Sustainable 1
Climate Risk Assessment

Megawide

December 2024

Project Manager: Shardul Bapat
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S&P Global

Credits

Sustainable1

Sustainable1 Project Team

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About Sustainable1, Part of S&P Global

Sustainable1 is part of S&P Global. A leader in carbon and environmental data and risk analysis, Sustainable1 assesses risks relating to climate change, natural resource constraints, and broader environmental, social, and governance (ESG) factors. Companies and financial institutions use Sustainable1 intelligence to understand their ESG exposure to these factors, inform resilience, and identify transformative solutions for a more sustainable global economy. S&P Global's commitment to environmental analysis and product innovation enables its team to deliver essential ESG investment-related information to the global marketplace. For more information, visit www.Sustainable1.com.

About S&P Global

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Introduction to the Climate Risk Reporting

Key Climate & Sustainability Reporting Standards since TCFD

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The TCFD publishes its recommendations for disclosure of climate-related risks and opportunities

2017

The Taskforce on Climate Related Financial Disclosures (TCFD) is established by G20's Financial Stability Board

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

G7

The G7 commit to mandatory climate-related financial reporting

2021

European Commission adopts the initial Corporate Sustainability Reporting Directive (CSRD) proposal

European Commission

U.S. SEC proposes climate disclosure rule drawing heavily from TCFD framework

2022

ISSB issues the exposure draft for the first two sets of IFRS Sustainability Disclosure Standards: IFRS S1 and S2

IFRS

ISSB officially issues IFRS S1 and S2, to serve as a global baseline and to be interoperable with existing sustainability disclosure requirements worldwide

2023

CSRD comes into effect after being approved by EU Parliament and EU Council. First set of European Sustainability Reporting Standards (ESRS) are launched

DRAFT EUROPEAN SUSTAINABILITY REPORTING STANDARDS

ESRS E1
Climate change

IFRS S1 and S2 effective for annual reporting periods beginning on or after 1 January 2024

2024

ISSB to assume responsibility from TCFD for monitoring companies' progress on climate-related disclosures

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

ISSB

Climate Risk Framework under Key Reporting Standards

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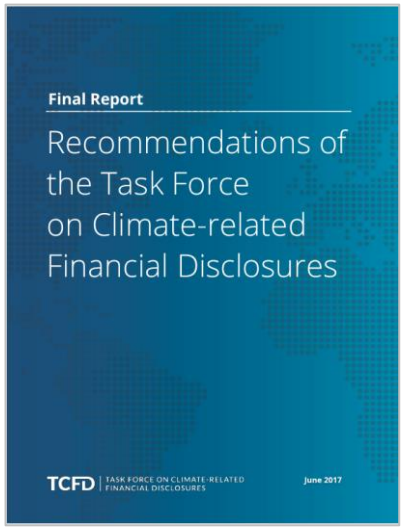
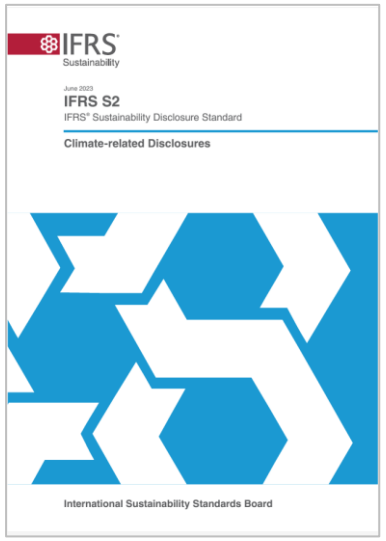
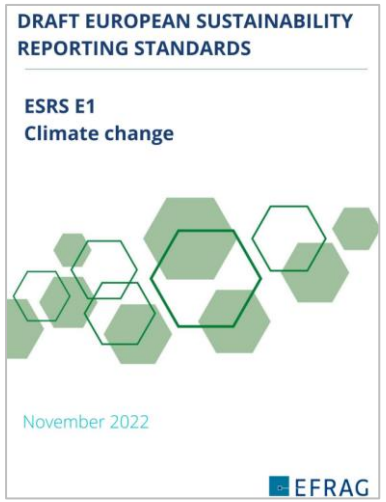
- Many climate risk reporting frameworks are derivatives of the TCFD framework and use the same pillar structure, focusing on disclosure of climate related: **Governance**, **Strategy**, **Risk Management** and **Metrics & Targets**
- Sustainable1 specializes in quantifying climate-related **transition** and **physical risks.** Which supports clients in their disclosure against the **Strategy** and **Metrics & Targets** pillars.

TCFD | TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES





- Designed with a focus on Capital Markets audience
- Emphasis on financial materiality of climate-related risks
- Evolution of the TCFD framework, requiring additional and/or more specific details
- Retains the 4 core pillars



- CSRD aims to provide transparency to all stakeholders on EU companies' sustainability performance
- Emphasis on double (financial & impact) materiality
- ESRS E1 topical standard requires disclosure on climate change mitigation and adaptation

Climate Risk Assessment Overview

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CLIMATE RISK CATEGORIES	MAJOR CHARACTERISTICS	METRICS CONSIDERED
Policy Risk Exposure	**Risk of policy action** to encourage low-carbon transition in direct operations or upstream supply chain (e.g. through carbon taxes)	▪ Carbon Pricing Risk Exposure (USD millions) ▪ Increase in expenditure (%) ▪ Carbon adjusted operating profit margin (%) ▪ Earnings at risk (%) ▪ Average Carbon Price ($)
Physical Risk Exposure	**Increasing frequency and severity of climate hazards** generating financial impacts on company assets	Physical Risk Financial Impact (Modelled Average Annual Loss): ▪ Relative risk (%) ▪ Absolute Risk (mUSD) (Results provided at Enterprise Level, Asset Level and by Climate Hazard)

Transition Risk
Policy Risk

Transition Risk
Scenario Analysis

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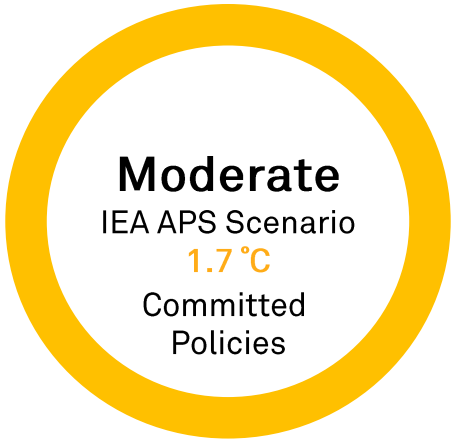
The Sustainable1 Carbon Pricing Scenarios include **three future carbon price scenarios** based on published research from the International Energy Agency (IEA):

This scenario is designed to provide a sense of the prevailing direction of energy system progression, based on a detailed review of the current policy landscape. Outcomes in the STEPS reflect a detailed review of the policies and measures that are actually in place or that have been scheduled to start.



The IEA APS scenario assumes that governments will meet, in full and on time, all of the climate-related commitments that they have announced, including longer term net zero emissions targets and pledges in Nationally Determined Contributions (NDCs)

The Net-Zero Emissions by 2050 Scenario (NZE) is designed to show what is needed across the main sectors by various actors, and by when, for the world to achieve net-zero energy related and industrial process CO_2 emissions by 2050

Transition Risk: Policy Risk Exposure
Methodology Overview

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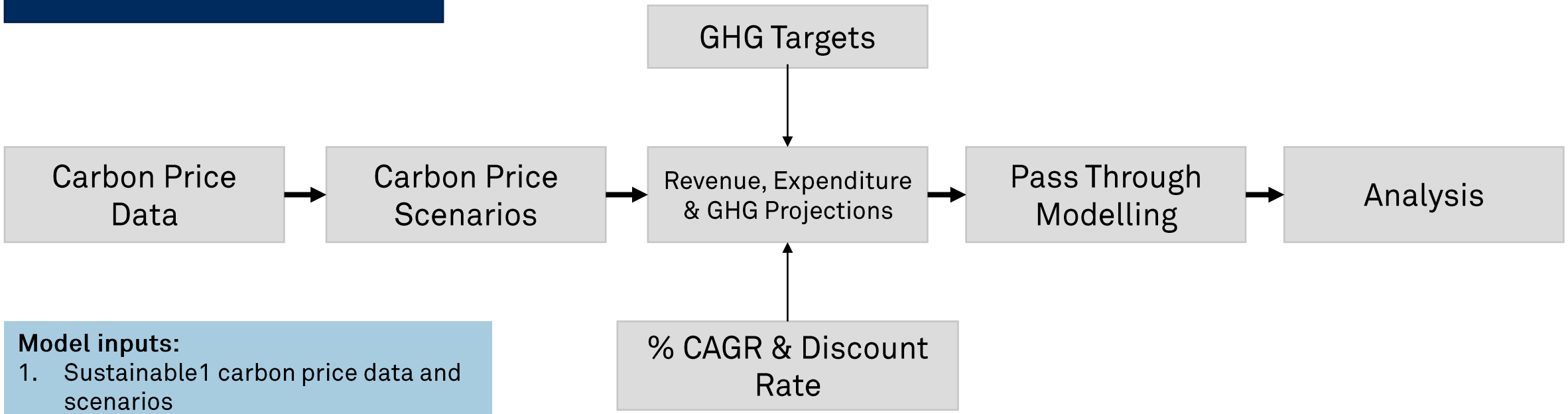
Carbon Price Risk Model



Model inputs:

1. Sustainable1 carbon price data and scenarios
2. Scope 1 & 2 GHG emissions and location data by facility
3. Scope 3 emissions data per category
4. Scope 1, 2 & 3 GHG targets

Transition Risk: Policy Risk Exposure
Data Inputs

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The figures below set out the GHG and financial model inputs for the 2023 reporting period.

We have **covered 100% of Megawide's Scope 1 and 2 emissions.** The source of these emissions mainly consisted of steel plant sites. **Upstream scope 3 emissions were also included in this assessment and totalled 146,071.95 tCO2e.** All upstream scope 3 categories have been estimated and included in the risk assessment.

Figure 1.1: Emission Inputs in base year

Emission Inputs	tCO2e (2023)
Scope 1 Emissions (tCO2e)	4,582.94
Scope 2 Emissions (tCO2e)	4,031.37
Scope 3 Emissions (tCO2e)	146,071.95
1. Purchased Goods & Services	126,727.37
2. Capital Goods	7,597.36
3. Fuel & Energy-Related Activities	2,450.30
4. Upstream Transportation & Distribution	3,857.15
5. Waste Generated in Operations	168.89
6. Business Travel	60.21
7. Employee Commuting	5,210.66
8. Upstream Leased Assets	N/A

*Emissions from Upstream Leased Assets are not relevant

Figure 1.2: Financial Assumptions

#	Model Input Assumptions	Input
1	Revenue ($2023)	$ 335.22 m
2	Expenses ($2023)	$ 319.44 m
3	Operating Profit ($2023)	$ 15.78 m
4	Revenue CAGR	2023 – 2024: 5.0% 2025-2028: 10.0% Post 2028: 15.0%
5	Expenditure CAGR	2023 – 2024: -2.0% 2025-2028: 5.0% Post 2028: 8.0%
6	Discount Rate	6%

Figure 1.3: Emission Reduction Targets

Emission Inputs	Type	Base Year	Target Year	% Reduction
Scope 1 and 2 Emissions (Interim)	Absolute	2023	2033	55%

*Emissions are assumed to remain constant after the target year

Transition Risk: Policy Risk Exposure
Emissions & Financial Forecasts

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Figure 1.4 a, 1.4 b and 1.5 show the emission and financial forecasts for Megawide out to 2050. Emissions data has been forecast using emissions reduction targets combined with Megawide's revenue forecast assumptions. The financial data has been forecast using growth rate assumptions provided by Megawide.

