrics ideally suited for quantitative evaluation on any green finance projects

Coverage

- All China A-shares and 95% market cap coverage for HK securities and ADRs
- 600K+ private companies, bond issuing entities
- Updated weekly and monthly
- History from 2015 (raw data from 2012)



China ESG Risk Scores Methodology

Rating methodology are aligned with global standards such as UN PRI, UN SDGs, UN Global Compact and SASB, but also tailored for China's own unique corporate and cultural characteristics

Sample Issues

es #	Level 1	Level 2
E01	Е	Animal Treatment
E02	Е	Global Air Pollution/GHG
E03	Е	Ecology & Biodiversity
S01	S	Child Labor
S02	S	Employee Discrimination
S03	S	Forced Labor
G01	G	Unfair Competition
G02	G	Corruption
G03	G	Executives Issues/ Shareholder Rights
M02	M	Supply Chain Issues
M04	Μ	Health Hazards

ESG Issues & Topics



- Not dependent self-disclosure
- Anti greenwashing
- 10000+ data sources
- 9 classification levels
- Weekly updates
- 2015 coverage inception



Luckin Coffee ESG Case Study - Financial Fraud

YoujiVest's China ESG Risk Scores (CERS) identified such "Governance" risk in advance

Muddy Waters LLC published an anonymous short seller report accusing Luckin of substantially inflating sales and operating results.

Feb 3, 2020

Luckin's Board of Directors formed a special committee to investigate COO Jian Liu overstating sales by \$2.2 Billion between Q2 to Q4:2019.

Apr 3, 2020

The U.S. SEC was reported to be investigating Luckin's financial accounting misconduct.

Jun 26, 2020

Jan 31, 2020

Luckin issued a statement calling the allegation "misleading and false" and denied any wrongdoing.

Apr 2, 2020

CSRC (China Regulators) announced investigation into Luckin's financial fraud and trading was halted on April 7, 2020.

Apr 29, 2020

Luckin was delisted from NASDAQ, and the board proposed the removal of Charles Zhengyao Lu as director and chairman of the board.



Luckin Coffee was a publicly traded company IPO as an ADR on NASDAQ on May 17, 2019. The company was founded in Beijing in 2017 and quickly became China's second largest coffee chain based on the number of stores and cups of coffee sold.

Luckin's retail model heavily leverages technologies and big data, enabling customers to transact entirely via its apps for a fast and seamless experience. On June 26, 2020, it was delisted from the NASDAQ due to failure to file its annual report and has since traded Over-the-Counter (OTC).



Luckin Coffee ESG Rating Case Study

YoujiVest's CERS vs Major ESG Rating Firms

Date	YoujiVest ESG*	ESG Rating Firm A**	ESG Rating Firm B***
May 31, 2019	58	No Coverage	No Coverage
Dec 31, 2019	62	No Coverage	No Coverage
Jan 31, 2020	54	No Coverage	No Coverage
Mar 31, 2020	53	No Coverage	No Coverage
Apr 30, 2020	94	CCC	No Coverage
Jul 31, 2020	100	CCC	No Coverage

^{*} YoujiVest ESG Low Risk = 0-25; Medium Risk = 26-50; High Risk = 51-75; Very High Risk = 76-100

^{***} ESG Ratings range from Very Low Risk, Low Risk, Medium Risk, High Risk and Very High Risk



YoujiVest already flagged Luckin as High ESG Risk (>50) in 2019, several months before Muddy Waters issued its negative short report on January 2020.

