

What has typhoon Bavi to do with our business – a question for Boards

強烈颱風巴威跟我們業務的關係值得董事會深思

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Typhoons, El Niño, heat waves and torrential rains are specific, short-term weather phenomena, whereas climate change refers to the long-term, systemic shift in average weather patterns and global temperatures spanning decades. El Niño is a natural, short-term cycle in the Pacific Ocean that lasts 1–2 years. Climate change is a long-term global warming trend caused by human greenhouse gas emissions.

Recent super typhoons like Bavi and Maysak have exhibited unusual erratic paths, often changing direction abruptly or defying typical weakening patterns after making landfall. Climate scientists note that storms are generally becoming stronger, lasting longer, and dumping significantly more rain, complicating standard tracking predictions.

As demonstrated by the World Economic Forum Strategic Intelligence map[1], natural risks are interconnected, complex with high uncertainty of occurrence, unknown frequency and impact severity.

Extreme weather and climate change degrade business asset value through direct physical damage and accelerated depreciation, while simultaneously shrinking revenues via supply chain disruptions and diminished consumer demand. Consequently, corporate profits take a direct hit from inflated insurance premiums, unexpected operational downtime, and costly regulatory compliance.

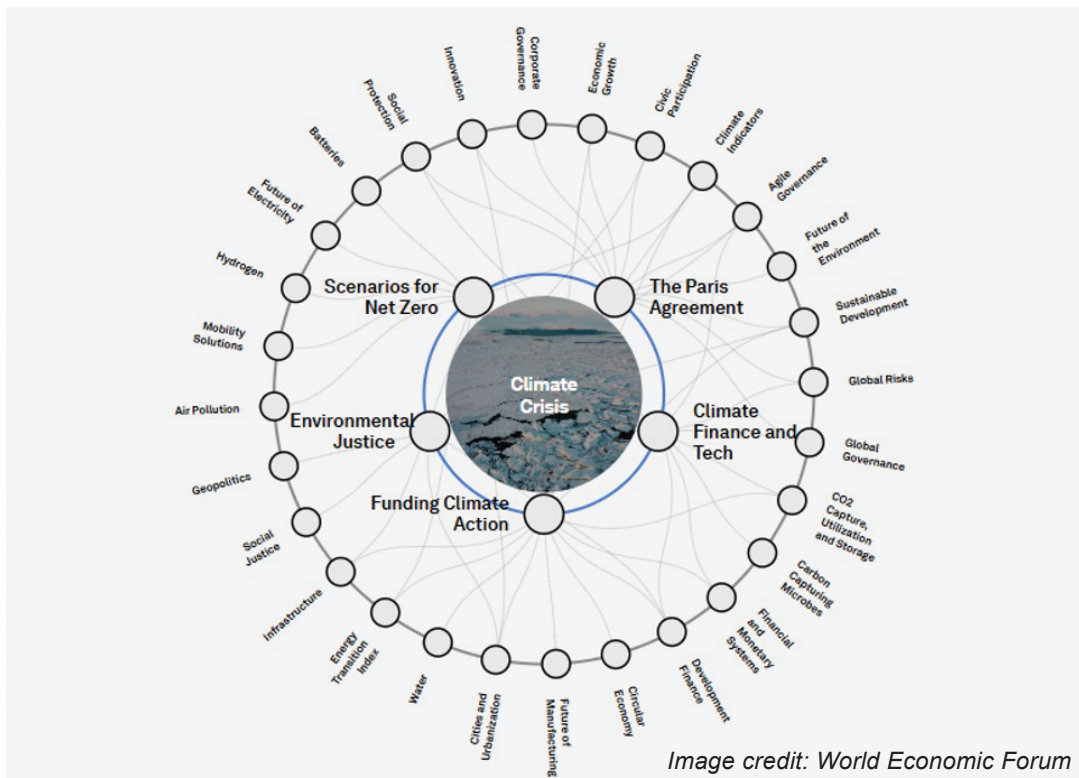


Image credit: World Economic Forum

[1] <https://intelligence.weforum.org/topics/a1Gb000000LHVfEAO>

Impacts can manifest on

Business Asset Value

- **Physical Damage:** Floods, wildfires, and hurricanes directly destroy critical infrastructure, real estate, and inventory, wiping out capital value instantly.
- **Asset Stranding:** Transitioning to a low-carbon economy can render fossil-fuel reserves, carbon-heavy machinery, and non-compliant real estate obsolete before the end of their economic life.
- **Insurance Devaluation:** Properties located in high-risk zones face plunging market valuations as insurers raise premiums or entirely withdraw coverage, severely reducing liquidity and collateral value.