Figure 1.4.a: Emissions Forecasts (Scope 1& 2)

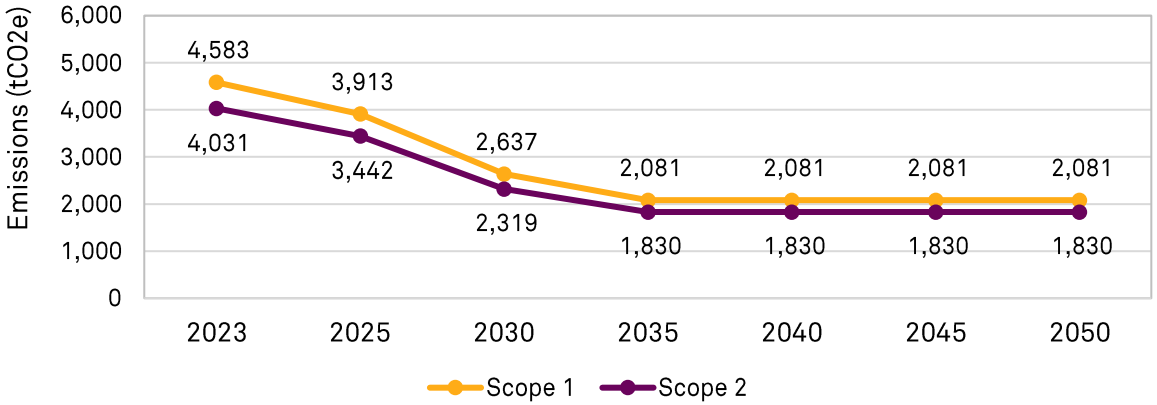


Figure 1.4.b: Emissions Forecasts (Scope 3)

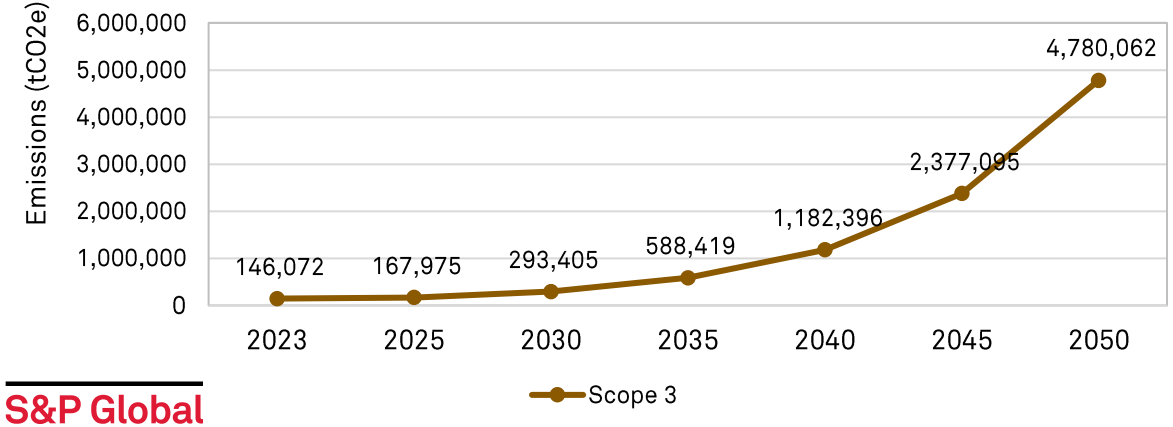
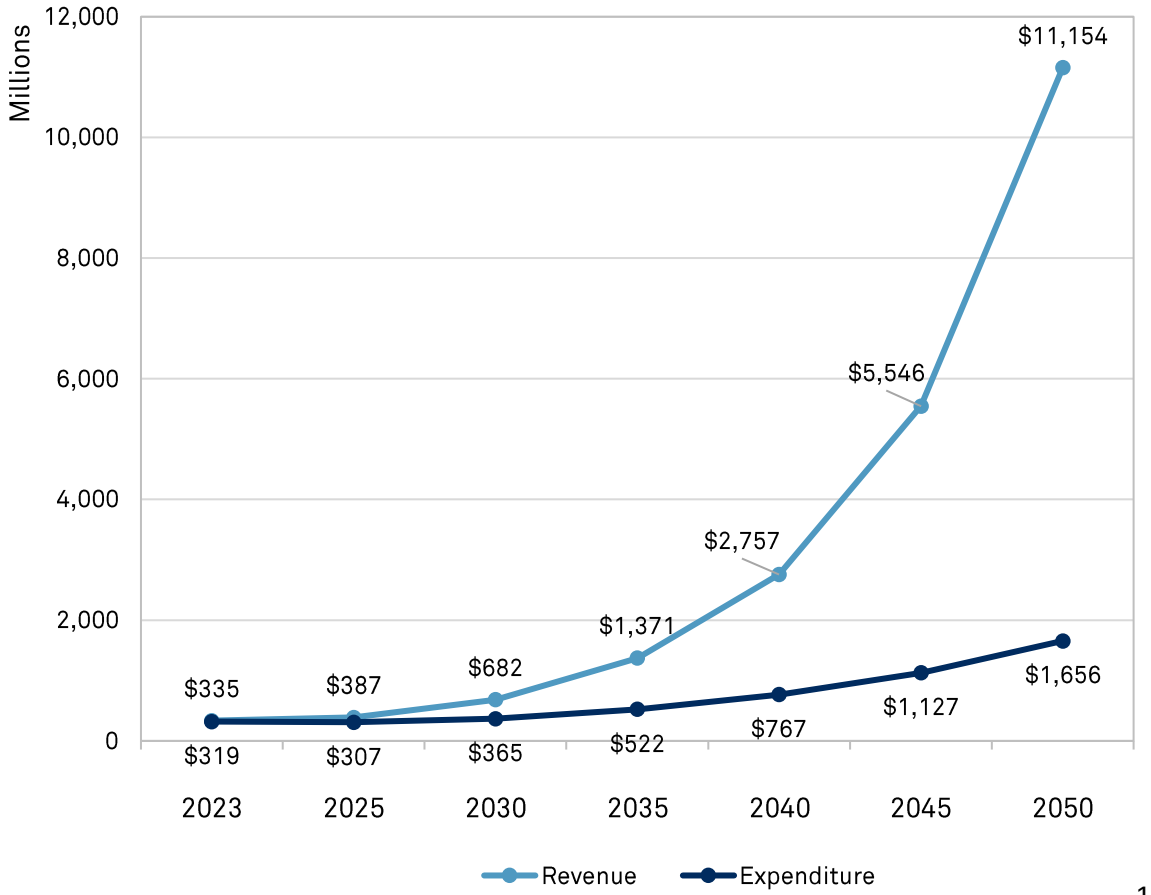


Figure 1 .5: Revenue & Expenditure in mUSD (Undiscounted)



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Transition Risk: Policy Risk Exposure Summary

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Increased pricing of GHG emissions and increased operating costs (e.g. higher compliance costs) are examples of climate-related policy risk. The table below shows the potential increase in carbon price risk under three different scenarios of policy intervention.

The emergence of increasing taxes on fuel or GHG emissions may leave **Megawide** with increased expenses which it may choose to either pass on to customers, absorb, or mitigate through low carbon solutions.

The analysis performed by Sustainable1, using carbon pricing risk projections, indicates that **Megawide's carbon pricing risk exposure** for the year 2030 **could range from $0.04 million to $2.81 million per annum under the low to high carbon price scenarios** respectively, representing an increase in expenditure between 0.02% to 1.16%.

By 2050 the carbon pricing risk further increases to between $13.03 and $134.32 million per annum under the low to high carbon price scenarios , representing an increase in expenditure between 3.79% to 39.11%.

This assessment assumes **Megawide** meets it target to reduce emission in line with its interim GHG targets.

Figure 1.6: Enterprise Carbon Pricing Risk: Impact of Future Carbon Prices on Company Financials with Scope 1, 2 & 3 GHG Emissions Projections to 2050 (in 2022 $US)*

		2030			2040			2050		
		Low	Moderate	High	Low	Moderate	High	Low	Moderate	High
Total Carbon Pricing Risk	$US Million	$0.04	$0.09	$2.81	$1.43	$3.71	$25.22	$13.03	$26.15	$134.32
Scope 1 Carbon Pricing Risk	$US Million	$0.00	$0.00	$0.03	$0.00	$0.01	$0.06	$0.01	$0.02	$0.07
Scope 2 Carbon Pricing Risk	$US Million	$0.00	$0.00	$0.03	$0.00	$0.01	$0.04	$0.01	$0.01	$0.05
Scope 3 Carbon Pricing Risk	$US Million	$0.04	$0.09	$2.76	$1.43	$3.70	$25.11	$13.02	$26.12	$134.19
% Change in Expenditure	%	0.02%	0.04%	1.16%	0.50%	1.30%	8.85%	3.79%	7.61%	39.11%
Carbon-adjusted Operating Profit Margin	%	46.37%	46.36%	45.76%	72.04%	71.82%	69.72%	84.59%	84.02%	79.35%
Earnings at Risk (%)	%	0.02%	0.04%	1.34%	0.19%	0.50%	3.41%	0.66%	1.33%	6.82%

*Scope: Includes carbon pricing risk associated with Scope 1, 2 & 3 GHG emissions. Only upstream Scope 3 emissions are included in our analysis of carbon pricing risk.

Transition Risk: Policy Risk Exposure
Carbon Pricing Risk Breakdown

Carbon pricing risk is dependent on both the total amount of GHG emissions from a location and potential carbon price increases at that location. Under the high carbon price (1.5°C) scenario, Megawide could face a carbon risk of as much as $1 million per annum by 2025, $3 million per annum by 2030, and **$25 million per annum by 2040. By 2050 the total carbon pricing risk could reach $134 million per annum**. This trend is driven by a combination of increasing carbon prices The reducing greenhouse gas emissions, in line with **Megawide**'s targets and the discount rate assumption used are factored in to provide the carbon pricing risk.

In the high price scenario, the carbon pricing risk associated with upstream Scope 3 emissions accounts for approximately 98% of Megawide's overall carbon pricing risk by 2030.