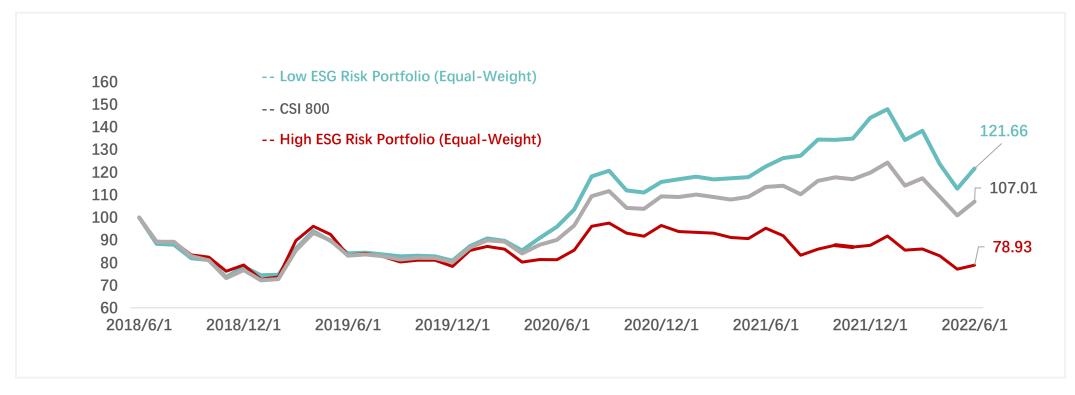


Luckin did not have any ESG ratings data from 2 major ESG rating firms until March 31, 2020, and only on April 30, 2020 did Firm A issue "CCC." But by then Luckin had fallen 75% and it was too late for investors to mitigate such ESG risk.

^{**} ESG Ratings range from AAA to CCC for a total of 7 categories. AAA, AA = Low Risk; A, BBB, BB, = Medium Risk; B, CCC = High Risk



YoujiVest CERS Portfolios vs. CSI 800 (June 2018-June 2022)

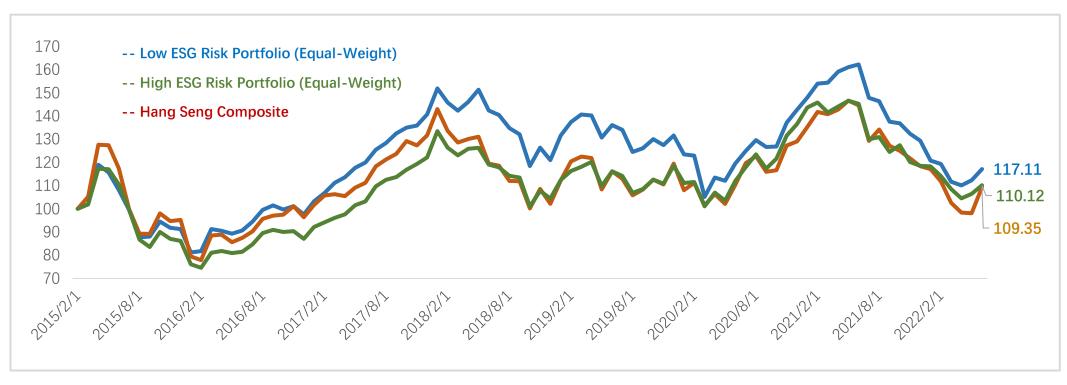


	Low ESG Risk Portfolio	High ESG Risk Portfolio	CSI 800
Total Returns	21.66%	-21.07%	7.01%
Annual Returns	5.02%	-5.74%	1.71%
Annual Volatility	20.88%	20.56%	20.06%
Max. Drawdown	-26.32%	-27.36%	-27.84%
Sharpe Ratio	0.11	-0.42	-0.05



YoujiVest CERS Portfolios vs Hang Seng (Feb 2015- Aug 2022)

(Market Cap USD\$300 Million or greater)



	Low ESG Risk Portfolio	High ESG Risk Portfolio	Hang Seng Composite
Total Returns	17.11%	9.35%	10.12%
Annual Returns	2.17%	1.23%	1.32%
Annual Volatility	18.20%	22.15%	18.03%
Max. Drawdown	-32.15%	-38.98%	-36.42%
Sharpe Ratio	0.04	-0.01	-0.01



HSU Project Introduction

- Source universe: Social media and Mainstream news
- Time Frame: Jan 2022 to March 2023.
- Number of news:

Mainstream news 1171747

Social Media: 1113143

- Description of the project:
 - Project Goal: Provide higher frequency sentiment signal to HSU I-Score with YoujiVest ESG Risk Score
 - Tasks and Challenges:
 - ✓ Methodology change to include positive sentiment
 - ✓ HK focused news sources with different language style
 - ✓ Making sense of data outcome



HSU Project Highlights



Adding transformer architecture models to improve full article understanding and sentiment judgement

Large language model added

- Llama (65 billion parameters)
- ChatGPT (175 billion parameters)



Multimodal learning (CNN, RNN) helps combine text with image data and video data.