Revenue

- **Supply Chain Bottlenecks:** Droughts (e.g., restricted shipping in the Panama Canal) and extreme heat disrupt logistics networks, delaying inventory and halting production.
- **Demand Volatility:** Shifting consumer purchasing power and altering seasonal weather patterns (e.g., reduced snowfall for ski resorts or agricultural yield drops) cause unpredictable, sudden drops in sales.
- **Operational Downtime:** Power grid failures and mandatory evacuations during severe storms force businesses to close, resulting in immediate, unrecoverable sales losses.

Profits

- **Rising Operational Costs:** Businesses incur heavier expenses to cool facilities, implement redundant backup systems, and secure increasingly expensive resources.
- **Spiraling Insurance and Risk Management:** Skyrocketing premiums and the need to retrofit facilities to meet stricter climate-resilient building codes heavily erode net margins.
- **Regulatory Penalties:** Mandatory ESG (Environmental, Social, and Governance) disclosures and due diligence create new compliance fees and potential fines that directly subtract from the bottom line.

Insurance coverage that is renewed annually could increasingly exclude vulnerable assets and/or raise premiums. Down the time horizon of 10, 15, 20 years, this form of protection may become inaccessible.

Yet, few boards recognize the multiple impacts of not having invested in adaptation. In Asia an estimated 90% of companies don't have insurance coverage on business continuity and most assets aren't adequately insured.

Companies that own critical infrastructure such as airports, ports, mass transit rails, utilities are to offer services for at least 50-100 years. Boards of these companies where assets are expected to be maintained for efficient functioning over such time horizons need to place adaptation high in their strategic plan.

The lack of scenarios-dependent data on the impact of each asset in the future may be a hindrance, till now.

The Physical Risk Assessment Platform developed collaboratively by the Hong Kong Monetary Authority (HKMA), XDI (Cross Dependency Initiative), and KPMG is available for free to all licensed banks and authorized institutions operating in the city. It allows banks to assess the physical impact using 10 different climate hazards (such as floods, storms, and sea-level rise) across their asset portfolios globally. It provides scenario analysis, on-demand physical climate risk analysis, and forward-looking data analytics compliant with international banking standards.

With this tool and help from banks, corporates can be better able to make forward-looking decisions on investing in adaptation, engaging with suppliers, and even pivoting business models if the risks are found to exceed the company's risk appetite.

Most corporate boards and management do not directly converse with insurers, since insurance is deemed a procurement exercise. There is merit in meeting the insurance brokers and insurers to understand how they price severe weather and climate physical risks into their underwriting exercises. Note that short-term premium shavings do not reflect long-term availability.

Certain global insurers that hold massive databases and proprietary climate models are offering advisory services while some offer innovative products such as parametric and sustainability-linked insurance. A top mainland insurance company owns two satellites that track assets in their portfolios.

Moving from an enterprise risk management angle, there are benefits in climate adaptation, which is often overlooked as an investment opportunity. 2025 World Research Institute (WR) research shows that every \$1 invested in adaptation can return \$10.50 in benefits[2], a "triple dividend of resilience".



