

Walk the Walk Carbon Risks and ESG in Investment Decisions

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All the views and materials presented are that of the speaker and not of HKMA or the University of Chicago.
Company information is for education purposes and does not represent investment recommendation.

What are Top Risks to all Human?

Top 10 Global Risks 2023 (WEF)

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period"

2 years

1	Cost-of-living crisis
2	Natural disasters and extreme weather events
3	Geoeconomic confrontation
4	Failure to mitigate climate change
5	Erosion of social cohesion and societal polarization
6	Large-scale environmental damage incidents
7	Failure of climate change adaptation
8	Widespread cybercrime and cyber insecurity
9	Natural resource crises
10	Large-scale involuntary migration

10 years

1	Failure to mitigate climate change
2	Failure of climate-change adaptation
3	Natural disasters and extreme weather events
4	Biodiversity loss and ecosystem collapse
5	Large-scale involuntary migration
6	Natural resource crises
7	Erosion of social cohesion and societal polarization
8	Widespread cybercrime and cyber insecurity
9	Geoeconomic confrontation
10	Large-scale environmental damage incidents

Risk categories

Economic

Environmental

Geopolitical

Societal

Technological

Researchers at Stanford University and Colorado State University found in a study using neural network (A.I.) a nearly 70% chance that the two-degree threshold would be crossed between 2044 and 2065, even if emissions rapidly decline. The study also shows the Earth is on track to exceed 2C warming, which international scientists identified as a tipping point, with a 50% chance the grave benchmark would be met by mid-century.

<https://www.theguardian.com/environment/2023/jan/30/climate-crisis-global-heating-artificial-intelligence>

Source: World Economic Forum

Cost of Climate Inaction - Global

According to the report, the [G7 \(Group of Seven\) economies](#) — Germany, France, Italy, Japan, Canada, the UK and the US — could see **annual average losses of up to 8.5% by 2050** if CO₂ emissions continue unabated. Total losses could amount to **US\$4.8 trillion** (€3.95 trillion) a year, double the GDP losses [caused by the coronavirus pandemic](#).

<https://www.dw.com/en/climate-inaction-will-cost-g7-countries-billions/a-57800168>



Deloitte research reveals **inaction** on climate change could **cost** the world's economy **US\$178 trillion by 2070**.

By contrast, the global economy could **gain US\$43 trillion** over the next five decades by rapidly accelerating the **transition to net-zero**.

<https://www2.deloitte.com/global/en/pages/about-deloitte/press-releases/deloitte-research-reveals-inaction-on-climate-change-could-cost-the-world-economy-us-dollar-178-trillion-by-2070.html>

Climate & Environmental Risks - different? (1/2)

What comes to mind about Environmental issues



SMOG ~ First “red alert” in Beijing 7 Dec 2015: 253 (301-500 is “hazardous” in USA). That week schools were required to close at noon, motor vehicles could drive only on alternate days, government agencies were required to keep a good fraction of their vehicles off the road, and outdoor cooking of any kind (very popular on the streets of Beijing) was temporarily banned. [PM2.5 pollution in Beijing was improving since 2013]

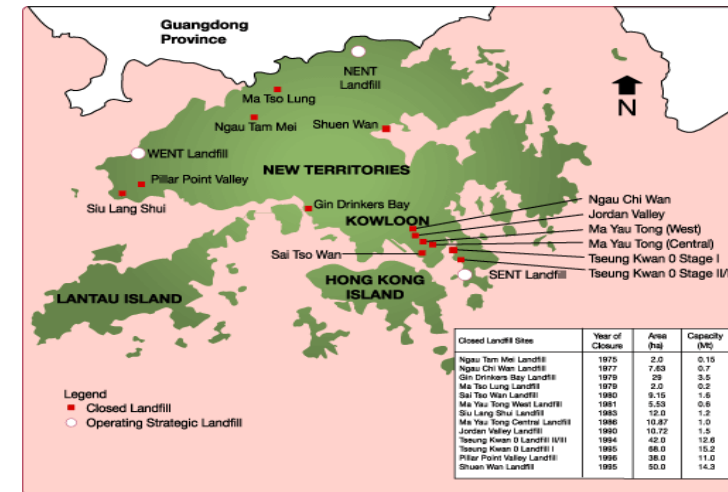
Sound / Light pollution



Plastic pollution is the accumulation of **plastic** objects and particles (e.g. **plastic** bottles, bags and microbeads) in the Earth's environment that adversely affects wildlife, wildlife habitat & humans. **Plastics** that act as **pollutants** are categorized into micro-, meso-, or macro debris, based on size.

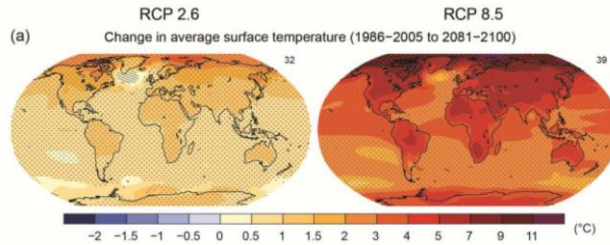


Saturation, taking up valuable residential space, methane gas are issues of landfills



Source: <https://www.epd.gov.hk/epd/misc/ehk06/eng/text/e08.05.html>

Climate & Environmental Risks - different? (2/2)



Map of multi-model mean results for different greenhouse gas concentration scenarios of annual mean surface temperature change in 2081–2100. Credit: IPCC Working Group I.