Adding a series of local news sources, including

Master Insight 灼见名家(CN)

South China Morning Post 南 华早报(EN)

香港01 (CN)

无线新闻TVB (CN)

on top of existing YoujiVest news sources

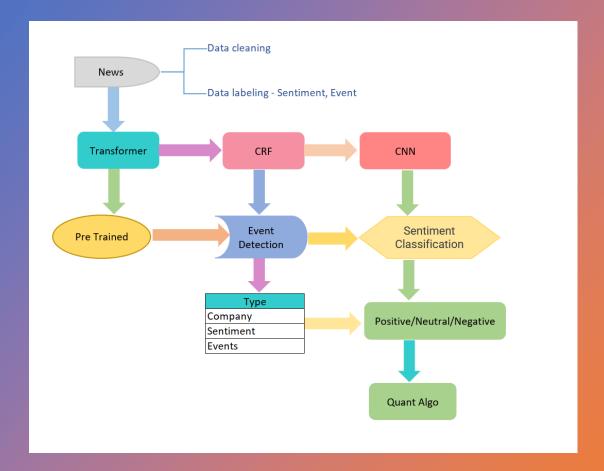


Labelling over 100,000+ key words.



Separate positive sentiment and negative sentiment analysis





Data Processing Flow

A Series of

- new language models
- deep learning (CNN+RNN)
- sentiment analysis technology

embedded during the whole processing flow



Language Models in a glance

- Beginning of the story: A Neural Probabilistic Language Model
 - "A goal of statistical language modeling is to learn the joint probability function of sequences of words in a language. This is intrinsically difficult because of the curse of dimensionality ...We propose to fight the curse of dimensionality by learning a distributed representation for words"
- Birth of Transformer: Attention is all you need
 - "We propose a new simple network architecture, the Transformer, based solely on attention mechanisms, dispensing with recurrence and convolutions entirely"

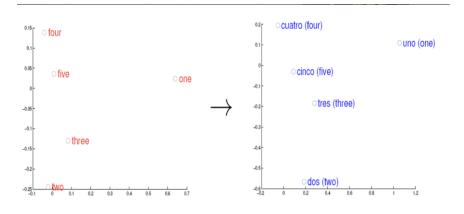


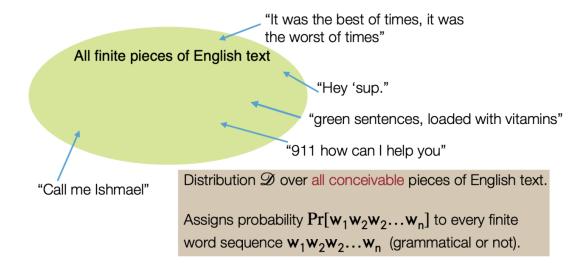
Table 1: Maximum path lengths, per-layer complexity and minimum number of sequential operations for different layer types. n is the sequence length, d is the representation dimension, k is the kernel size of convolutions and r the size of the neighborhood in restricted self-attention.

Layer Type	Complexity per Layer	Sequential Operations	Maximum Path Length
Self-Attention	$O(n^2 \cdot d)$	O(1)	O(1)
Recurrent	$O(n \cdot d^2)$	O(n)	O(n)
Convolutional	$O(k \cdot n \cdot d^2)$	O(1)	$O(log_k(n))$
Self-Attention (restricted)	$O(r \cdot n \cdot d)$	O(1)	O(n/r)



Language Models: Narrow Sense

• A probabilistic model that assigns a probability $P[w_1, w_2, ..., w_n]$ to every finite sequence $w_1, ..., w_n$ (grammatical or not)



Source: Princeton CS



Language Models: Narrow Sense

Conditional probability

$$p(w_1, w_2, w_3, \dots, w_N) = p(w_1) p(w_2|w_1) p(w_3|w_1, w_2) \times \dots \times p(w_N|w_1, w_2, \dots w_{N-1})$$

Sentence: "the cat sat on the mat"

$$P(\text{the cat sat on the mat}) = P(\text{the}) * P(\text{cat}|\text{the}) * P(\text{sat}|\text{the cat})$$

$$*P(\text{on}|\text{the cat sat}) * P(\text{the}|\text{the cat sat on})$$

$$*P(\text{mat}|\text{the cat sat on the})$$
Implicit order

Source: Princeton CS





YoujiVest CRESP

O1 China ESG Risk Scores (CERS)

- Quantify overall ESG and 25 sub-issue risks through "sentiment" and "event" analysis
- Outside-in, negative scoring methodology to minimize "greenwashing" risks
- Over 10K+ data sources, including mainstream news, annual/CSR reports, NGOs, government agencies, social media and more
- Real-time monitor and updates leveraging NLP technologies
- Controversial Products (CPBI)
- ESG customised data point

O2 China Environmental Pollutant Discharge (CEPD)