Figure 1.7: Carbon Pricing Risk at Enterprise Level with GHG Reduction Goals Achieved

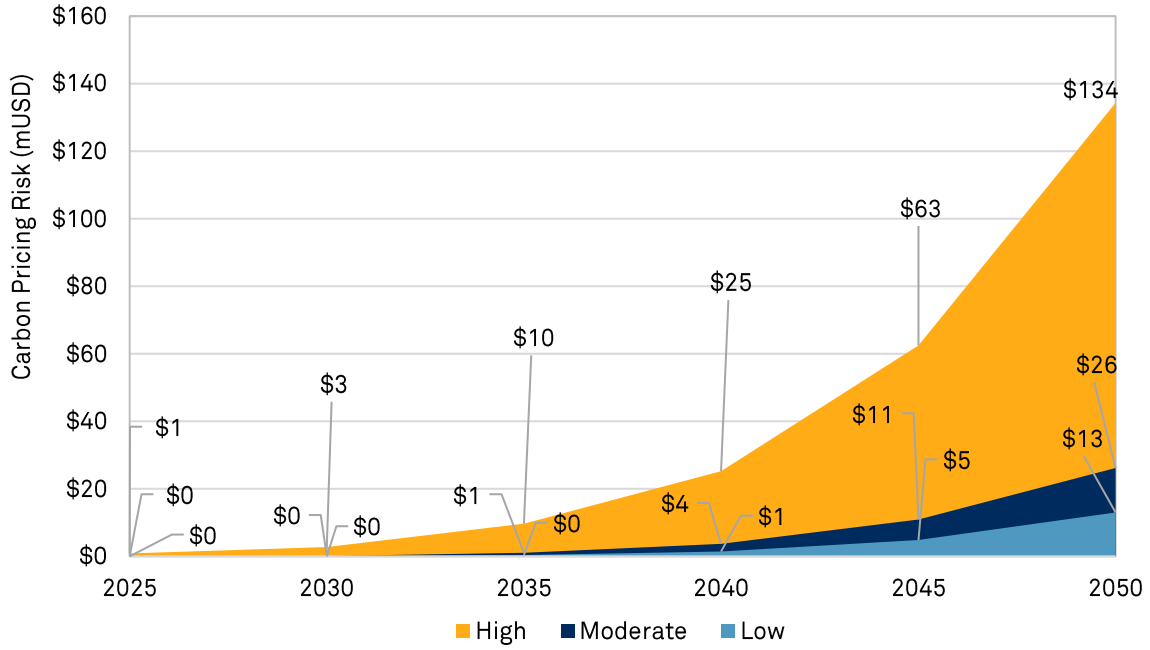
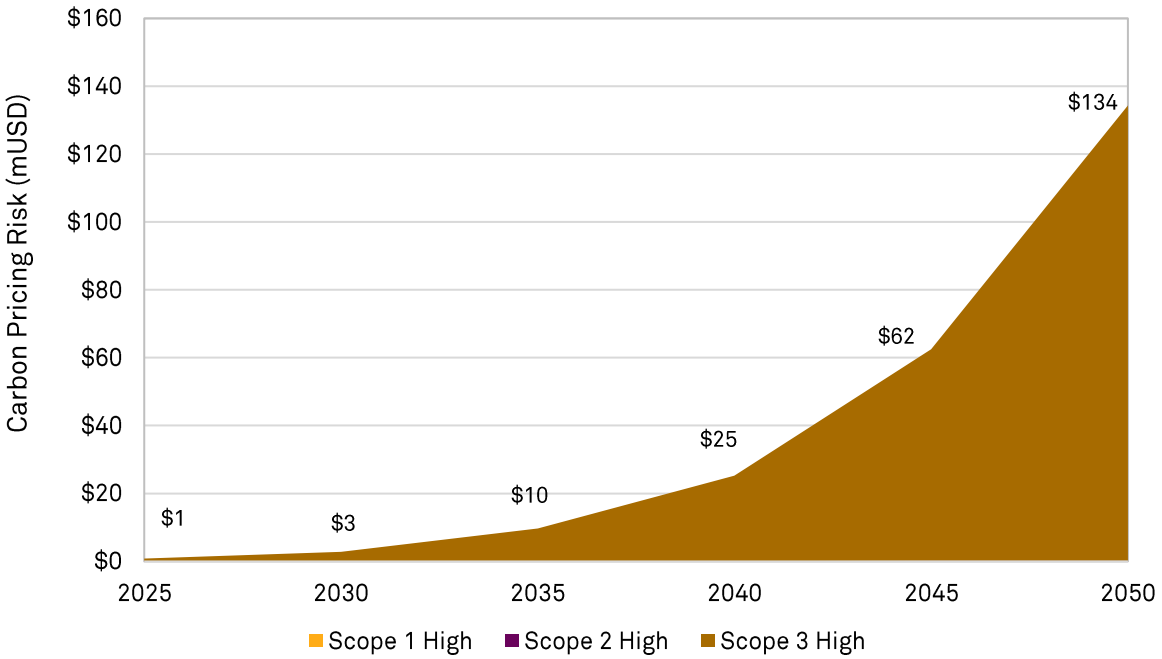


Figure 1.8: Carbon Pricing Risk Breakdown by Scope for High Price Scenario (in 2023 $US)



Source: Sustainable1 Analysis (US$ 2022), Scope 1, 2 & 3. Discount rate of 5% applied for all future values.

Transition Risk: Policy Risk Exposure
Expenditure and Operating Profit Margin Impacts

Under the high carbon price (1.5°C) scenario, the carbon pricing risk as a percentage of expenditure increases to 1.16% by 2030, 8.85% by 2040 and 39.11% by 2050 which could erode the operating profit margins by approximately 6% by 2050, based on Megawide's revenue and expenditure assumptions.

Figure 1.9: Percentage change in expenditure at Enterprise Level

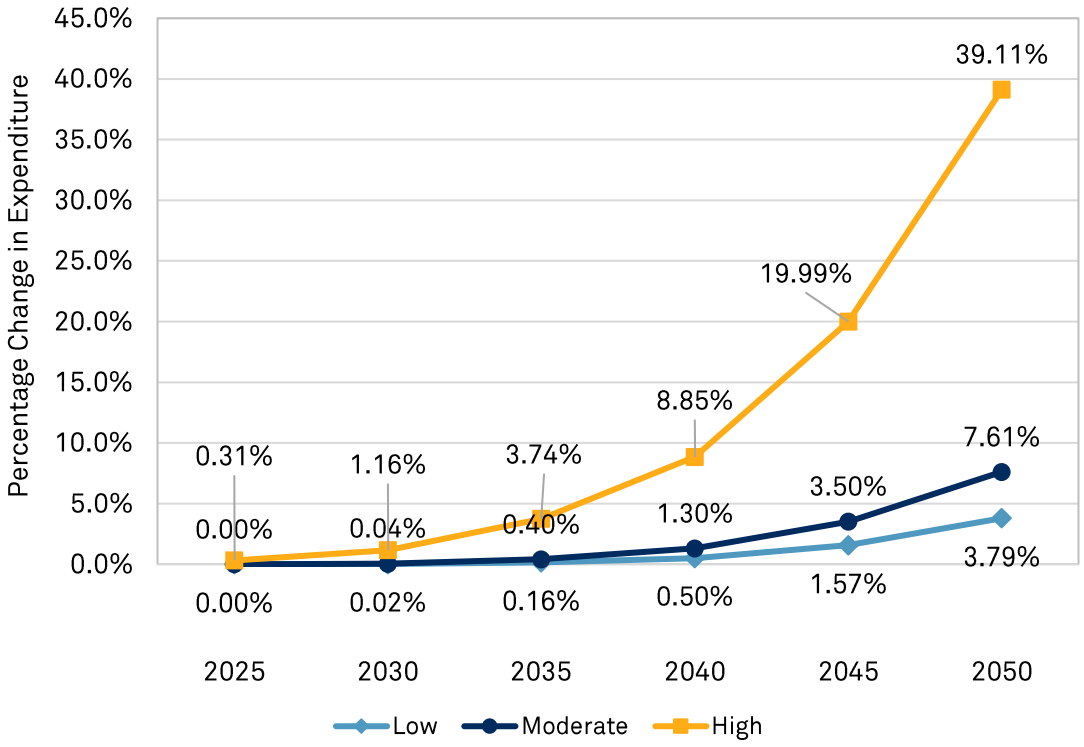
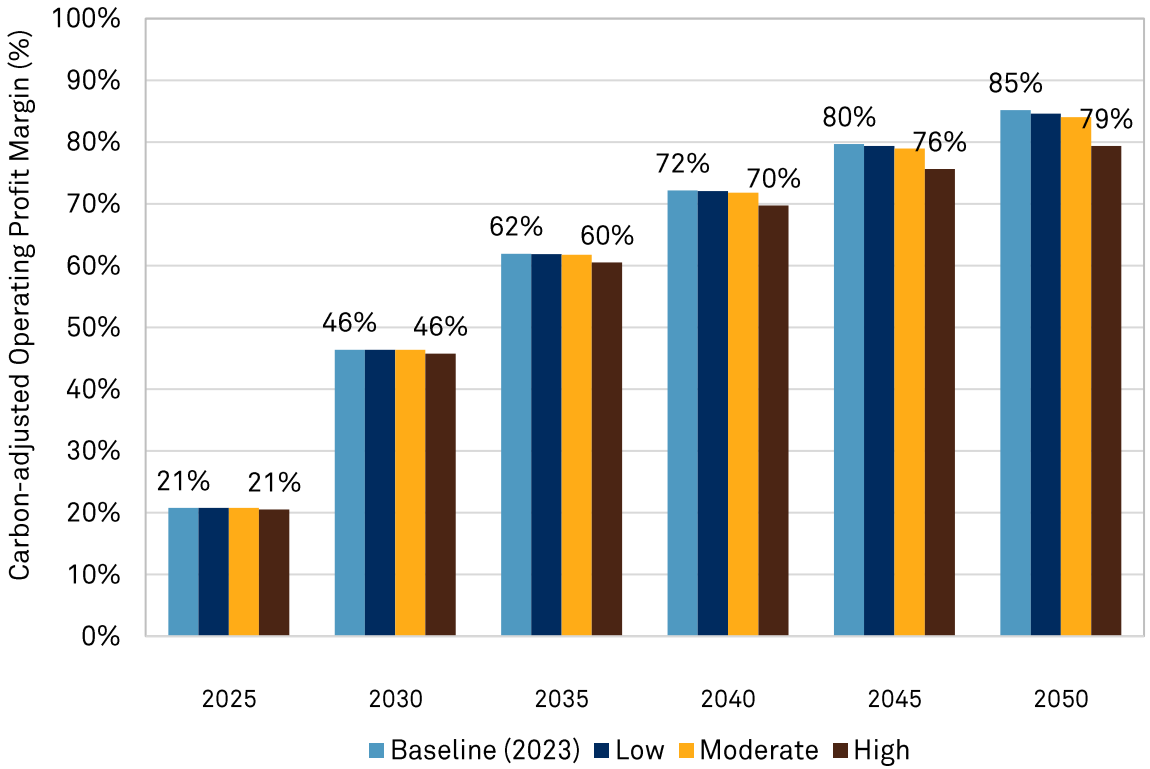


Figure 1.10: Carbon Adjusted Operating Profit Margin (%)



1. Percentage change in expenditure is calculated as [(Expenditure $_{Year\ n}$ + Carbon Pricing Risk $_{Year\ n}$) / Expenditure $_{Year\ n}$) -1]
Source: Sustainable1 Analysis (US$ 2023), Scope 1, 2 & 3. Discount rate of 6% applied for all future values.

Transition Risk: Policy Risk Exposure

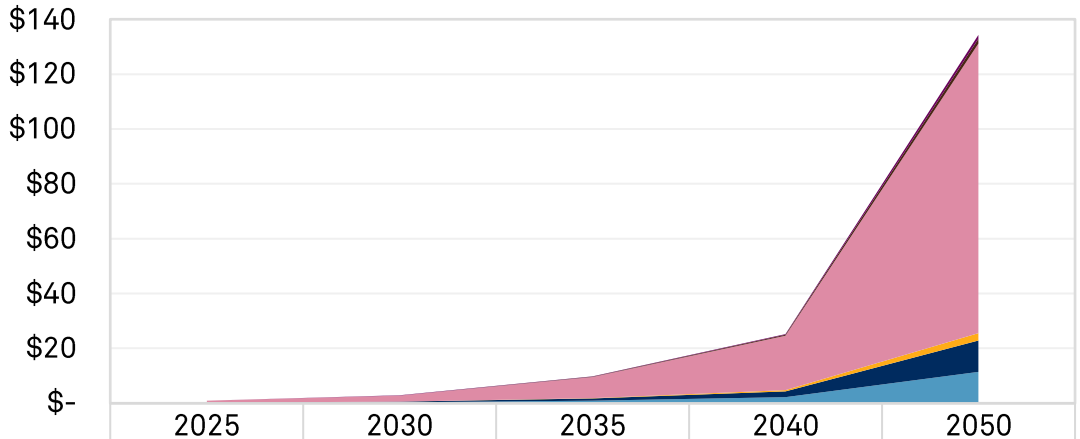
Carbon Pricing Risk by Businesses & Average Internal Carbon Price

Assuming Megawide's GHG reduction goals are achieved, Figure 1.11 below illustrates the carbon pricing risk by business unit.