Glaciers melting



Droughts & crop failure



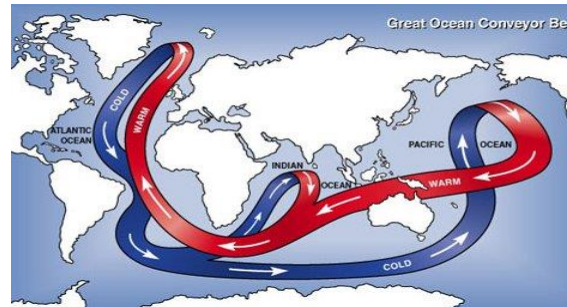
Source: CWR based on HK DTM from Lands Department of Hong Kong

<https://www.chinawaterrisk.org/resources/analysis-reviews/hk-submerged-is-this-map-for-real/>

https://www.chinawaterrisk.org/resources/analysis-reviews/code-red-8-things-you-need-to-know-about-water-in-ipcc-ar6/?utm_source=CWR+Newsletter&utm_campaign=625ad20d6d-2017_COPY&utm_medium=email&utm_term=0_51404a9e62-625ad20d6d-1205181109



Extreme weather



Disruption of ocean currents



Floods

Wildfires



CWR New Base Case 2030: 5.87m of extreme storm tides



Source: CWR based on HK DTM from Lands Department of Hong Kong

Hong Kong 2050

Can HK
function as a
city?

<https://www.chinawaterrisk.org/resources/analysis-reviews/hk-submerged-is-this-map-for-real/>

https://www.chinawaterrisk.org/resources/analysis-reviews/code-red-8-things-you-need-to-know-about-water-in-ipcc-ar6/?utm_source=CWR+Newsletter&utm_campaign=625ad20d6d-China_Water_Risk_Jan_2018_Newslette07_15_2017_COPY&utm_medium=email&utm_term=0_51404a9e62-625ad20d6d-1205181109

What is Carbon Risk?

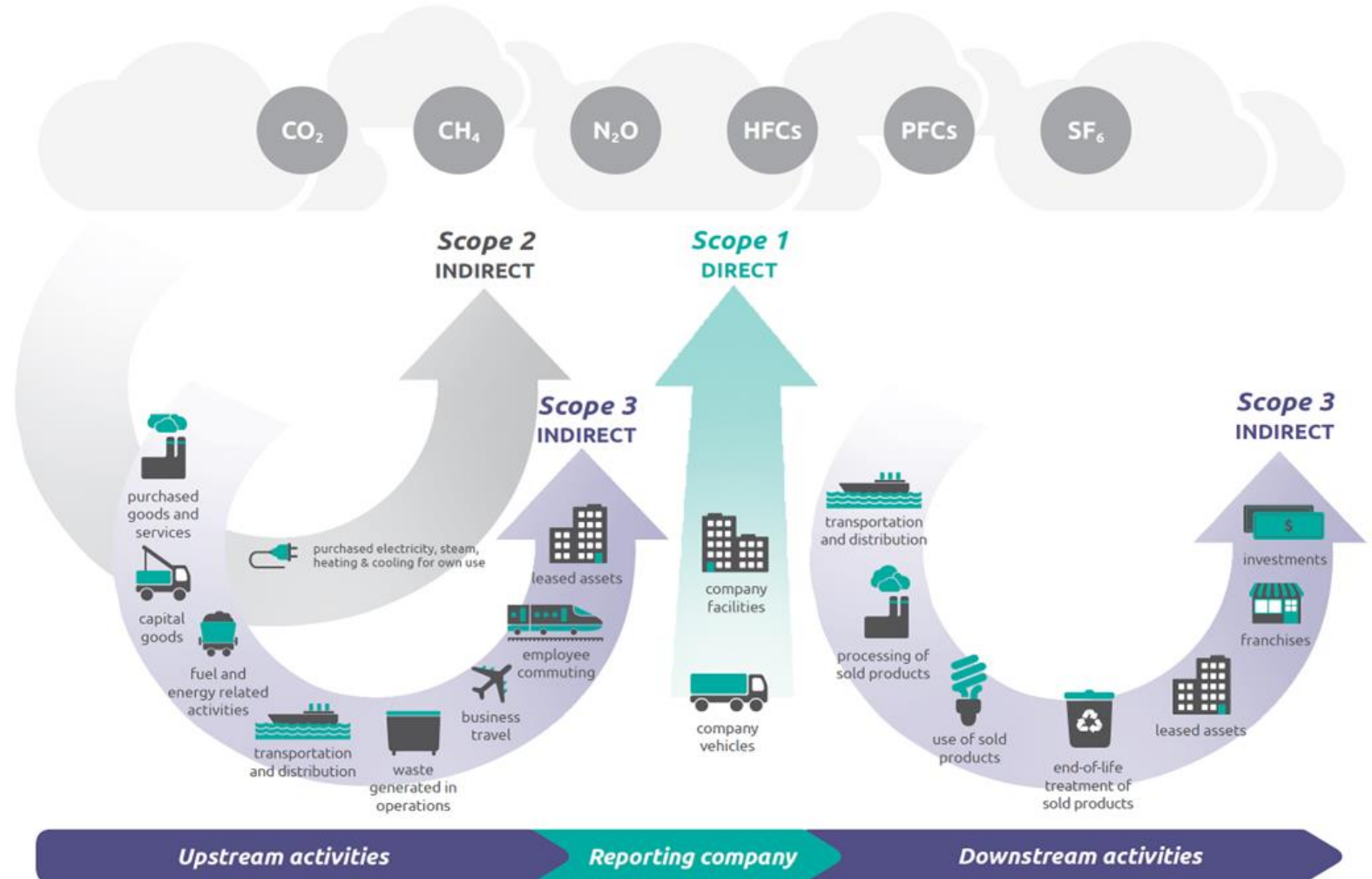
What are Scope 1, 2, 3 Emissions?