- Quantify 600+ discharged pollutants
- Data sourced directly from municipal and provincial sources
- A unique, uncorrelated source of "Environmental" alpha
- Urban city air pollution level real-time monitor, updated hourly

China Carbon Emission Metrics (CCEM)

- Compile, normalize and quantify carbon emissions, carbon intensity and footprints
- Data sourced from public, primary sources encompassing Scope 1, 2, 3 GHG emissions
- Carbon emissions estimated for undisclosed companies based on proprietary models
- Aligned with TCFD and ideally suited for portfolio climate risk analysis, reduction and reporting

Climate Risk Model Solutions (YoujiCRMS)

- YoujiVest unique scientificbased climate risk model
- Extensive collection of global and local climate data
- Combining with the company's financial indicators to quantify risks
- Covering all RCP-SSP scenario analysis pathways
- Meet the TCFD and various regulatory needs of listed companies and investors
- Quantitative analysis of physical risk and transition risk to formulate corporates' medium and long-term development goals



China Environmental Pollutant Discharge (CEPD)

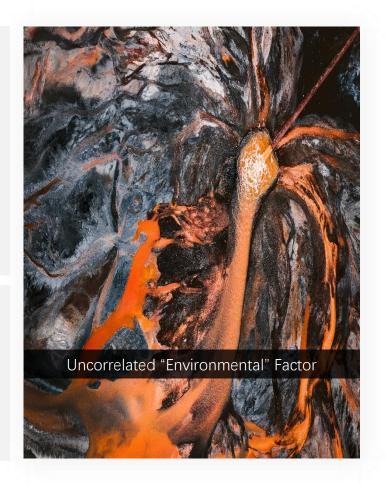
CEPD provides real-time, comprehensive waste discharge data for enterprises operating in all major China municipalities and provinces, and includes 500 +types of pollutants such as wastewater and various gas and solid particulates.

Advantages

- Data originates from real-time monitoring sensors at the provincial and municipal levels, and Alenabled process allows for automated data acquisition, quality assurance and frequent update
- A differentiated, non-carbon related "Environmental" factor able to detect short to mid-term production activities ahead of wide public awareness fertile ground for alpha discovery
- Cities' real-time air pollution profiles that are highly correlated to company production capacity

Coverage

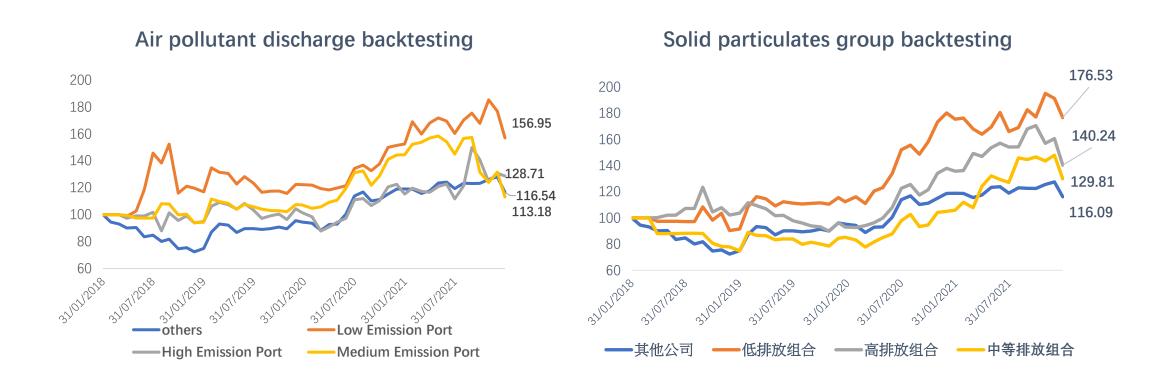
- 2600+ China publicly listed company covered; sourced and aggregated from all provinces
- Granular discharge data available for over 400,000 unlisted, private companies
- Data collected daily, sanitized/updated monthly; urban pollution levels updated hourly
- Data history since 2014





China Environmental Pollutant Discharge (CEPD)

CEPD can be seen as 'E' fundamental data to contribute excess return





China Carbon Emission Metrics (CCEM)

Carbon is the primary factor used by all stakeholders for analyzing climate risks and achieving China's Dual Carbon Goals



Advantages

- Scope 1, 2 and 3 disclosed carbon data sourced, sanitized, compiled from public sources: annual filings, CSR reports, company websites, etc.
- Normalized Carbon Intensity (CI) and Carbon Footprint (CP) for all disclosed and estimated company carbon emission data
- Easily aggregated into industries/regions/other groupings for portfolio and institutional level climate risk analyses, research, reporting and compliance
- Address large coverage gap for China equities