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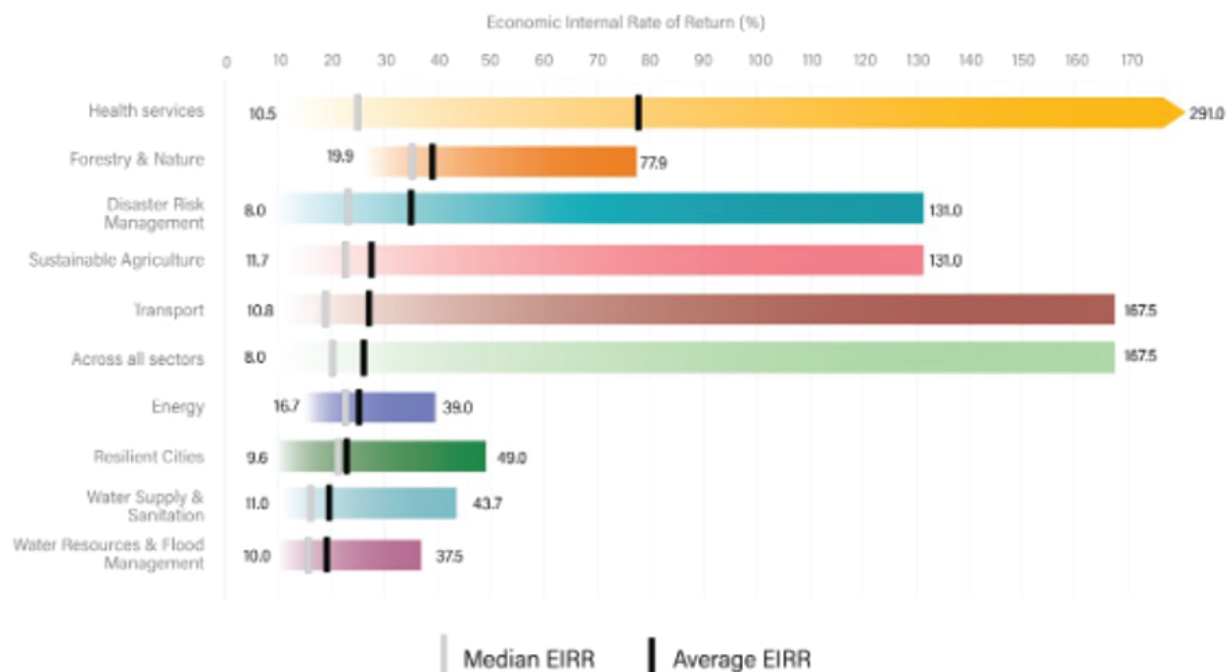
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Rates of return on adaptation investments by sector



Source: WRI authors.

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[2]<https://www.wri.org/insights/climate-adaptation-investment-case>

Some questions boards can ask management today are:

1. Are risks arising from climate change over a longer time horizon and severe weather in the short term properly reflected in the risk register, based on what assumptions. Who owns/manages those risks and how do we assess the progress?

2. What if insurance is not available on certain critical assets next year? Or will the premiums become unaffordable? What are our options?

3. How can we work with our banks to more correctly assess complex risks that challenge our resilience?

4. How can we ask insurance brokers and insurers about their pricing and innovative solutions that fit our company (sector)?

5. How can our government support us – learning from Tokyo Metropolitan's issuance of Resilience Bonds and Adaptation Bonds – and what kind of incentives (e.g. tax credits or in-kind credits) should we propose?