6 Greenhouse Gases (**GHG**)
recognized in Kyotol Protocol 1997

Global Warming Potential (**GWP**)

- developed to allow comparisons of the global warming impacts of different gases
- a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period of time, relative to the emissions of 1 ton of carbon dioxide (CO₂)

Carbon dioxide equivalent or **CO₂e**
means the number of metric tons of CO₂ emissions with the same global warming potential as one metric ton of another greenhouse gas



Source: [WRI/WBCSD Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard \(pdf\)](#)

What Companies Face & Can Do?

Acute vs Chronic

PHYSICAL RISKS

- Business continuity threatened by severe weather (floods, wildfires, landslides) and pandemics
- Water shortage affecting agriculture, power generation & semiconductor production
- Heat affecting outdoor workers
- Coastal property damage (insurance?)

TRANSITION RISKS

- Change in regulations : carbon tax, carbon offset, carbon price in trading, disclosures – increase costs, legal liability
 - Change in consumer preferences + behavior – premium for green products
 - Change in technology – competitive costs of renewables / CCUS
 - Stranded assets
- * Fossil fuels turning into stranded assets

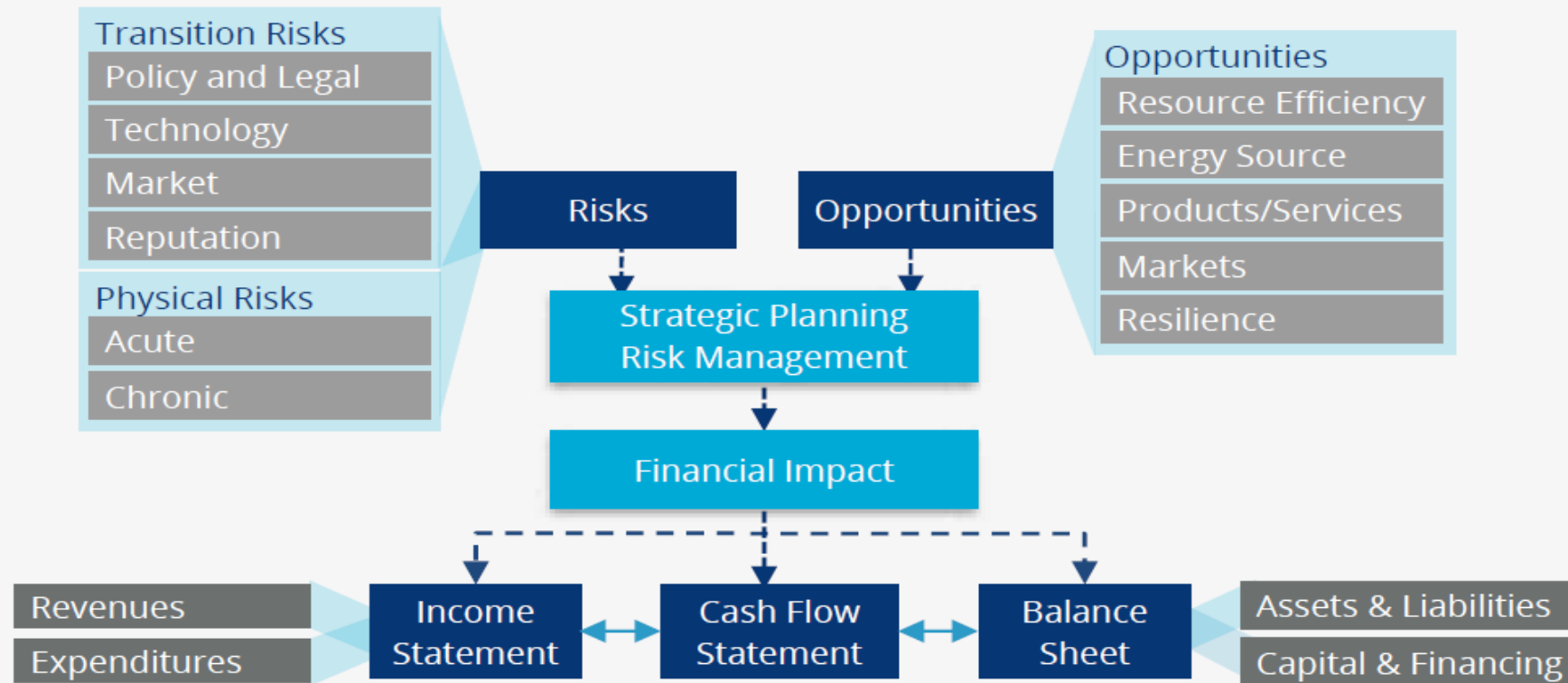
OPPORTUNITIES

- Improve resource productivity, e.g., energy efficiency to save cost, revenue from waste reduction
- Innovation in new products + services, e.g., use of (even produce) biofuels/SAF and renewable energy