Coverage

Disclosure data:

2700+ China A-shares, Hong Kong securities and ADRs, 1000+ Taiwan listed securities

Estimate data:

Full coverage for both equity and 4000+ bond issuing enterprises

- Disclosed data at least once annually to align with company reporting; estimated data model update semi-annually
- Data history from 2006; more comprehensive coverage from 2017



Disclosed Carbon Emissions Collection



Data Sample

cosco	Amt	Unit
Carbon Emissions	22,214,824	tCO2e
Carbon Intensity	66,572	tCO2e/\$Mil Sales (RMB)
Carbon Footprint	82,056	tCO2e/\$Mil MktCap (RMB)
Scope 1	22,198,758	tCO2e
Scope 2	16,066	tCO2e
Nitric Oxides	522,229	tCO2e
Sulfur Oxides	132,479	tCO2e
Other Particles	47,066	tCO2e

- 2700+ China/HK companies covered
- 1000+ Taiwan companies covered
- Most comprehensive China/HK/TW coverage in the marketplace





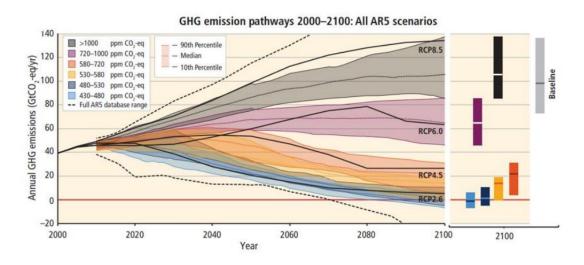
YoujiVest CCM platform provides comprehensive Physical Risk and Transition Risk analysis based on the actual asset locations.

Identify the risks that climate change brings to your business and prepare a risk management plan that deals with climate change

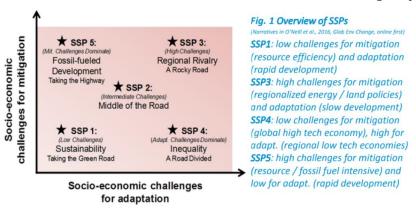




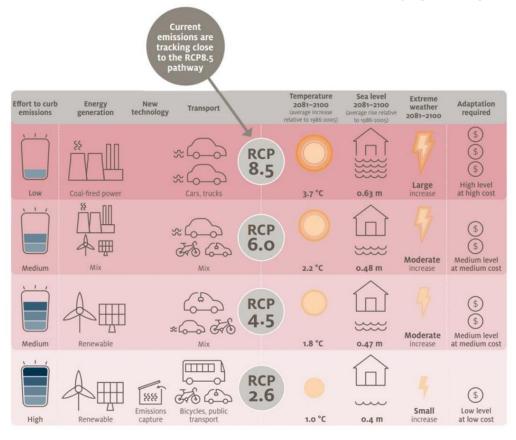
Scenario Analysis – IPCC: RCP+SSP



The Shared Socio-Economic Pathways (SSPs)

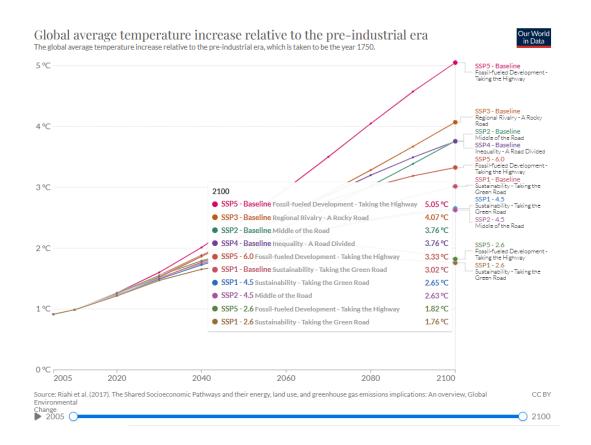


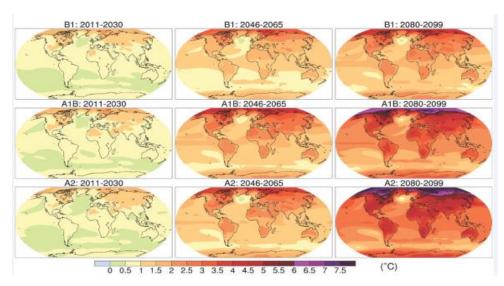
Representative Concentration Pathway (RCPs)