Megawide's operations in **Philippines** are exposed to carbon pricing risk, mainly due to the size of Precast and Construction Solutions (PCS) carbon footprint.

Under a high carbon price (1.5°C) scenario, Megawide 's average internal carbon price, across all operating geographies globally, could increase from the base year level of approximately **$3.09 per tonne CO2e in 2023** to **$14.19 per tonne CO2e in 2030 reaching $ 135.40 per tonne CO2e by 2050**, based on potential future increases in carbon pricing regulation.

Figure 1.11: Total estimated increase in carbon regulation costs compared to the baseline year



	2025	2030	2035	2040	2050
PITX	$0.01	$0.03	$0.10	$0.27	$1.4
PH1	$0.01	$0.04	$0.13	$0.33	$1.7
PCS	$0.67	$2.2	$7.6	$19.8	$105.6
HOLDCO	$0.02	$0.06	$0.20	$0.51	$2.7
EPC	$0.07	$0.24	$0.82	$2.1	$11.4
C2W	$0.07	$0.24	$0.83	$2.1	$11.4

Scenario: High Carbon Price Scenario, 2030, Scope 1, 2, 3 (US$ 2023)*

Figure 1.12: Scope 1,2, 3 Average Carbon Price Risk Premium Across Scenarios and Years

Scenario	Low	Moderate	High	
2023	$0.00	$0.00	$3.09	$/Tonne CO2e
2025	$0.00	$0.00	$5.47	$/Tonne CO2e
2030	$0.20	$0.46	$14.19	$/Tonne CO2e
2040	$3.24	$8.42	$57.24	$/Tonne CO2e
2050	$13.14	$26.36	$135.40	$/Tonne CO2e

Scope: Scope 1, 2, 3 (US$ 2023)

Figure 1.13: Scope 1 + 2 Average Carbon Price Risk Premium Across Scenarios and Years

Scenario	Low	Moderate	High	
2023	$0.00	$0.00	$1.90	$/Tonne CO2e
2025	$0.00	$0.00	$4.94	$/Tonne CO2e
2030	$0.00	$0.00	$16.27	$/Tonne CO2e
2040	$1.72	$9.02	$70.66	$/Tonne CO2e
2050	$15.37	$36.21	$156.77	$/Tonne CO2e

Scope: Scope 1, 2 (US$ 2022)

*Model assumes that the geographies of Megawide's upstream scope 3 emissions mirror the geographies of Megawide's Scope 1 and 2 emissions

Physical Risk

Sustainable1's Approach: Understanding Physical Risk Financial Impacts at the Asset Level

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1	Map Asset Level Data	• Asset level data from Megawide
2	Quantify climate hazard exposure	• 8 climate hazards based on CMIP6 and 21 NASA models for SSP5/SSP3/SSP2/SSP1
3	Apply Asset Specific impact functions	• Specific to asset type, hazard, location and ownership type
4	Quantify financial impact	• Percentage at risk (%) • Absolute risk (mUSD)

Physical Risk Financial Impact Metrics

- **Relative risk (in %)** is a function of hazard x vulnerability. Reported as a percent of asset value, it provides a perspective on exposure and vulnerability across assets, independent of their value. It's possible for low-value assets to have high relative risk compared to more valuable assets.
- **Absolute risk (in USD millions)** is a function of hazard x vulnerability x asset value. This reflects the expected financial impacts in dollar terms. A very valuable asset with low hazard exposure and vulnerability could still hold substantial risk due to the high asset value.

Climate Hazards

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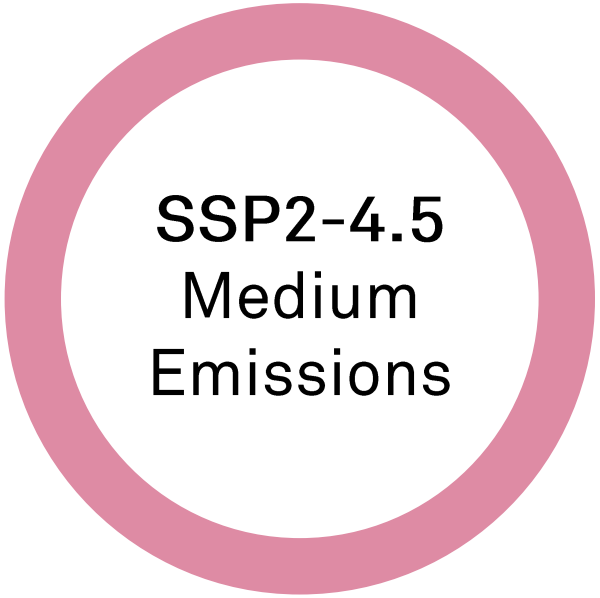
The hazards we cover include coastal flooding, pluvial flooding, fluvial flooding, extreme heat & cold, tropical cyclones, wildfire, water stress, drought and Landslide. Each is based on industry-leading data and models that characterize risk exposure based on specific metrics and indicators.

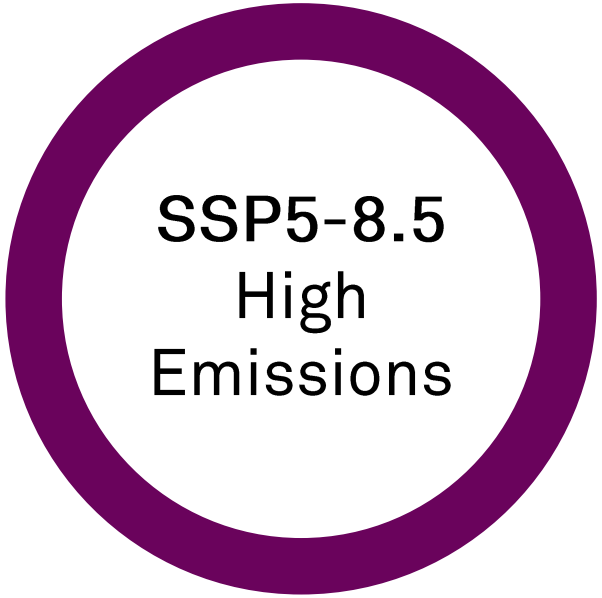
Hazards		Risk Type	Hazard Metric	Indicator Definition	Spatial Resolution	Data Sources
	Coastal Flood	Acute	Frequency of 100-yr flood	Projected return period of the historical 100-yr coastal flood	30 x 30m (USA)) 90 x 90m (RoW)	Kopp et al, 2014 Muis et al, 2016
	River (Fluvial) Flood	Acute	Frequency of 100-yr flood	Projected return period of the historical 100-yr flood	1 x 1 km	Hydro Basins, NEX-GDDP downscaled CMIP6, WWF
	Pluvial Flood	Acute	Frequency of 100-yr flood	Projected return period of the historical 100-yr precipitation	25 x 25 km	NEX-GDDP downscaled CMIP6
	Extreme Heat	Chronic	Projected Tx90p	Annual percentage of days with maximum temperature warmer than the 90th percentile local baseline daily maximum temperature	25 x 25 km	NEX-GDDP downscaled CMIP6
	Tropical Cyclone	Acute	Frequency of Cat3+ storms	Projected frequency of category 3+ tropical cyclone	25 x 25 km	NASHM
	Wildfire	Acute	Fire Weather index (FWI)	The wildfire hazard is defined based on the FWI and assesses if meteorological conditions are favorable for wildfire development.	25 x 25 km	NEX-GDDP downscaled CMIP6
	Water Stress	Chronic	Water Stress Index	Projected future ratio of water withdrawals to total renewable water supply in a given area	Basin Level (~50 – 100km)	WRI
	Drought	Chronic	Standardized Precipitation and Evapotranspiration Index (SPEI)	The hazard variable for a projected decade is the average proportion of months per annum where the SPEI is less than or equal to the historical local 10th percentile.	25 x 25 km	NEX-GDDP downscaled CMIP6

Physical Risk Scenarios Assessed

Sustainable 1 looks at climate scenarios SSP2-4.5 and SSP5-8.5 over decadal intervals from the 2020s to the 2090s.



Medium Emissions : Strong mitigation scenario in which total greenhouse gas emissions stabilize at current levels until 2050 and then decline to 2100. This scenario is expected to result in global average temperatures rising by 2.1-3.5C by 2100



High Emissions : Low mitigation scenario in which total greenhouse gas emissions triple by 2075 and global average temperatures rise by 3.3-5.7C by 2100

Company Assets

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Key Asset Data

Sustainable 1 assessed **7** Assets with a value of **$256m.** A summary of the asset types, locations and most valuable assets can be found in the figures below. These assets are indicative of the assets owned or operated in the 2023 reporting period.

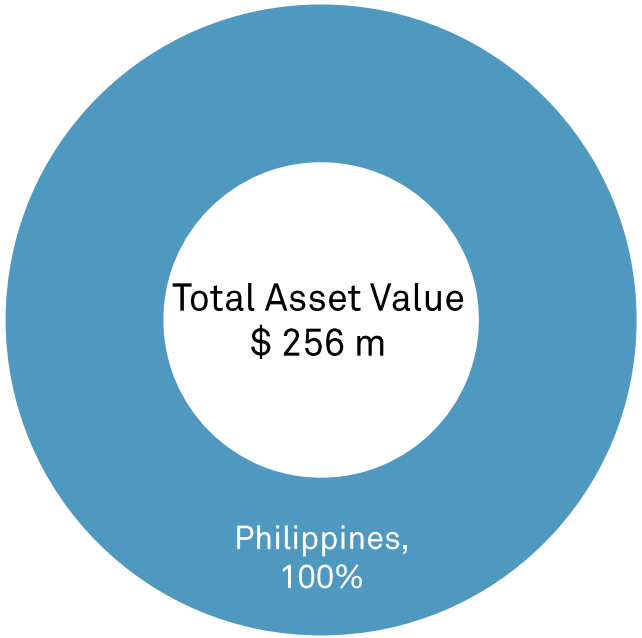
Figure 1: Top 5 Asset Types by Asset Value

Asset Type	Ownership	Asset Value (mUSD)	(%)
General Manufacturing	Owner/Occupier	68	26.6%
Office	Owner/Occupier	65	25.2%
Equipment (General)	Owner/Operator	58	22.7%
Industrial and Logistics	Owner/Occupier	54	20.9%
Mixed Use	Investor	12	4.5%

Figure 2: Sites by Asset Value

Asset Name	Asset Value (mUSD)	(%)
EPC	65	25.2%
PRECAST	57	22.1%
CELS	54	20.9%
FORMWORKS	54	20.9%
BATCHING	12	4.5%
MWM TERMINALS	12	4.5%
FMD	5	1.8%

Figure 3: Asset Value by geography



Physical Risk
Financial Impact Summary

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Company Level Summary 2030s

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2030s Modelled Average Annual Loss:

>2˚C Scenario (SSP2 - 4.5)	>4˚C Scenario (SSP5 – 8.5)
$2.55m	**$2.67m**
Total Asset Value at Risk 0.99%	Total Asset Value at Risk 1.04%
Low Risk	Moderate Risk

In the 2030s Megawide has a High Risk level in a Medium scenario and a High Risk level in a High scenario, with an absolute risk of $30m and $33m respectively. This translates into a relative risk of 11.9% and 13% respectively.

Water Stress, Temperature Extremes, Pluvial Flooding, account for 96% of total financial impact in the 2030s

The percentage of Megawide's asset value that is at risk for each climate hazard is shown in Figure 5. The majority of the total value of Megawide's assets are considered to have a Low level of risk to the hazards assessed.