6. Is self-insurance a viable option? How?

7. What amount of capital allocation do we need for adaptation work over the next 5 years?

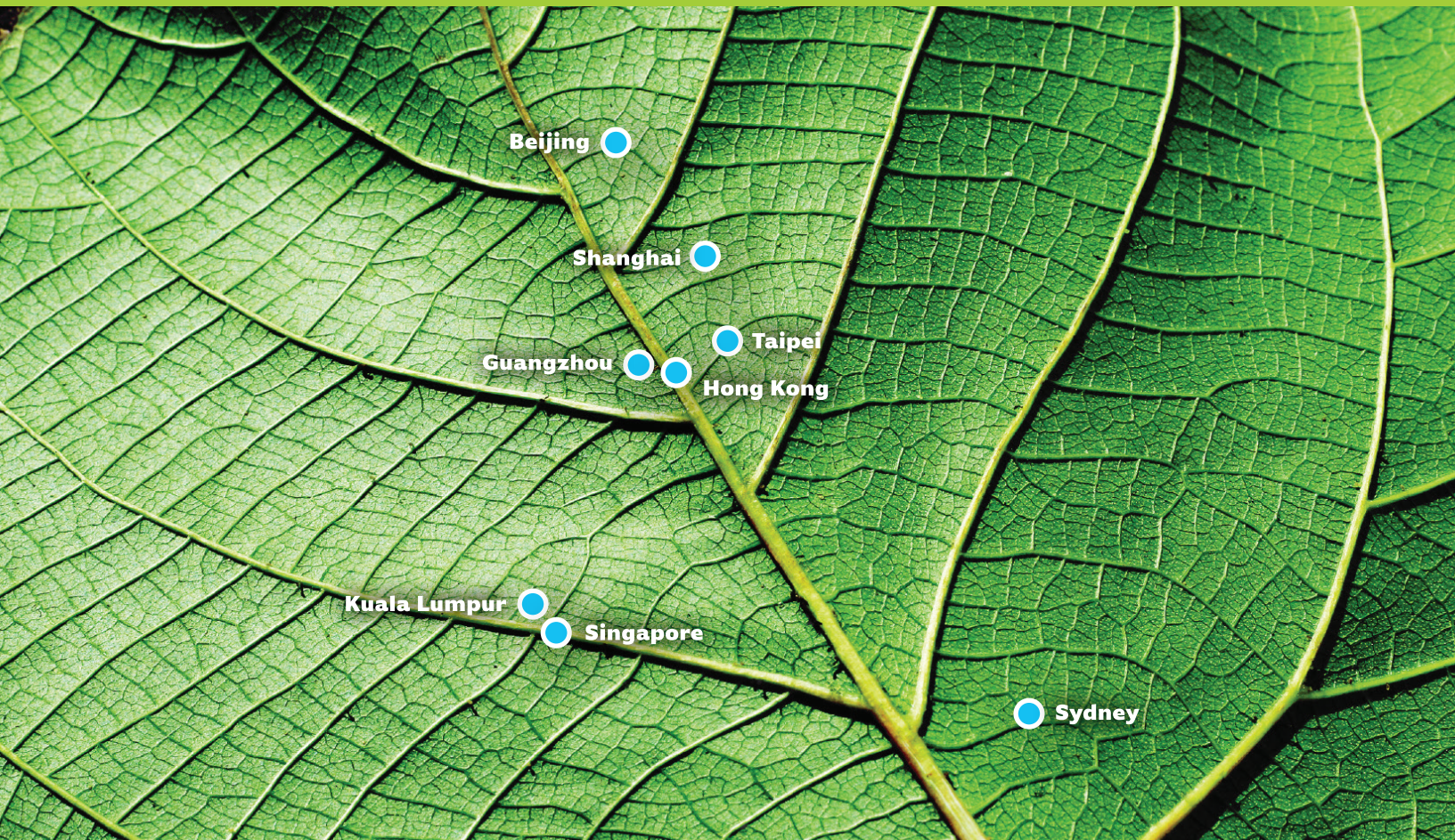
8. What are opportunities that we have overlooked?

Unless a business is well prepared, it's too late to count the loss when uninsured or inadequately insured assets are damaged, supply chain is interrupted, employees can't get to work due to broken infrastructure, or they can't work in the open under extreme weather conditions.

Boards are stewards of the company's assets and have the fiduciary responsibility to protect them and make strategic choices to ensure resilience and growth. Being complacent with historical operational performance, reliability of suppliers or the accessibility insurance is like sleeping at the wheels.

Start work on adaptation and resilience, now.

Prof Agnes K Y Tai, Council Member of HKIoD.



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颶風 颶風、厄爾尼諾現象、熱浪和暴雨都是短暫的天氣現象和氣候變化，彼此互不相關，但氣候變遷是指恒常天氣模式和全球溫度出現為時數十年的長期全面轉變，厄爾尼諾現象是太平洋的短暫自然週期，為時一至兩年，而氣候變遷是由人類排放溫室氣體導致的長期全球暖化趨向。

巴威 (Bavi) 和美莎克 (Maysak) 等近期肆虐的超強颶風的路徑異常，除了方向不時突然改變，在登陸後風力亦無減弱。氣候科學家注意到，風暴一般而言較以往更強、持續更久、帶來的雨量顯著更多，因此難以按照標準方法追蹤和預測。

誠如世界經濟論壇「戰略情報」的圖[1]顯示，自然風險是互有關連的，而且何時發生高度不明確，頻次和影響嚴重程度亦無從得知。

極端天氣和氣候變遷直接造成實際破壞，而且加速商業資產折舊造成貶值、中斷供應鏈和減低消費者需求，令收益減少。為此，企業要加大保額、突然停頓營運和花費龐大金錢遵行規管要求，結果直接打擊盈利。

下述方面可能會受影響：

商業資產價值

- 實際破壞：水災、山火和颶風直接摧毀重要基礎設施、房地產和庫存，資本價值瞬間蒸發。
- 資產擱淺：轉型至低碳經濟可能會導致化石燃料儲量、破密集型機械和不合規的房地產在經濟壽命未完結之前便報廢。
- 保險貶值：隨著承保商上調位於高風險區產業的保費或完全撤銷保障，這類產業的市場估值將會大跌，從而大幅減少流動資金和抵押品價值。