- Reduction of Scope 3 emissions leads to aligned supply chain and customers

Climate Financial Impact

Figure 1

Climate-Related Risks, Opportunities, and Financial Impact



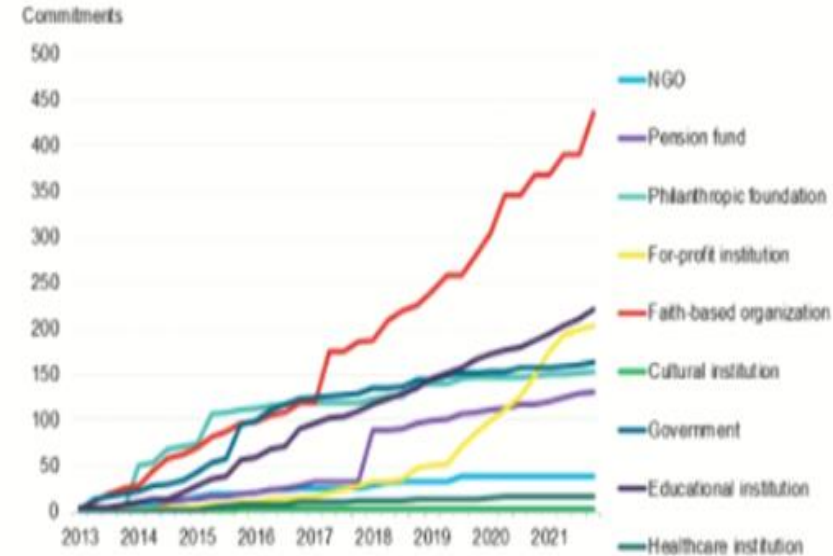
Source: TCFD

What Capital Providers Want/Do?

Global Investors are Decarbonizing Portfolios

- Norway to divest the country's US\$1.3T sovereign wealth fund from oil & gas (134 companies, 20% portfolio in 2017)
- AIA—Asia's largest publicly listed life insurance group valued at US\$127 billion announced in an official statement in December 2021 that it had **sold off all** of its fixed-income-and equity-coal holdings in October, **seven years ahead** of schedule

Count of cumulative divestment and phase-out commitments



Source: BloombergNEF, Bloomberg terminal, divestmentdatabase.org, Stand.earth, 350.org, Reclaim Finance, BankTrack, IEEFA, company and news documents.
Note: Commitments are not represented here if their commitment date is unknown.

How do Investors integrate ESG / Carbon Risks into Investment Decisions?

Proprietary Investment Models/Lending Criteria

Fundamentals + ESG tilt or full integration

Reference 3rd party ESG and/or Risk ratings

Passive Strategies:

- Benchmark: Index
- Tilt by ESG / risk scores

Active Strategies:

- Exclusion
- Best in Class
- Thematic
- Impact (usually private equity)

Stewardship

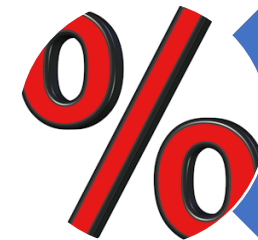
- Corporate engagement
- Escalation
- Voting