Figure 4: Modelled Average Annual Loss by Physical Risk Hazard

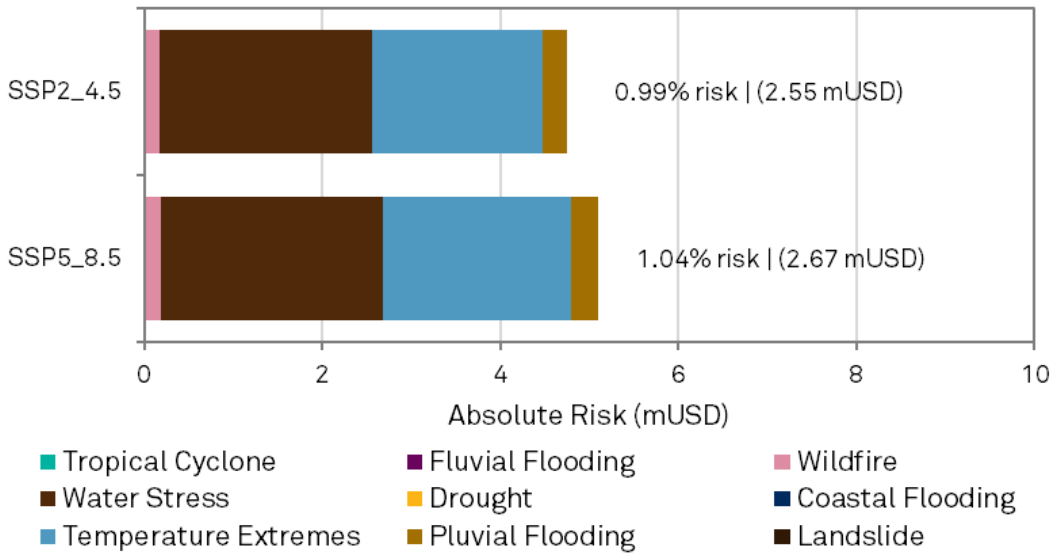

Figure 5: Percentage of total asset value by physical risk classification (SSP2 - 4.5)

Climate Hazard	High	Moderate	Low
Tropical Cyclone	0%	0%	100%
Drought	0%	0%	100%
Wildfire	0%	0%	100%
Temperature Extremes	0%	25%	75%
Water Stress	0%	49%	51%
Fluvial Flooding	0%	0%	100%
Coastal Flooding	0%	0%	100%
Pluvial Flooding	0%	0%	100%
Total	**0%**	**49%**	**51%**

1. Risk exposure classification thresholds have been defined as the following:
[High >5%, 5% > Moderate > 1%, Low < 1%]

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Company Level Summary 2030s

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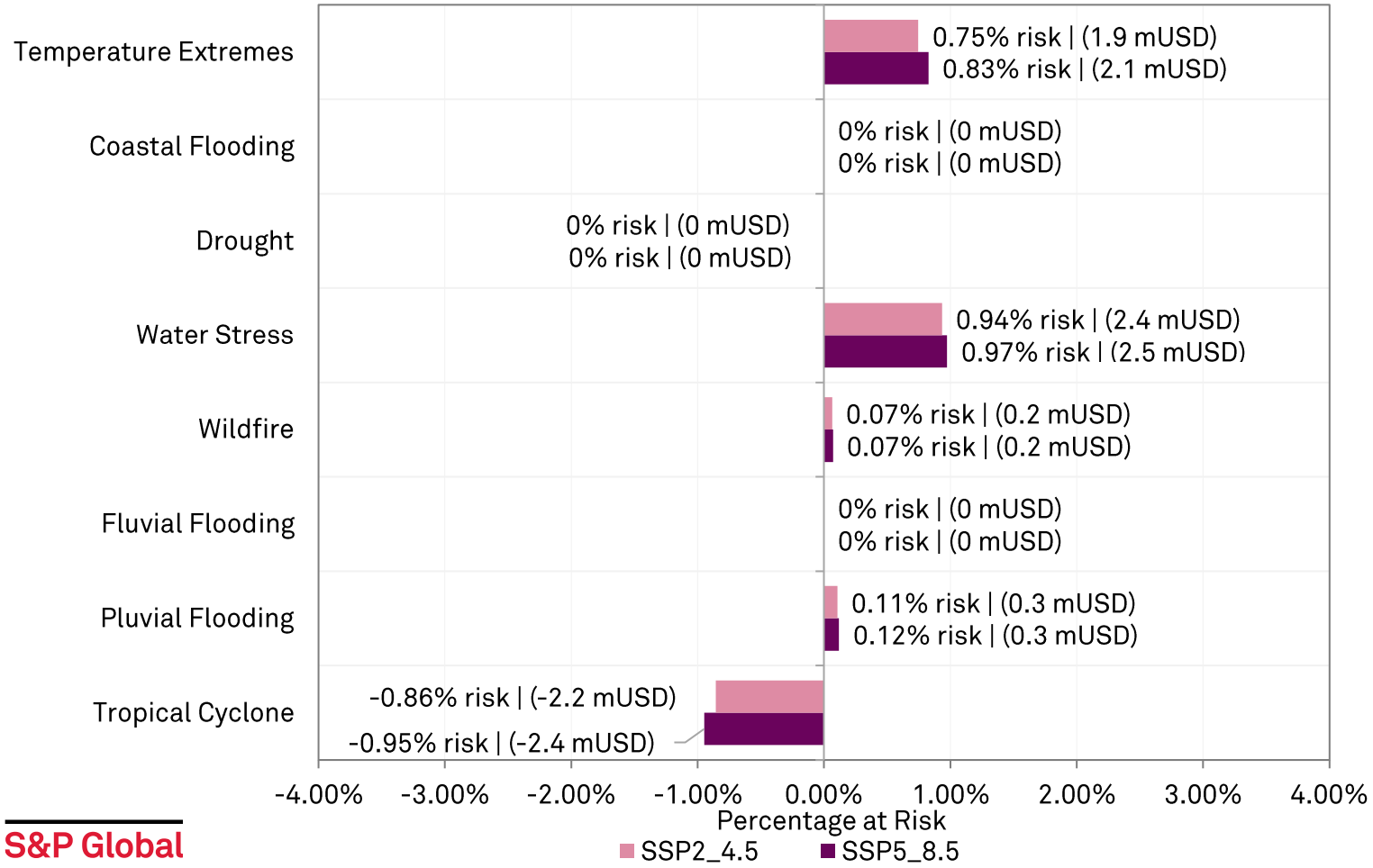
Figure 6 below sets out the absolute and relative risk for each climate hazard.

Water Stress present the highest relative risk to Megawide's asset value with 0.94% at risk in a SSP2_4.5 scenario, representing $2 of Megawide's total asset value. This is followed by Temperature Extremes where 0.75% of the company's total asset value is at risk from this climate hazard.

Figure 6: Financial Impact by Climate Hazard



Relative risk (in %) is a function of hazard x vulnerability. Reported as a percent of asset value, it provides a perspective on exposure and vulnerability across assets, independent of their value. It's possible for low-value assets to have high relative risk compared to more valuable assets.

Absolute risk (in USD millions) is a function of hazard x vulnerability x asset value. This reflects the expected financial impacts in dollar terms. A very valuable asset with low hazard exposure and vulnerability could still hold substantial risk due to the high asset value.

Top 3 Climate Hazards in the 2030s

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Figures 7-9 sets out the top 3 climate hazards measured by the absolute risk.

Water Stress present the highest risk to Megawide's asset value in the 2030s.

Of the top 3 hazards assessed Water Stress is the the most dominant risk by the 2090s increasing to $4m in a SSP2_4.5 scenario.

Figure 7: Water Stress (absolute risk)

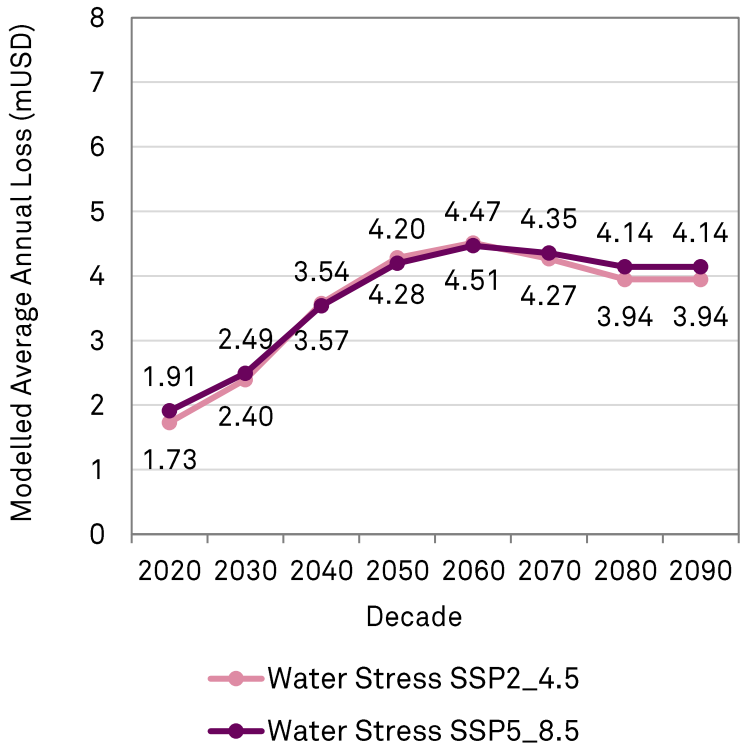


Figure 8: Temperature Extremes (absolute risk)

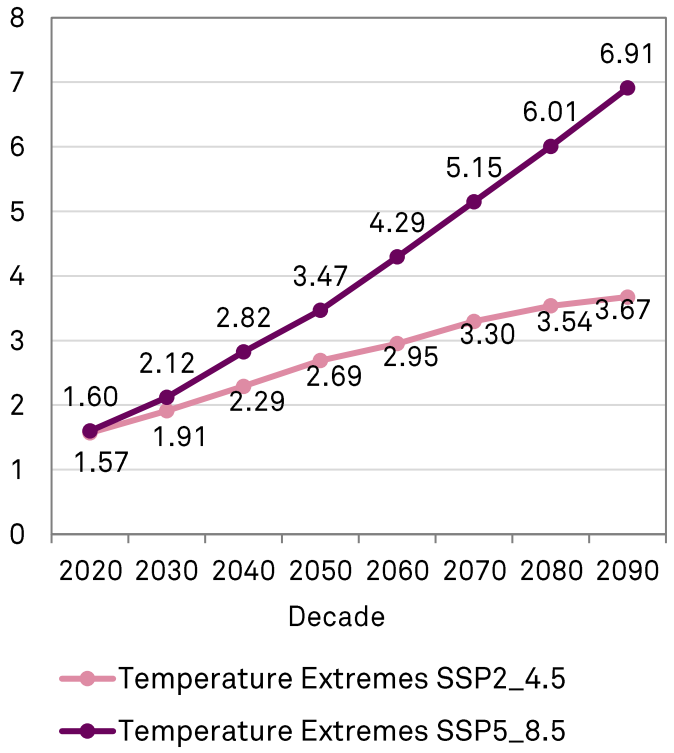
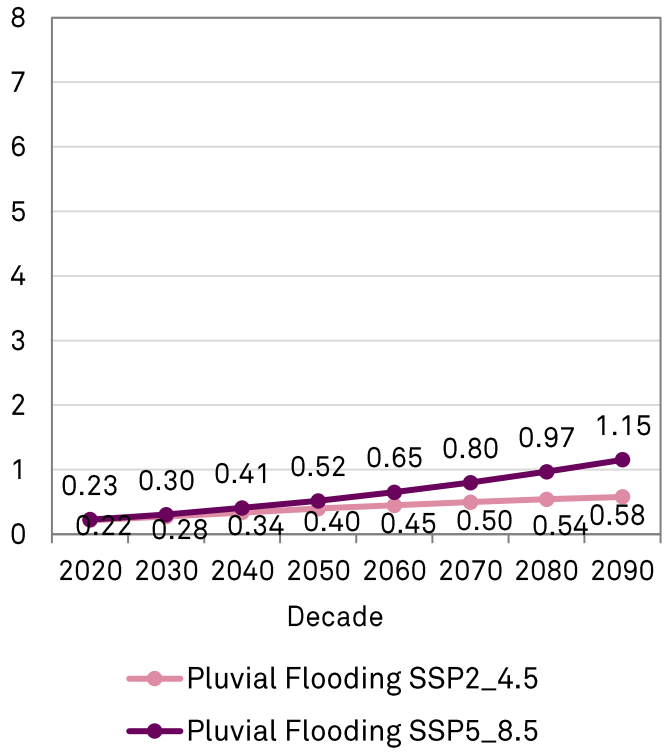


Figure 9: Pluvial Flooding (absolute risk)



Absolute Risk by Decade

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Figure 10 below highlights the decadal risk for each climate hazard in the SSP2 - 4.5 scenario, allowing Megawide to identify the timing of significant increases in specific climate hazards.