收益

- 供應鏈樽頸：物流網絡因乾旱（例如巴拿馬運河限制航運）和極端炎熱中斷，導致庫存延誤和生產停頓。
- 需求波動：消費者的購買力改變和季節性天氣模式轉變（例如降雪減少影響滑雪渡假點的營運或導致農產品收成下降）令銷量出乎預期驟降。
- 營運停頓：強烈暴風導致電網故障和人們要強制性撤離，使企業不得不關閉，即時造成無法挽回的銷售損失。

盈利

- 營運成本上升：企業要增加開支將設施降溫、設置冗餘備份系統和購買愈來愈貴的資源。
- 保險費飆升和風險管理：保費飆升和需要升格設施以符合日益嚴格的氣候應對建築守則，這會大幅蠶食毛利。
- 規管罰則：強制性環境、社會和管治披露及盡職調查招致新的合規費用和潛在罰款，直接減削弱經營業績。

保險保障每年需要更新，因此高危資產有更大機會被排除在保障之外及／或增加保費。這類保障可能會在10年、15年及20年後不獲提供。

但是，很少董事會認同不投資於氣候適應會產生多重影響。在亞洲，估計有90%企業沒有就業務持續投保，而且大部分資產並無獲得適當的保險保障。

擁有機場、港口、集體運輸鐵路和公用設施等重要基建的企業至少會提供服務50至100年。對這類資產預期會在上述年期內保持高效運作的企業來說，董事會必須將氣候適應放在策略計劃的首要優次。

由於至今沒有數據顯示每種資產在未來的不同情境下所受的影響，因此構成困難。

由香港金融管理局、XDI (Cross Dependency Initiative) 和畢馬威聯合開發的「實體風險評估平台」免費開放給所有獲授權在香港營運的持牌銀行和認可財務機構，讓銀行可以運用十種不同的氣候危害（例如水災、暴風和海平面上升）來評估其全球資產組合受到的實質影響。平台提供情境分析、隨選實質氣候風險分析及符合國際銀行標準的前瞻性數據分析。

當風險超過企業的風險胃納，企業憑借此工具和銀行的協助，便有更大能力就氣候適應投資、供應商交易甚或重要業務模式作出高瞻遠矚的決定。

由於保險被視為採購工作，很少企業董事會直接跟承保商對話，大部分管理人員亦然。跟保險經紀和承保商會晤有好處，就是能夠了解他們如何為承保衡量嚴峻天氣和實際的氣候風險。必須注意一點：短期的保費節省不反映長遠可得性。

某些擁有龐大數據庫和專有氣候模型的全球承保商提供諮詢服務，有些則提供創新產品，例如參數型產品和可持續性掛鉤保險。中國內地一間頂尖保險公司擁有兩個人造衛星用於追蹤投資組合內的資產。

氣候適應往往只被視為投資機會，但撇除企業風險管理的角度，投資於氣候適應有好處。世界資源研究所2025年一項研究顯示，每投資一美元在氣候適應可以帶來10.50美元的實益[2]，是「投資於韌性的回報」的三倍。

董事會可以向管理人員了解以下問題：

1. 氣候變遷是否很久之後才引發風險？風險冊有否適當反映短期內會出現的嚴峻天氣？當中依據什麼假設？誰人擁有／管理這些風險及如何評估進度？

2. 如果明年某些重要資產不受保應該怎辦？或者保費會否高得難以負擔？我們有什麼選擇？

3. 我們如何跟銀行合作，以更準確評估考驗韌性的複雜風險？

4. 我們就定價方式和適合公司（所屬行業）的創新解決方案如何諮詢保險經紀和承保商？

5. 我們的政府可以如何支援我們（效法東京都政府發行韌性債券和氣候適應債券）及我們應該提議什麼激勵措施，例如稅額減免或實物抵付？

6. 自我保險是否可行選擇？如何自我保險？

7. 在未來五年需要分配多少資金給氣候適應工作？

8. 我們忽略了哪些機會？

除非企業作好準備，否則當不受保或受保不足的資產損毀、供應鏈中斷、僱員因基建摧毀無法上班或因天氣情況極劣惡劣以致無法在戶外工作，要點算損失便為時已晚。董事會是公司資產的管理員，且有受信責任保護公司資產和作出策略性選擇以確保企業強韌和氣候適應力增長。滿足於過往的營運業績、依賴供應商或深信定必受保險保障，等如坐視不管。

大家宜馬上行動，致力加強氣候適應力和韌性。 

戴潔瑩教授是香港董事學會理事會成員。

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