Revenue
Expenses
Cash flow

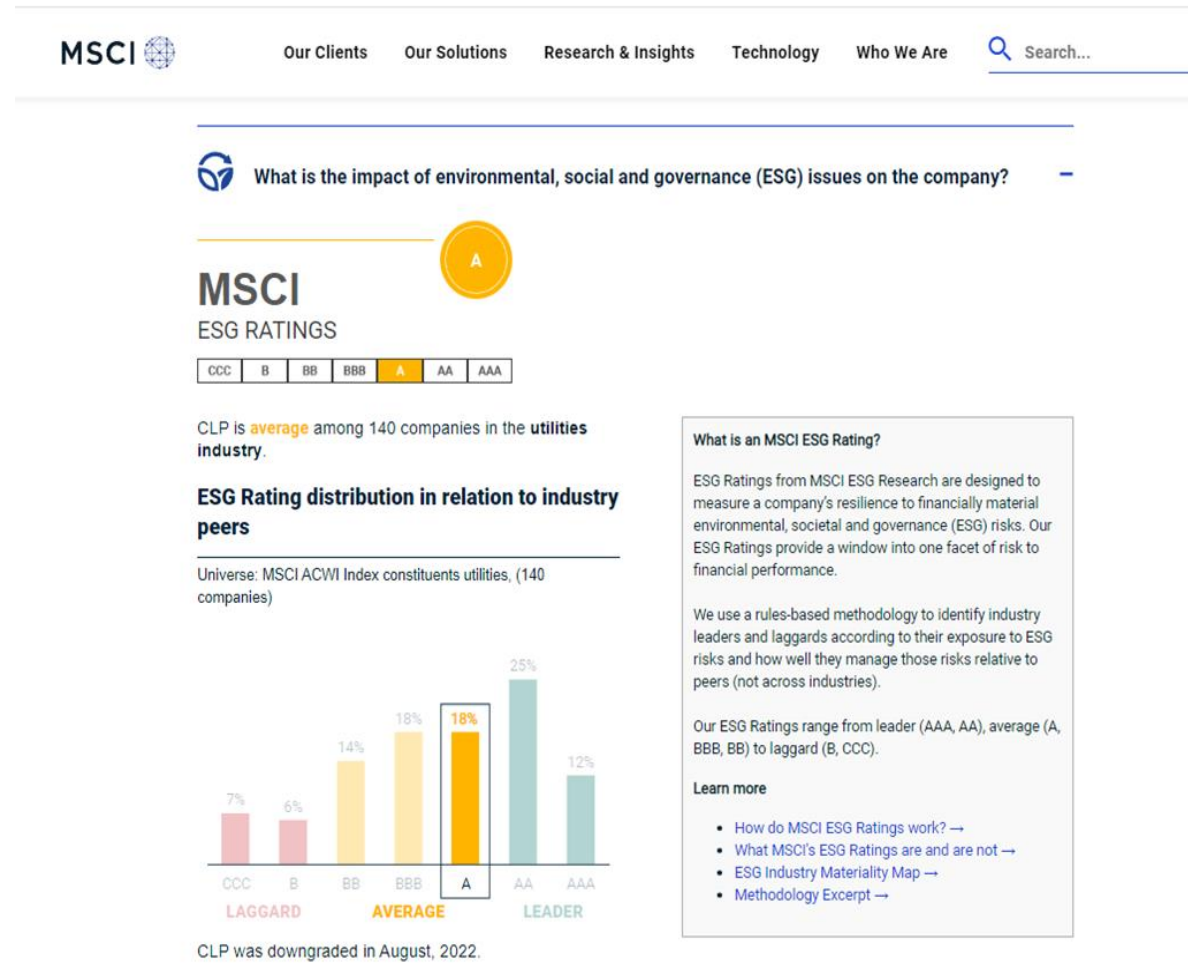


Capital
expenditure



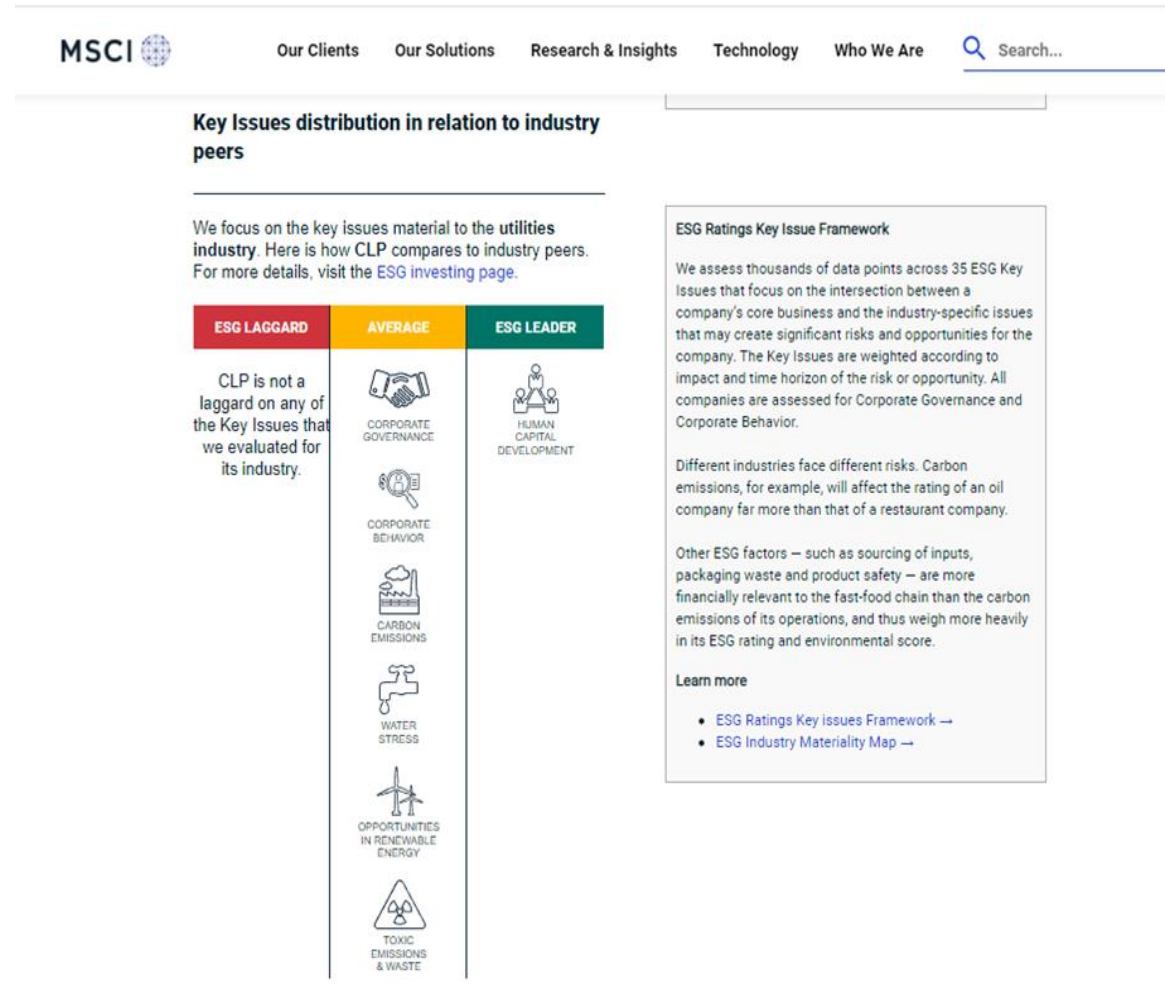
Discount
rate