- Overall, the risk from all climate hazards remains moderate across the 2020 – 2090 time horizon in the SSP2 – 4.5 scenario
- Temperature Extremes is the fastest growing risk over this period, increasing from $1.57m per annum in 2020 to $3.67m per annum in the 2090s.
- Water Stress continue to be the next dominant risk out to the 2090s, increasing from $2.40m per annum in the 2030s up to $3.95m per annum in the 2090s

Figure 10: Absolute risk (mUSD) by decade (SSP2 - 4.5)

Low Risk | Moderate Risk | High Risk

Climate Hazards	2020	2030	2040	2050	2060	2070	2080	2090
Coastal Flooding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Drought	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fluvial Flooding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Temperature Extremes	1.57	1.91	2.29	2.69	2.95	3.30	3.54	3.67
Tropical Cyclone	-1.67	-2.19	-2.70	-2.70	-2.70	-2.70	-2.70	-2.70
Water Stress	1.73	2.40	3.57	4.28	4.51	4.27	3.94	3.94
Wildfire	0.12	0.17	0.22	0.26	0.29	0.32	0.35	0.37
Pluvial Flooding	0.22	0.28	0.34	0.40	0.45	0.50	0.54	0.58
Total Physical Risk	1.97	2.55	3.72	4.92	5.50	5.68	5.67	5.86

Note: Risk exposure classification thresholds are calculated where the relative risk exceeds the following threshold criteria: High >5%, 5% > Moderate > 1%, Low < 1%

Physical Risk
Financial Impacts – Asset Level

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Company Level Results - Top Sites by Relative Risk
SSP2 - 4.5 Scenario – 2030s

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Of the top sites by relative risk four have a moderate physical risk exposure with a relative risk greater than 1%. This is mainly driven by water stress and temperature extremes.

#	Asset Name	Country	Asset Value USD millions	Modeled Average Annual Loss (in $M)	Relative Risk 2030 (%)	Risk Exposure Classification	Tropical Cyclone	Drought	Wildfire	Temperature Extremes	Water Stress	Fluvial Flooding	Pluvial Flooding	Coastal Flooding
1	PRECAST	Philippines	56.6	1.3	2.3%	Moderate	-0.8%	0.0%	0.1%	0.7%	2.3%	0.0%	0.1%	0.0%
2	BATCHING	Philippines	11.6	0.3	2.3%	Moderate	-0.8%	0.0%	0.1%	0.7%	2.3%	0.0%	0.1%	0.0%
3	FMD	Philippines	4.6	0.1	1.7%	Moderate	-0.4%	0.0%	0.1%	0.7%	1.3%	0.0%	0.1%	0.0%
4	FORMWORKS	Philippines	53.5	0.9	1.7%	Moderate	-0.4%	0.0%	0.1%	0.7%	1.3%	0.0%	0.1%	0.0%
5	EPC	Philippines	64.6	0.4	0.6%	Low	-0.8%	0.0%	0.0%	1.2%	0.0%	0.0%	0.1%	0.0%
6	CELS	Philippines	53.6	-0.3	-0.6%	Low	-1.4%	0.0%	0.1%	0.4%	0.1%	0.0%	0.1%	0.0%
7	MWM TERMINALS	Philippines	11.6	-0.1	-1.0%	Low	-1.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%

Notes: Risk Exposure Classification thresholds have been defined as the following: [High >5%, 5% > Moderate > 1%, Low < 1%]

Company Level Results - Top Sites by Absolute Risk
SSP2 - 4.5 Scenario – 2030s

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Precast & Formworks are two sites with highest absolute risk. Both the sites are impacted the most by Water Stress and Temperature Extremes.

#	Asset Name	Country	Asset Value USD millions	Modeled Average Annual Loss (in $M)	Relative Risk 2030 (%)	Risk Exposure Classification	Tropical Cyclone	Drought	Wildfire	Temperature Extremes	Water Stress	Fluvial Flooding	Pluvial Flooding	Coastal Flooding
1	PRECAST	Philippines	56.6	1.3	2.3%	Moderate	-0.8%	0.0%	0.1%	0.7%	2.3%	0.0%	0.1%	0.0%
2	FORMWORKS	Philippines	53.5	0.9	1.7%	Moderate	-0.4%	0.0%	0.1%	0.7%	1.3%	0.0%	0.1%	0.0%
3	EPC	Philippines	64.6	0.4	0.6%	Low	-0.8%	0.0%	0.0%	1.2%	0.0%	0.0%	0.1%	0.0%
4	BATCHING	Philippines	11.6	0.3	2.3%	Moderate	-0.8%	0.0%	0.1%	0.7%	2.3%	0.0%	0.1%	0.0%
5	FMD	Philippines	4.6	0.1	1.7%	Moderate	-0.4%	0.0%	0.1%	0.7%	1.3%	0.0%	0.1%	0.0%
6	MWM TERMINALS	Philippines	11.6	-0.1	-1.0%	Low	-1.2%	0.0%	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%
7	CELS	Philippines	53.6	-0.3	-0.6%	Low	-1.4%	0.0%	0.1%	0.4%	0.1%	0.0%	0.1%	0.0%

Notes: Risk Exposure Classification thresholds have been defined as the following: [High >5%, 5% > Moderate > 1%, Low < 1%]

Physical Risk
Top 5 Sites at Risk by Climate Hazard

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Top 5 sites at risk by climate hazard

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Figures 11 – 14 set out the top 5 sites at risk for each climate hazard in the 2030s. Temperature extremes and Water Stress are the most prominent risks for Megawide with EPC site having the greatest impact from **Temperature Extremes** and PRECAST & BATCHING sites the most impacted facilities from **Water stress.**

Figure 11: Top 5 Sites at Risk from Water Stress

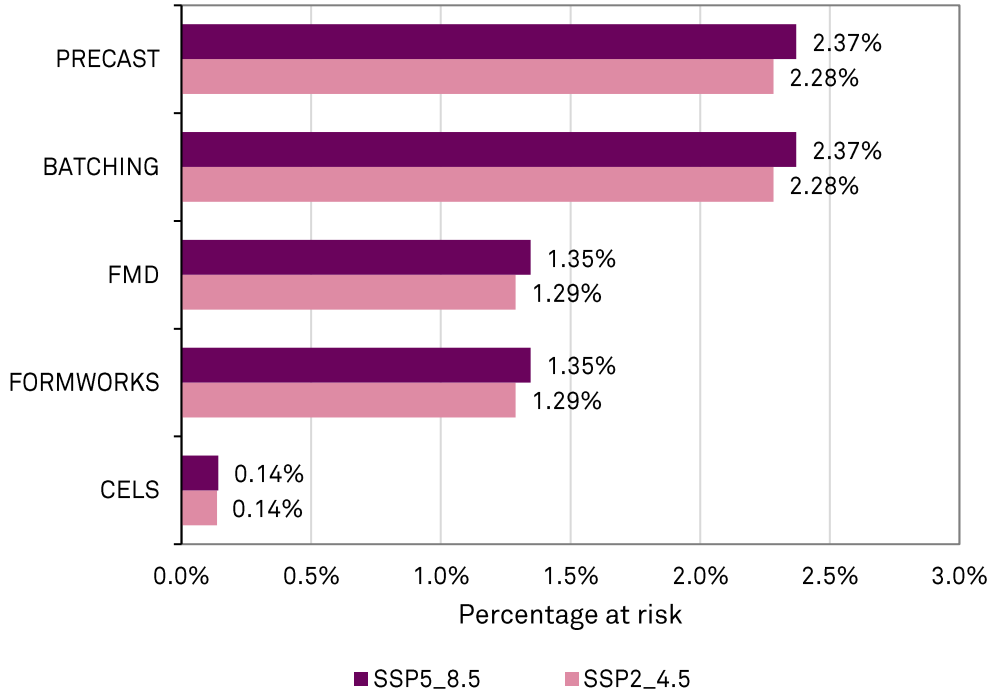
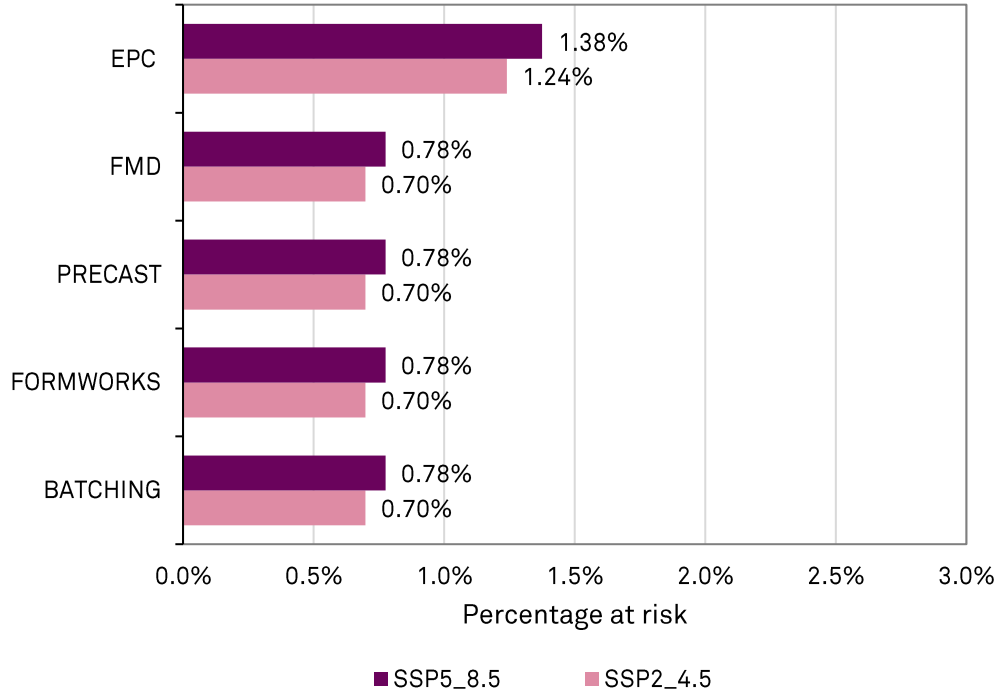


Figure 12: Top 5 Sites at Risk from Temperature Extremes



Top 5 sites at risk by climate hazard

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EPC is the most heavily exposed location to **Pluvial Flooding** related impacts with a relative risk of 0.14% in the 2030s. For **Wildfire** the **CELS** site has a relative risk of 0.14% followed by **PRECAST** site which sees a relative risk of 0.10%