Scenario Analysis – IPCC: RCP+SSP





YoujiVest considers different RCPs + SSPs combined Pathways



YoujiVest Climate Risk Model Solution(YoujiCRMS)

TCFD: Scenario Analysis

YoujiVest covers all 4 RCPs and 5 SSPs Pathway scenarios

RCP2.6 RCP4.5 RCP 6.0, RCP8.5

A series of IPCC hazards:

Water Stress, Tropical Cyclones, Floods, Extreme high temperatures, Extreme low temperatures, Wildfires, Landslides, Sea Level rise, etc.

YoujiVest provides a set of measures to indicate the climate risk of each company under different scenarios. These indicators can include the impact analysis for physical risk, policy risk, and transition risk, etc.



			2030			
气候灾害	历史基准	SSP1-2.6	SSP2-4.5	SSP3-6.0	SSP5-8.5	
极端高温	6.03%	6.39%	6.40%	6.38%	6.20%	
水压力与干旱	4.88%	5.09%	5.02%	5.20%	5.04%	
台风	0.11%	0.11%	0.1196	0.11%	0.1196	
河流洪涝	7.02%	7.43%	7.23%	7.30%	7.47%	
海平面上升	0.55%	0.56%	0.58%	0.58%	0.58%	
山体滑坡	0.20%	0.21%	0.20%	0.21%	0.22%	
ш火	1.35%	0.00%	0.00%	0.00%	0.00%	
极端低温	11.26%	11.54%	11.71%	11.68%	11.64%	





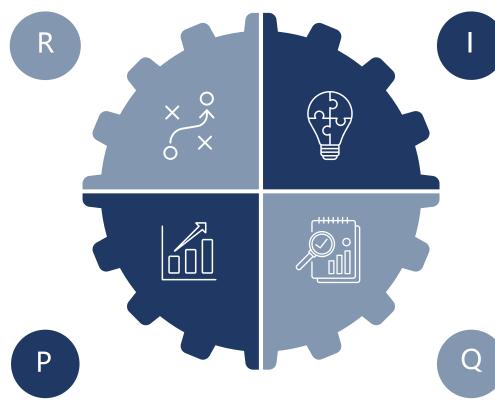
ESG Data Solutions Built for Institutional Investors

Risk Management

- Create climate (GHG) and ESG portfolio risk reports and individual stock red flag alerts
- Align and meet global and domestic ESG regulations and reporting requirements, including TCFD

Product Development

- Our vast experience in oversea ESG fund development can support you from idea inception to launch
- Ideally suited for building Active,
 Passive, Index-enhanced and Thematic
 ESG funds



Investment Research

- Comprehensive data coverage/history for all China/HK/ADR securities to address both individual stock or sector research needs
- YoujiVest ESG data integrated into Exabel web-enabled platform with powerful visual charting, screening and back-testing tools

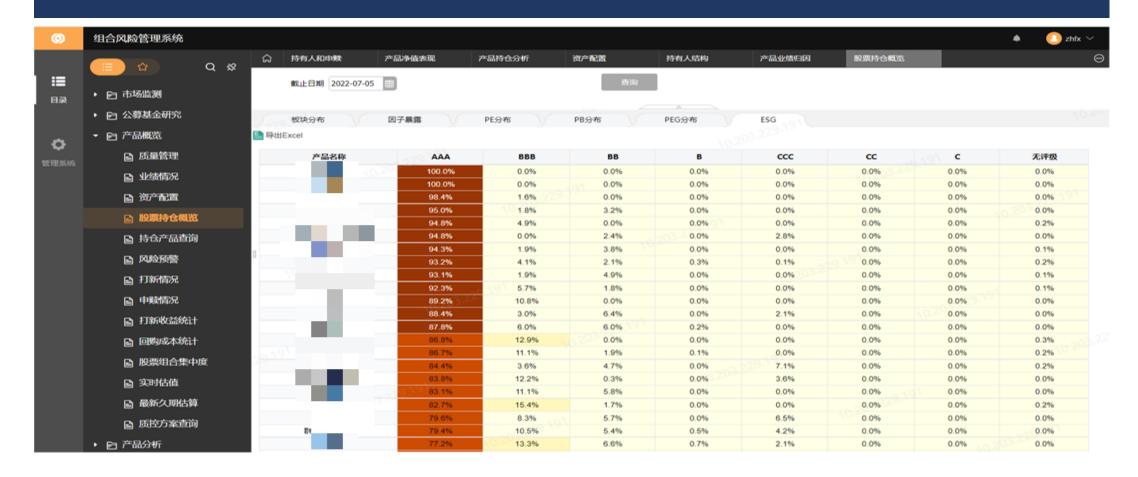
Quant & Indexing

- YoujiVest ESG data can be seamlessly integrated into client's existing quant environment via automated FTP protocols
- Our data experts can assist with quant/index strategies formulation and back-testing