MSCI ESG Rating of CLP (1/2)



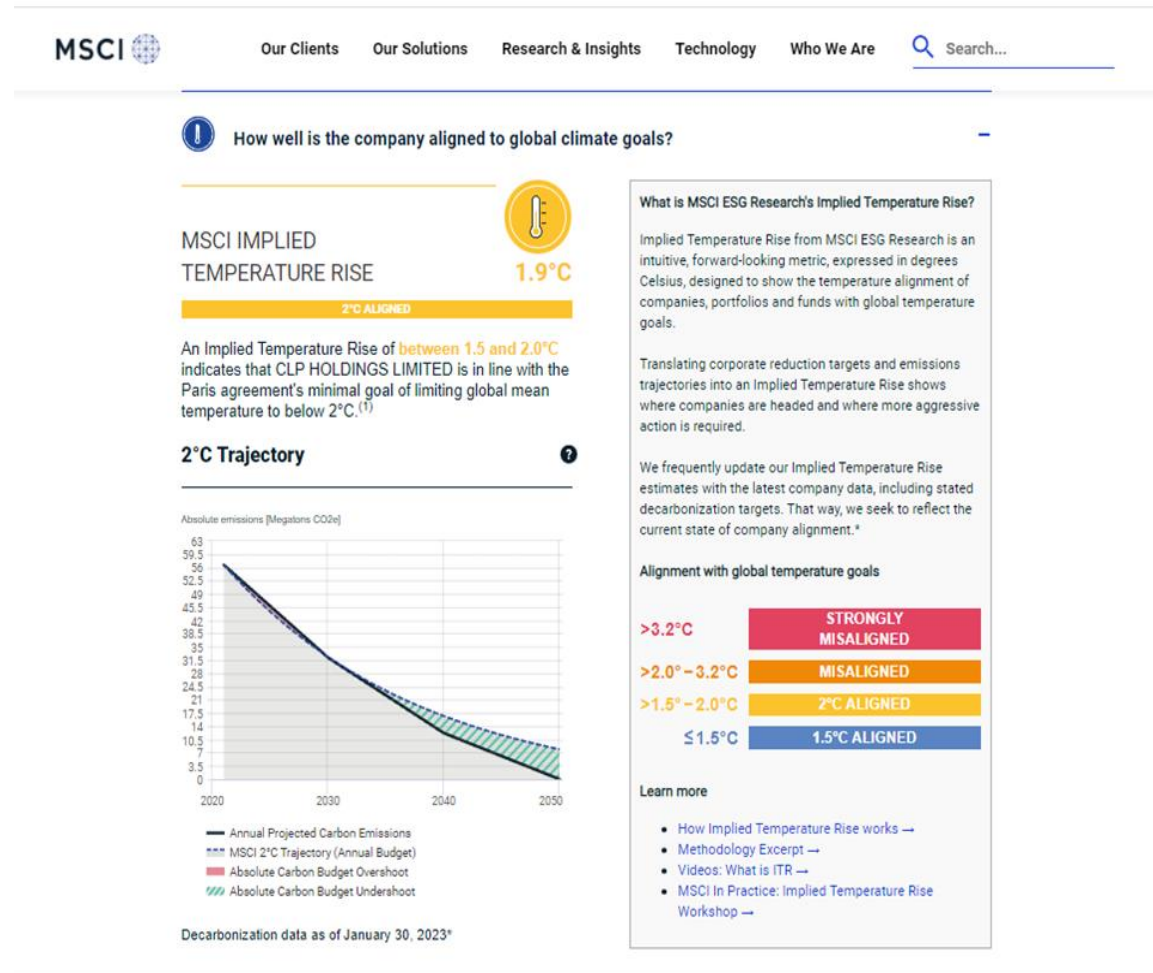
Source: <https://www.msci.com/our-solutions/esg-investing/esg-ratings-climate-search-tool>