Figure 13: Top 5 Sites at Risk from Pluvial Flooding

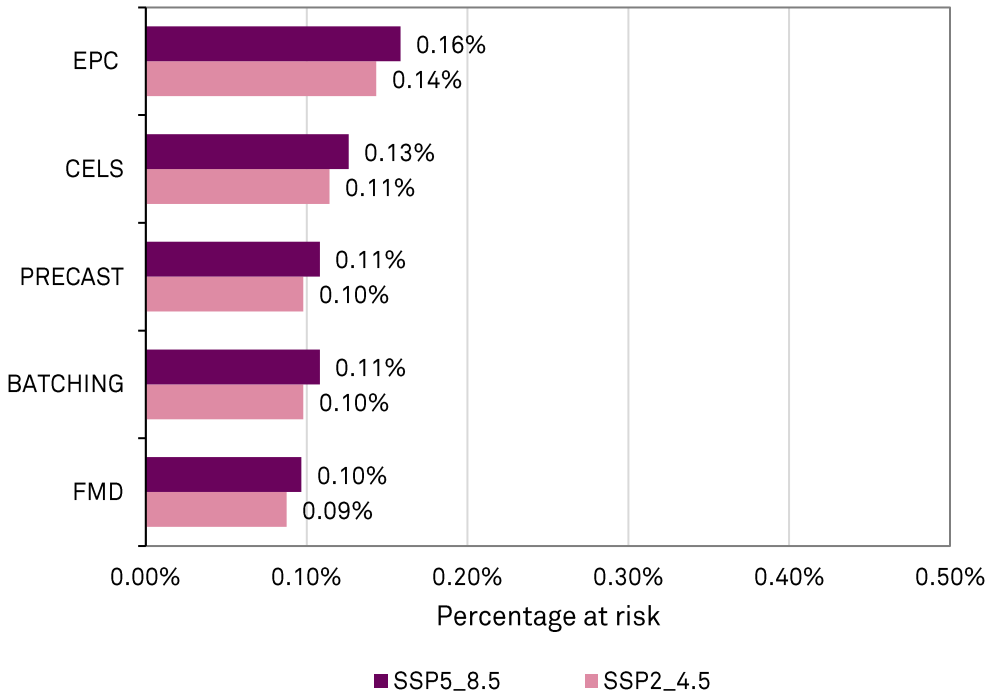
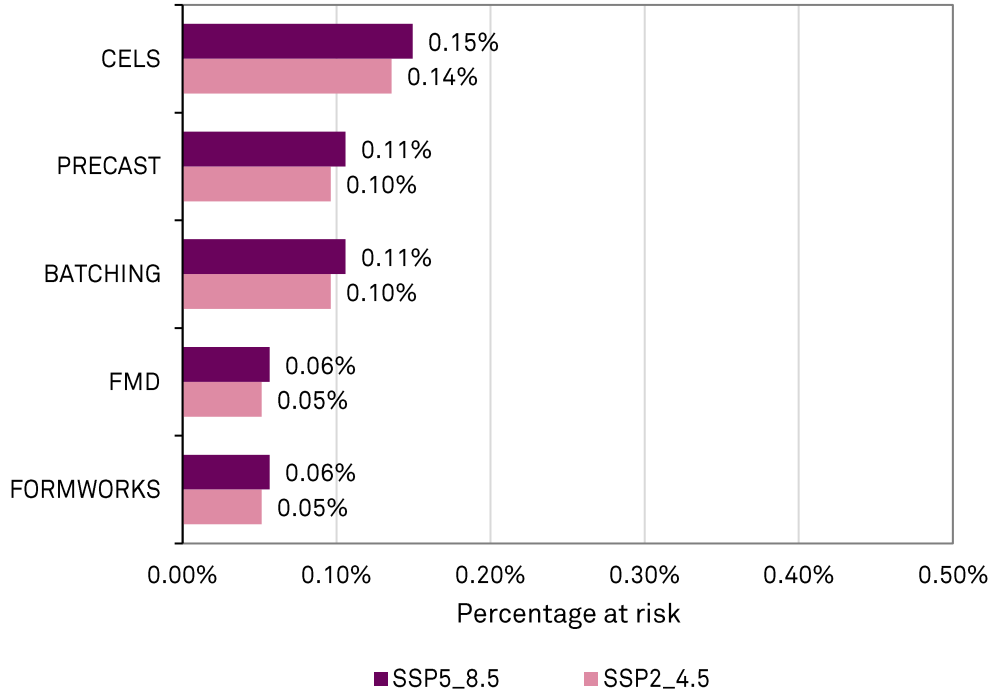


Figure 14: Top 5 Sites at Risk from Wildfire



Physical Risk Impact Functions

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Asset Impact Functions

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The table below shows the impact pathways by asset type for each climate hazard. This provides a helpful summary of the financial impact mechanisms assumed for each asset type.

Asset Type	Tropical Cyclone	Drought	Wildfire	Temperature Extremes	Water Stress	Coastal / Pluvial Flooding	Fluvial Flooding
General Manufacturing - Owner/Occupier (Book Value)	Impact	Impact	Impact	Impact	Impact	Impact Business Interruption Cleanup and Repair Costs	Impact Business Interruption Cleanup and Repair Costs
Office - Owner/Occupier	Impact Business Interruption Cleanup and Repair Costs	Impact Foundation Damage Water Expenses	Impact Employee Health Business Interruption	Impact Cooling Costs Employee Productivity	Impact Business Interruption Water Expenses	Impact Business Interruption Cleanup and Repair Costs	Business Interruption Cleanup and Repair Costs
Equipment (General) - Owner/Operator	Impact Business Interruption Cleanup and Repair Costs	Impact Foundation Damage Water Expenses	Impact Employee Health Business Interruption	Impact Cooling Costs Employee Productivity	Impact Business Interruption Water Expenses	Impact	Impact
Industrial and Logistics - Owner/Occupier	Business Interruption Cleanup and Repair Costs	Foundation Damage Water Expenses	Business Interruption Employee Health Physical Damage	Cooling Costs Employee Productivity HVAC Degradation	Business Interruption Water Expenses	Business Interruption Cleanup and Repair Costs	Business Interruption Cleanup and Repair Costs
Mixed Use - Investor	Business interruption Cleanup and Repair Costs	Business Interruption Foundation Damage Water Expenses	Business Interruption Physical Damage	Cooling Costs HVAC Degradation	Business Interruption Water Expenses	Business interruption Cleanup Costs Repair Costs	Business interruption Cleanup Costs Repair Costs

Note: Tier 1 impact functions are modelled based on specific, tailored and quantitative research and are decomposed to multiple pathways (with different names). Tier 2 impact functions characterize general sensitivity, and they are based on the relative vulnerability and qualitative research. Tier 2 assets are **not** decomposed to multiple pathways, in these cases the pathway name is described simply as "Impact".

Appendix A – Carbon Pricing Risk Assessment
Appendix B – Physical Risk Assessment

Appendix A

Carbon Pricing Risk Assessment

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Carbon Pricing Risk Assessment

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Methodology

The methodology for measuring carbon pricing is comprised of the following key components:

- **Carbon Price Database:** A database of current carbon taxes, emissions trading schemes and fuel taxes in 171 countries / states[1]
- **Carbon Price Scenarios:** Potential future carbon price trajectories informed by published research and climate change modelling
- **Revenue, Expenditure and Emissions Projections:** Projections of revenue, Expenditure and GHGH emissions for future years based on assumptions entered by the user.
- **Pass Through Modelling:** Modelling of the pass-through of rising carbon prices to a company from its suppliers.
- **Analysis Tools:** Analyses designed to draw insights on the impact of rising carbon prices on company financial performance.

Carbon Price Database

Sustainable1 has assembled a database of publicly available information on current carbon prices across over 171 countries / states, which is updated annually. The database includes information on prices and sector coverage (the proportion of sector emissions covered by the policy) for emissions trading schemes, carbon taxes and fuel taxes in each geography. The Carbon Price Database Country Coverage slide outlines the geographic coverage of the database. Emissions trading scheme prices represents the average spot price in the last month for which data was available.

Carbon Price Scenarios

Carbon prices associated with emissions trading schemes, carbon taxes, fuel taxes and other policies are expected to rise in the future as governments take action to reduce greenhouse gas emissions consistent with the Paris Agreement. The speed and level to which carbon prices may rise is uncertain and likely to vary across countries and regions. The Sustainable1 Carbon Pricing Tool includes three future carbon price scenarios based on published research and Sustainable1 analysis:

High Carbon Price Scenario (NZE Scenario): The Net-Zero Emissions by 2050 Scenario (NZE) is designed to show what is needed across the main sectors by various actors, and by when, for the world to achieve net-zero energy related and industrial process CO2 emissions by 2050

Medium Carbon Price Scenario (APS Scenario): The IEA APS scenario assumes that governments will meet, in full and on time, all of the climate-related commitments that they have announced, including longer term net zero emissions targets and pledges in Nationally Determined Contributions (NDCs)

Low Price Scenario (STEPS Scenario): This scenario is designed to provide a sense of the prevailing direction of energy system progression, based on a detailed review of the current policy landscape. Outcomes in the STEPS reflect a detailed review of the policies and measures that are actually in place or that have been announced

World Bank Carbon Pricing Dashboard (2023), International Carbon Action Partnership (2024), OECD Effective Carbon Rates (2021), US EIA (2023)

Carbon Pricing Risk Assessment

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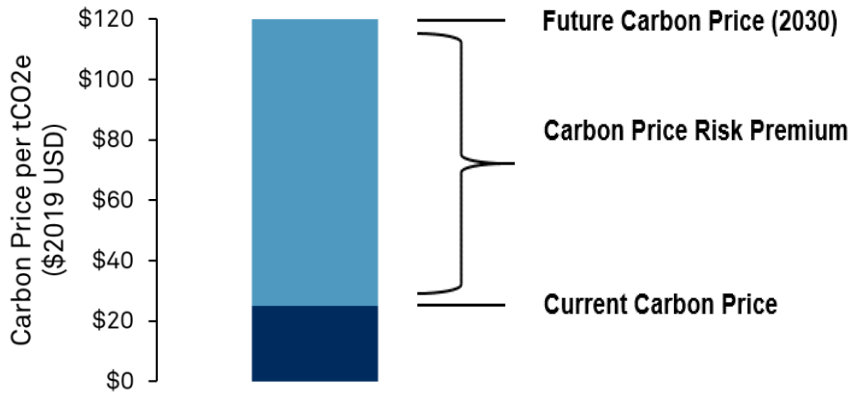
The Carbon Price Risk Premium

Sustainable1 defines the gap between current carbon prices and potential future carbon price targets as the 'Carbon Price Risk Premium'. This premium, which varies by sector and geography, reflects the additional financial cost paid per tonne of emission due to increasing carbon pricing regulations in the future and is a useful benchmark for setting internal carbon prices. Figure B1 illustrates the calculation of the Carbon Price Risk Premium by subtracting the current carbon price in each sector and geography from the corresponding future carbon price in each time period.

Figure B.1: Carbon Price Risk Premium



Revenue, Expenditure and Emissions Projections

The carbon pricing methodology is designed assess the impact of future increases in carbon prices in future years. To do so it is necessary to project revenue, expenditure and emissions for future years. Future projections are modelled as follows:

- **Revenue Projections:** Revenue in future years is projected based on data entered by the user on revenue (at the enterprise, geography or facility level) in the base year and future revenue growth expectations up to the year 2050.
- **Expenditure Projections:** Expenditure in future years is projected based on data entered by the user on expenditure (at the enterprise, geography or facility level) in the base year and future expenditure growth expectations up to the year 2050.
- **Emissions Projections:** Greenhouse gas emissions in future years are projected by multiplying the greenhouse gas emissions intensity in the base year (total emissions / total revenue in US$ millions) by projected future revenues in each year. The greenhouse gas emissions intensity is adjusted in future years if the business has provided details of an emissions reduction target already in place (or planned).