ESG Fund Risk Rating Reports

Our comprehensive ESG coverage allows for effective, firm-level ESG ratings aggregation to capture any fund's ESG risks at the portfolio level, as well as enabling the integration of ESG risks into your firm's overall risk management framework

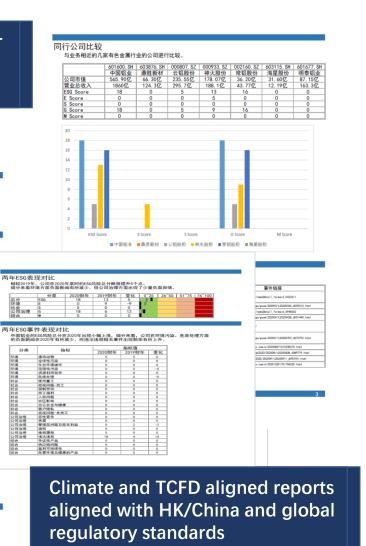


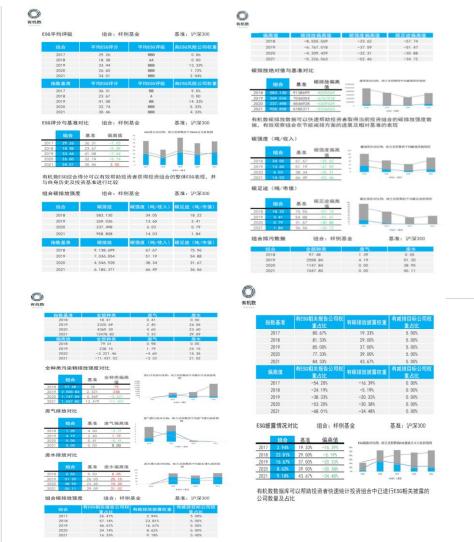


ESG Company Risk Rating Reports





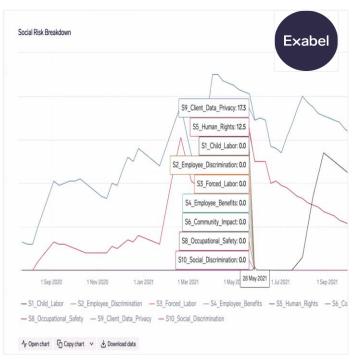


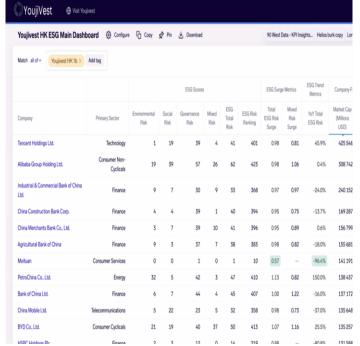


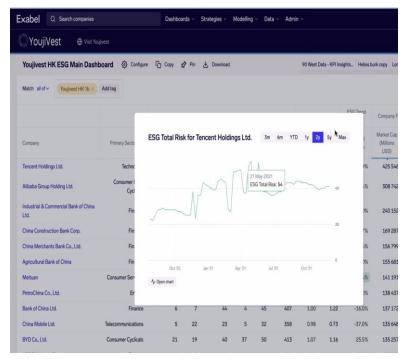


YoujiVest Data Platform – Powered by Exabel

In collaboration with Exabel, a global enterprise financial platform company, our suite of data solutions has been integrated to offer clients seamless access, custom modules and visualizations, and institutional grade quant analytics









YoujiVest Data Platform - Powered by Exabel





Exabel CEO said: "We are delighted to be partnering with YoujiVest, one of the premier providers of ESG data on the Chinese market. YoujiVest combines two areas of massive market interest, ESG and China, and we are thrilled to get the chance to help bring these insights to a wider audience."