MSCI ESG Rating of CLP (2/2)



Source: <https://www.msci.com/our-solutions/esg-investing/esg-ratings-climate-search-tool>

MSCI Implied Temperature Rise of CLP



Source: <https://www.msci.com/our-solutions/esg-investing/esg-ratings-climate-search-tool>

Do carbon risks matter for Hong Kong equity prices? – PhD dissertation 2022 (1/3)

AIMS

- Identity investors' behaviour – choice of Hong Kong stock price action in response to carbon risks [*Behavioural Finance*]
- Uncover motivation behind their behaviour [*Causation*]

SIGNIFICANCE (decision-useful)

- ❖ *Corporates*: understand investors' demands, set sound climate action policies, better strategise and communicate with stakeholders
- ❖ *Investors*: make better informed decisions
- ❖ *Regulators*: establish more effective rules and regulations
- ❖ *Service providers*: design more decision-useful tools/data/services

Do carbon risks matter for Hong Kong equity prices? – PhD dissertation 2022 (2/3)

Hypothesis 1: Low carbon risk/Price Premium

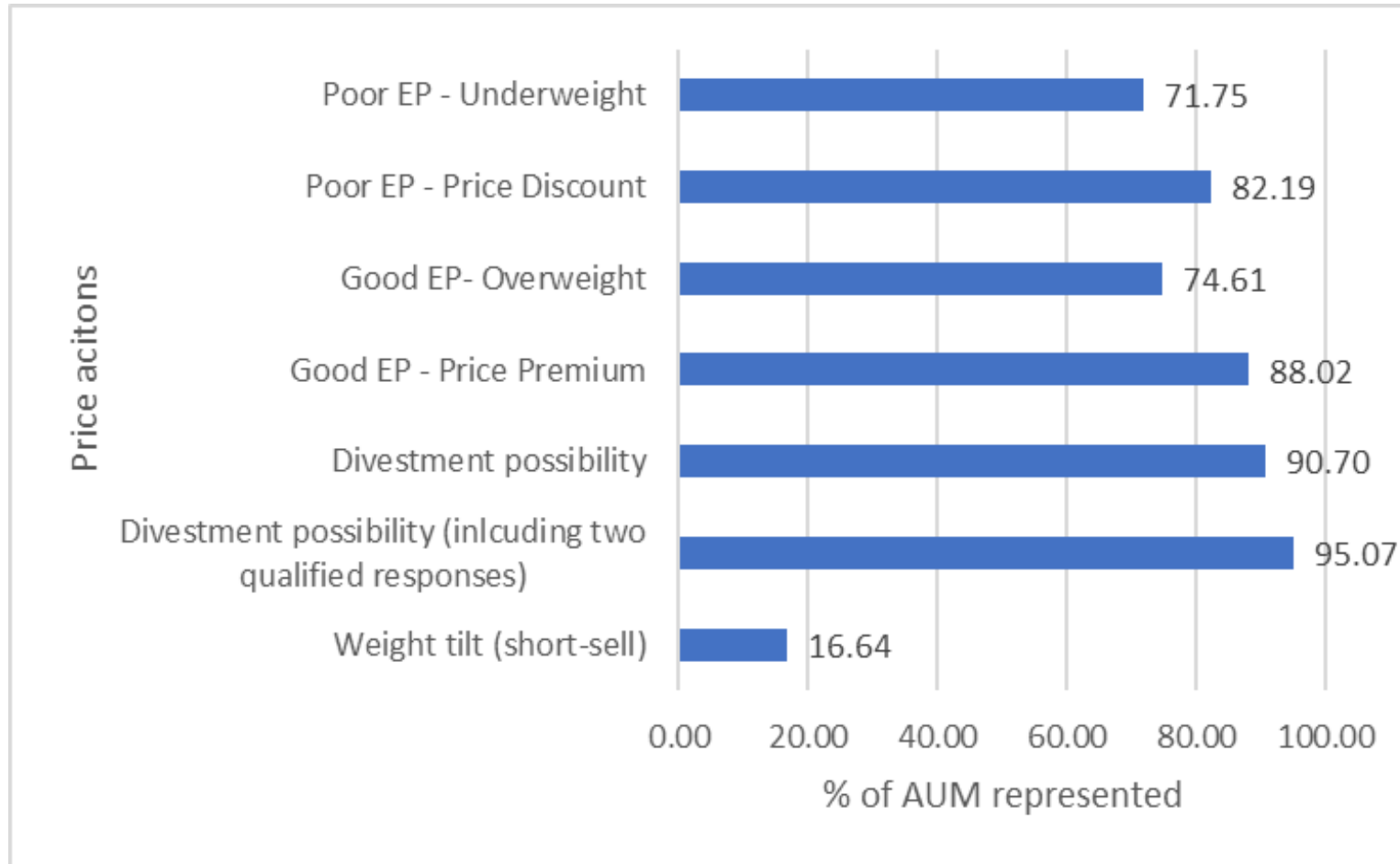
Hypothesis 2: High carbon risk/Price discount

Both regressions and interview results showed that investors were more inclined to penalise Hong Kong listed firms that are environmental laggards, rather than reward less carbon intensive ones.