Carbon Pricing Risk Assessment

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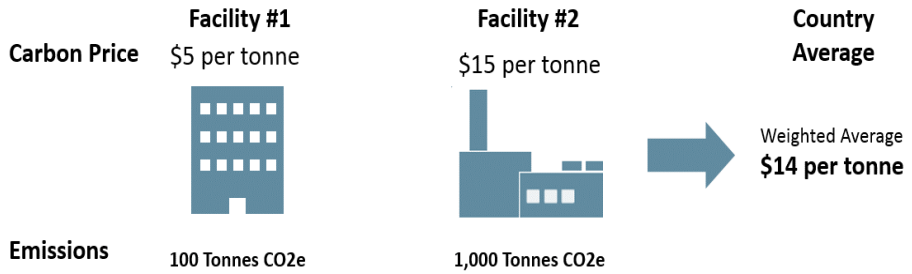
Figure B.2: Carbon Price Risk Assessment Metrics

Metric	Description
Carbon Pricing Risk Exposure ($US)	Total financial value of the Carbon Price Risk Premium ($) multiplied by total greenhouse gas emissions in the relevant sector, geography and year. This metric reflects the expected additional financial value of carbon prices paid on emissions in a future time period compared to prices paid today.
Carbon Pricing Risk by Scope (%)	The share of carbon pricing risk per emissions scope as defined in the greenhouse gas protocol (WBSCD and WRI, 2015).
High Carbon Pricing Risk Geographies	The top five operating geographies of the enterprise or business ranked by carbon pricing risk. This metric may be useful in prioritizing emissions reduction strategies in geographies with the highest carbon pricing risk.
Increase in expenditure (%)	Represents the change in expenditure due to rising carbon prices in operating geographies.
Carbon Adjusted Operating Profit Margin (%)	Estimates the change in operating margin (relative to business as usual) associated with increased expenditure under future carbon price scenarios.

The carbon pricing risk methodology presents the calculated Carbon Price Risk Premium and potential Future Carbon Price at the enterprise, business unit and geography level. Each metric is calculated as a weighted average (by emissions) for the sectors and geographies represented within the enterprise, business unit or geography of operations. The Carbon Price Risk Premium metrics presented may be used to benchmark the setting of an estimated internal carbon price at the company, business unit or regional level, which reflects the expected potential future increase in regulated carbon prices in the future.

Figure B.3: Calculation of Weighted Average Carbon Prices



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Carbon Pricing Risk Assessment

Carbon Price Database Country Coverage

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Figure B.4: Sustainable1 Carbon Price Database: Geographic Coverage

Included Geographies				
Argentina	Kyrgyzstan	Canada - British Columbia	China - Qinghai Province	United States - Maryland
Australia	Latvia	Canada - Manitoba	China - Shaanxi Province	United States - Massachusetts
Austria	Lithuania	Canada - New Brunswick	China - Shandong Province	United States - Michigan
Bangladesh	Luxembourg	Canada - Newfoundland and Labrador	China - Shanghai Municipality	United States - Minnesota
Belgium	Madagascar	Canada - Northwest Territories	China - Shanxi Province	United States - Mississippi
Brazil	Malaysia	Canada - Nova Scotia	China - Shenyang	United States - Missouri
Burkina Faso	Mexico	Canada - Nunavut	China - Sichuan Province	United States - Montana
Chile	Morocco	Canada - Ontario	China - Tianjin Municipality	United States - Nebraska
Colombia	Netherlands	Canada - Prince Edward Island	China - Tibet Autonomous Region	United States - Nevada
Costa Rica	New Zealand	Canada - Quebec	China - Xinjiang Uyghur Autonomous Region	United States - New Hampshire
Cote d'Ivoire	Nigeria	Canada - Saskatchewan	China - Yunnan Province	United States - New Jersey
Cyprus	Norway	Canada - Yukon	China - Zhejiang Province	United States - New Mexico
Czech Republic	Other Regions	China	Japan	United States - New York
Denmark	Panama	China - Anhui Province	Japan - Saitama	United States - North Carolina
Dominican Republic	Paraguay	China - Beijing Municipality	Japan - Tokyo	United States - North Dakota
Ecuador	Peru	China - Chongqing Municipality	United States	United States - Ohio
Egypt	Philippines	China - Fujian Province	United States - Alabama	United States - Oklahoma
Estonia	Poland	China - Gansu Province	United States - Alaska	United States - Oregon
Ethiopia	Portugal	China - Guangdong Province	United States - Arizona	United States - Pennsylvania
Finland	Russian Federation	China - Guangxi Zhuang Autonomous Region	United States - Arkansas	United States - Rhode Island
France	Rwanda	China - Guizhou Province	United States - California	United States - South Carolina
Germany	Singapore	China - Hainan Province	United States - Colorado	United States - South Dakota
Ghana	Slovak Republic	China - Hebei Province	United States - Connecticut	United States - Tennessee
Greece	Slovenia	China - Heilongjiang Province	United States - Delaware	United States - Texas
Guatemala	South Africa	China - Henan Province	United States - Florida	United States - Utah
Hungary	Spain	China - Hong Kong	United States - Georgia	United States - Vermont
Iceland	Sri Lanka	China - Hubei Province	United States - Hawaii	United States - Virginia
India	Sweden	China - Hunan Province	United States - Idaho	United States - Washington
Indonesia	Switzerland	China - Inner Mongolia Autonomous Region	United States - Illinois	United States - West Virginia
Ireland	Turkey	China - Jiangsu Province	United States - Indiana	United States - Wisconsin
Israel	Uganda	China - Jiangxi Province	United States - Iowa	United States - Wyoming
Italy	Ukraine	China - Jilin Province	United States - Kansas	
Jamaica	United Kingdom	China - Liaoning Province	United States - Kentucky	
Kenya	Canada	China - Macau	United States - Louisiana	
Korea, Rep.	Canada - Alberta	China - Ningxia Hui Autonomous Region	United States - Maine	

Carbon Pricing Risk Assessment

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Limitations and Considerations

The carbon pricing risk methodology includes the following limitations:

- The Sustainable1 database of current carbon prices is updated annually at the sector and country level. This data is combined with future carbon price projections to calculate the future carbon price risk. Carbon prices have been estimated in some cases where complete data was unavailable.
- Future carbon prices are estimated based on hypothetical future scenarios and may not reflect the actual carbon price in future years.
- Future carbon price estimates do not account for carbon pricing policies announced but not implemented prior to December 2023.
- Future revenue, expenditure and operating profit margin projections included in the tool do not constitute financial forecasts and are driven by data entered into the tool by the user.
- Scope 3 emissions are entered into the tool at the enterprise level but distributed across the operating geographies based on the share of scope 1 and 2 emissions by geography.
- The carbon pricing risk methodology considers only scope 3 emissions from the eight upstream scope 3 categories:
  - Purchased Goods and Services
  - Capital Goods
  - Fuel-and-Energy-Related Activities
  - Upstream Transportation and Distribution
  - Waste Generated in Operations
  - Business Travel
  - Employee Commuting
  - Upstream Leased Assets
- Upstream scope 3 categories are included in the tool since increases in the carbon prices paid by suppliers may be readily passed on in part, or in full, to the user company in the form of increased prices for goods and services.
- Downstream scope 3 categories are excluded since the mechanisms by which rising carbon prices may feed back to the user company, such as through reduced demand for the company's goods and services, are less clearly defined.

Carbon Pricing Risk Assessment – Glossary

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Term	Definition
Nationally Determined Contribution	Emissions reduction and policy commitments made by countries in response to the signing of the Paris Agreement on climate change.
Current Carbon Price	Estimated average price per tonne levied on greenhouse gases (CO2e) emitted in each sector and geography in 2023
Future Carbon Price	Expected average price per tonne levied on greenhouse gases (CO2e) emitted in each sector and geography in future years (Base year -2050)
Carbon Pricing Cost Exposure	Total financial value ($) of Current Carbon Price or Future Carbon Price multiplied by total greenhouse gas emissions in the relevant sector, geography and year.
Carbon Price Risk Premium	The Carbon Price Risk Premium is the estimated additional financial cost ($) per tonne of greenhouse gas emissions in a future year. It is the difference between the Current Carbon Price and Future Carbon Price in each sector, geography and year.
Carbon Pricing Risk	Total financial value of the Carbon Price Risk Premium ($) multiplied by total greenhouse gas emissions in the relevant sector, geography and year.

Appendix B

Physical Risk Assessment

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The Sustainable 1 Approach

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Sustainable 1 quantifies climate risk in financial terms by integrating terabytes of climate and socioeconomic data on climate-related hazards, driving econometric models with hazard inputs and business data, and translating risk into financial terms to provide decision-relevant insights.

Sustainable 1 Physical Risk assessment models the impact of hazards such as extreme temperature, drought, wildfire, coastal flooding, fluvial flooding, pluvial flooding, water stress and tropical cyclone, combined with a sophisticated understanding of the vulnerability of each asset type to each type of hazard.

Our methodology is built on principles similar to catastrophe risk models, but is driven by climate model and socioeconomic model data. Inputs include terabytes of climate and socioeconomic data on hazards from public (including IPCC, NASA, NOAA), academic and commercial sources, and proprietary Sustainable 1 models. The rapidly growing Sustainable 1 library of impact functions, modeling the vulnerability of individual assets to individual climate-related risks, is a key differentiator. Inputs are updated frequently as new sources become available or desirable

* Source: https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en

Climate Risk Terminology

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Hazards: Changes in environmental or economic conditions associated with climate change. These are expressed as specific metrics that change through time.

Vulnerabilities: Responses of an asset or entity to changes in the climate-related hazards. These are sensitive to the levels of the hazard metrics.

Risks: Financial measures of impacts induced by the hazards via the vulnerabilities. This is based on the combination of the degree of vulnerability (at a given hazard level) and the valuation of an asset.

Impact Functions: The Sustainable 1 methodology begins with an analysis of the hazards facing specific assets. The asset's vulnerability to each hazard is then characterized based on asset type and specific ways ("impact pathways") in which a particular asset is impacted by a given climate hazard. Finally, impact functions, comprised of impact pathways, are assigned to model the risk based on the hazard and vulnerability. TCS has developed an extensive library of detailed impact functions based on peer-reviewed published research and papers published by government and industry sources.

Risk Calculations: Sustainable 1 quantifies the financial impacts caused by climate change in a metric known as Modeled Average Annual Loss (MAAL). As the name suggests, Sustainable 1 reports financial losses on an annual basis, in order to provide decision-relevant insights in terms of other key financial metrics, such as revenue.

High SSP5-8.5: Low mitigation scenario in which total greenhouse gas emissions triple by 2075 and global average temperatures rise by 3.3-5.7C by 2100

Moderate-High SSP3-7.0: Limited mitigation scenario in which total greenhouse gas emissions double by 2100 and global average temperatures rise by 2.8-4.6C by 2100

Moderate SSP2-4.5: Strong mitigation scenario in which total greenhouse gas emissions stabilize at current levels until 2050 and then decline to 2100. This scenario is expected to result in global average temperatures rising by 2.1-3.5C by 2100

Low SSP1-2.6: Aggressive mitigation scenario in which total greenhouse gas emission reduce to net zero by 2050, resulting in global average temperatures rising by 1.3-2.4C by 2100, consistent with the goals of the Paris Agreement.

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