Oslo-based data and analytics platform Exabel has partnered with Chinese ESG data and analytics firm YoujiVest to launch the Youjivest Insights Platform, which aims to enhance ESG information access for China securities. The platform will provide asset managers, asset owners and hedge funds with curated insights based on YoujiVest's ESG data on Chinese securities, displayed through dashboards, analytics, visualisations and KPI-monitoring capabilities to help enhance the integration of ESG and sustainable considerations into their investment processes and workflows.



YoujiVest powered ESG Fund Products

Active Fund

Chosen for alpha enhancement, YoujiVest's ESG data has been fully deployed in Invesco Great Wall's ESG Quantitative Active Fund launched in May 2022.

Known for its meticulous and thorough research, the Invesco Great Wall Quant team has selected YoujiVest for our high signal-to-noise data and robust client support services.





Passive Fund

Optimizing the right set of systematic factors are critical to any passive fund's success, as it is rules-based and must track an index.

TruValue has chosen YoujiVest's ESG data to deploy in its Passive ESG Responsible Fund due its consistent efficacy in reducing risks and enhancing returns.





THE HANG SENG UNVERSITY OF HONG KON 深圳市绿色金融协会 | 绿色及可持续金融线上分享会NO.47 ESG投资中的难点解读

报告关键点

A 股市场 ESG 四个大分项 AAA

308 违法违规这两项。在 2023 年以来 AI 赋能的高领 ESG 评

相关报告

《ESG 校资分析基础(方法论

AI 赋能的高频 ESG 评级: 2023 年 以来关键因素在公司治理

6 兴业证券

度表 (评级数据), 重点分析 2023 年以来中国资本市场 ESG 评级变化的关 健因素,以推动 ESG 高频数据在投研活动中的日常应用。

2023年1月份到4月份、全AESG AAA 评级占比下降近10%左右、同时 AA、A和BBB 评级总计上升8%, 这显示出市场 ESG 评级出现显著的下

大分项和行业的变化: G 分项、多数行业评级下降幅度大, 2023 年以来兹 得A 股市场 ESG 四个大分项 AAA 评级的占比均出现一定幅度下降,其中 G 分项的 AAA 评级上市公司占比下降幅度最大。从中万一级行业维度来现察。前貿零售、建筑裝飾、石油石化等行业 AAA 评级上市公司占比下降 幅度最大,煤炭和通信等行业 AAA 评级上市公司占比上升幅度较大。

大分项下行业变化:多数行业评级下降,分项变化分歧大。银行和非银金 級在E分項有略有改善。但是在M分項是AAA 评級占此下降幅度最大的 两个行业。从消费行业来看,杜服、纺织服装在E分项评级有所改善,但 是在公司治理分项下滑幅度较大, 整体来看, 四个分项中行业分歧较大

小分项下评级变化: G08 违法违规的 AAA 占比下降 12.88%。从细分评级 来看,GO8 违法违规这一小分项出现明显下降,下降 12.88%。从 YoujiVest 底层数据来看,期间大量的负面新闻导致 AI 评级的违法违规小分项出现故 大比例增加。这提示我们要注意这一因素可能对市场风险偏好上市公司业 结、公司治理的潜在影响.

小分项下行业评级变化: 部分行业在 G03 管理层问题及股东利益有显著的 改善,多数行业在 G08 违法违规这一项有显著的下降。从25个小分项*中 万 31 个一级行业维度的分析来看,公司治理这一维度,特别是 G03 管理 层问题及股东利益和 G08 违法违规这两项,在 2023 年以来 AI 默能的高频 ESG 评级中起到了重要影响,因此在未来我们要重点关注这两个关键因素

Research **Exposure** and Market Influence

○Youji Vest



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失。其输出结果有助于估算不同气候情景的总体气候风险。

步骤三:构建金融风险模型,这列模型将气候风险暴露水平和影 务分析工具中,如资产定价模型和投资组合风险管理框架。这些 候风险对资产价值、回报和整体投资组合绩效的潜在影响。

步骤四:参数校准。参数校准包括基于历史数据和专家判断对模引 以确保模型准确地反映出潜在的现象和关系。这一步骤需要根据 产出进行严格的评估,并结合气候学家、金融分析师和其他利益:

从大℃\$金融茶图



资料来源: 有机数、国信证券经济研究所整理



央企上市公司"領衔"FSG信息披露

小分项下评级变化; G08 违法违

级中起到了重要影响, 因此未来 要重点关注。

下的超額收益方向3(20230327) 《ESG 校资框架下如何理解近 期产业政策调整?如何应对? 3

风险提示: 投資环境超预期变化、商业发展趋势超预期波动、监管超预期等。





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