- The study's **regression** results using relative GHG emissions intensity to predict price/sales fail to support Hypothesis 1 but **support Hypothesis 2** [Investors' behaviour]
- The results of the **expert interviews support both hypotheses**. Return on investments (investors' first and foremost fiduciary duty) almost always trump environmental performance.

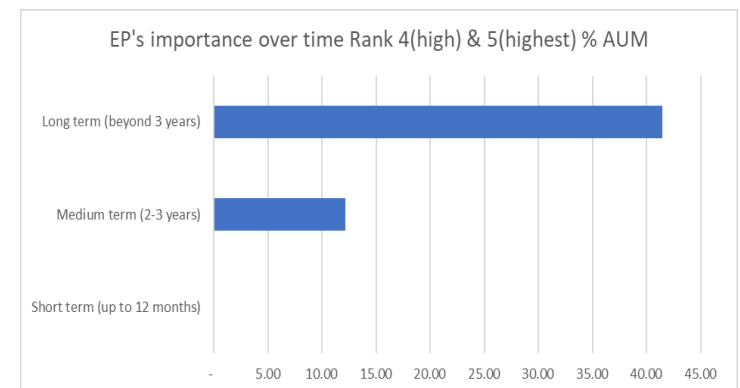
Investors holding 88% of the capital show a willingness to pay premium for good environmental performance, while investors holding **over 90% of the capital would divest or exclude a stock if the company's environmental performance is persistently poor.**
[Motivation]

Do carbon risks matter for Hong Kong equity prices? – PhD dissertation 2022 (3/3)



Over 90% AUM represented will divest or exclude if a firm shows persistently poor environmental performance (high carbon risk)

- Sustainability/ESG investors do not exclude or divest right away
- 3 years or longer



Rise of Shareholders' Activism – US & Europe

OIL & GAS



11 Shell board directors personally sued by ClientEarth – inadequate climate strategy puts company at financial risks (9 Feb 2023)

Supported by UK's Nest, London CIV, Swedish national pension fund AP3, French asset manager Sanso IS and Danske Bank Asset Management

<https://www.theguardian.com/environment/2023/feb/09/shell-directors-personally-sued-over-flawed-climate-strategy>

In May 2021

- Engine No. 1, a hedge fund that has been pushing for ExxonMobil to gradually move away from fossil fuels, won election of three out of four nominees it had put forward for the oil and gas giant's 12-member board. Engine One owns just USD 12.5M worth of ExxonMobil's shares
- A Dutch court ruled that Royal Dutch Shell needs to accelerate cuts to greenhouse gas emissions- by 2030, Shell must cut its CO2 emissions by 45% compared to 2019 levels; Shell said it will appeal
- 61% of shareholders in Chevron have voted for a proposal by Follow This to encourage the US oil company to reduce all of its emissions
- Earlier same month, 58% of shareholders voted for a similar resolution at ConocoPhillips, and 80% voted at Phillips66

Questions & Answers



Your comments and feedback are most valuable

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About the speaker

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<http://hk.linkedin.com/in/agnestai>

Agnes is Director of Great Glory Investment Corporation and Head of Sustainability Investment and Advisory of Arta Asset Management Limited. She holds RA 4 & RA 9 licenses issued by the Securities and Futures Commission in Hong Kong, a Climate Designation certificate from Competent Boards, a Sustainability and Climate Risk certificate and a Financial Risk Manager certificate from Global Association of Risk Professionals, an ESG Investing certificate from CFA UK, and a CAIA certificate from Chartered Alternative Investment Association.

She is a Steering Committee member of Climate Governance Initiative Hong Kong Chapter, an Expert Review Panel member for the MTR Corporation sustainability reports since 2014, an ESG judge for WealthAsia (Benchmark) Funds of the Year Awards, a Council member, Publishing Board of Magazine member and a Deputy Chair of the training committee of the Hong Kong Institute of Directors (HKIoD), faculty of Competent Boards, CSIA and FITC, board member of Hope of the City, advisory council/committee member of GARP (HK), BlueOnion, FarmacyHK and Shao Ming Lo Foundation.

In her 43 years of serving the financial community in China, Hong Kong SAR, the USA and Australia, she has established and managed asset management/investment companies, consultancy practices, and new business units within major financial institutions.

She has a PhD from the Hong Kong University of Science and Technology with dissertation titled “Do carbon risks matter for Hong Kong equity prices?”, an MBA from the University of Chicago - Booth School of Business, a BSc (Honors) from Roosevelt University in USA and is a graduate of the Stanford University Senior Executive Leadership Program and the 2011 Stanford Directors’ College. She has authored a book on investing in H-shares, a Harvard Business case and a positive psychology book ‘Tall Miracles’.