



TCFD Summit

Implications of GPIF Portfolio Climate Change-Related Risk and Opportunity Analysis of GPIF's Portfolio

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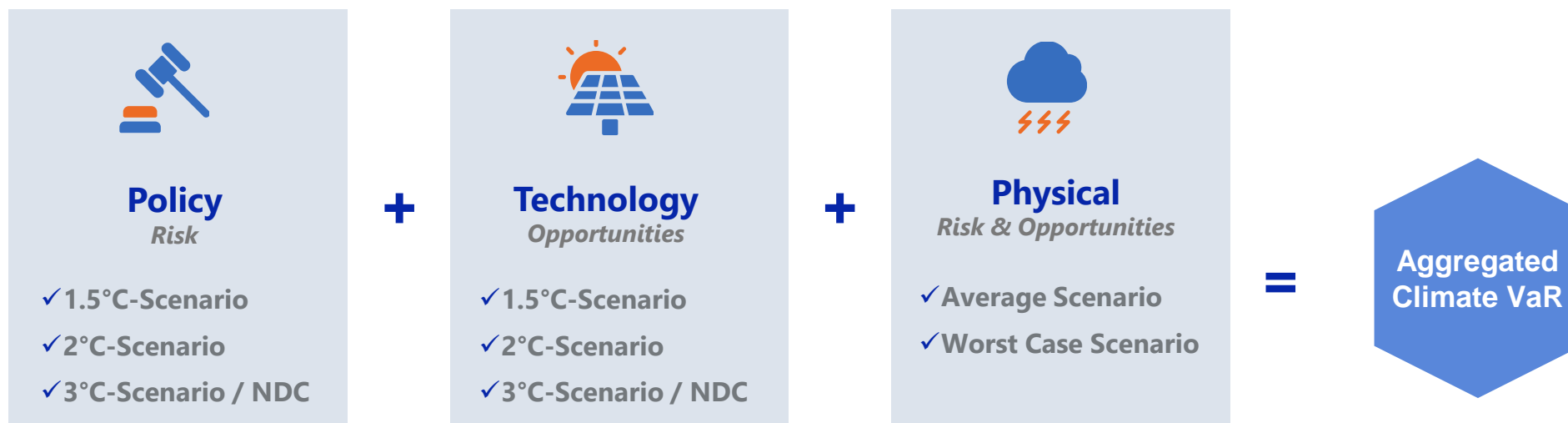


Climate Value-at-Risk (CVaR)

A model for measuring the potential impact of climate change on corporate and security values

Transition Risks & Opportunities

Physical Risks & Opportunities



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(CVaR Estimation Process)

- Step 1: Estimate future climate change-related costs and profits
- Step 2: Discount these costs and profits to present value
- Step 3: Estimate the above impact on current enterprise value (EV)
- Step 4: Break down this impact into values for equity and debt securities

CVaR for Low-Carbon Technological Opportunities

Assessing the value of low-carbon technology patents and potential future technology revenue

Potential Environmental Technology Revenue

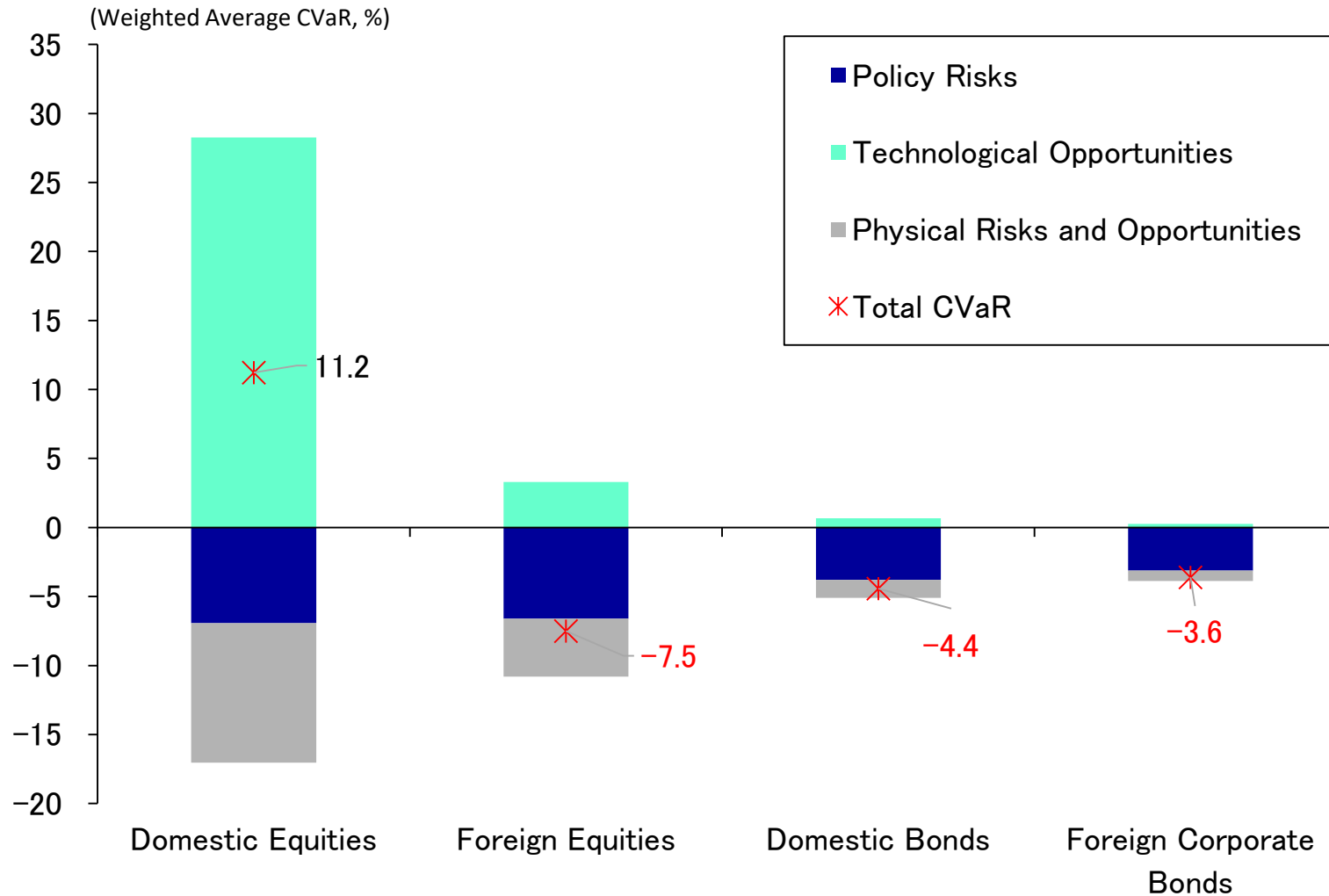
- Assumed to be equal to the costs of reducing emissions on a sector basis

Patent Score

- Forward Citations
- Backward Citations
- Market coverage
- CPC coverage

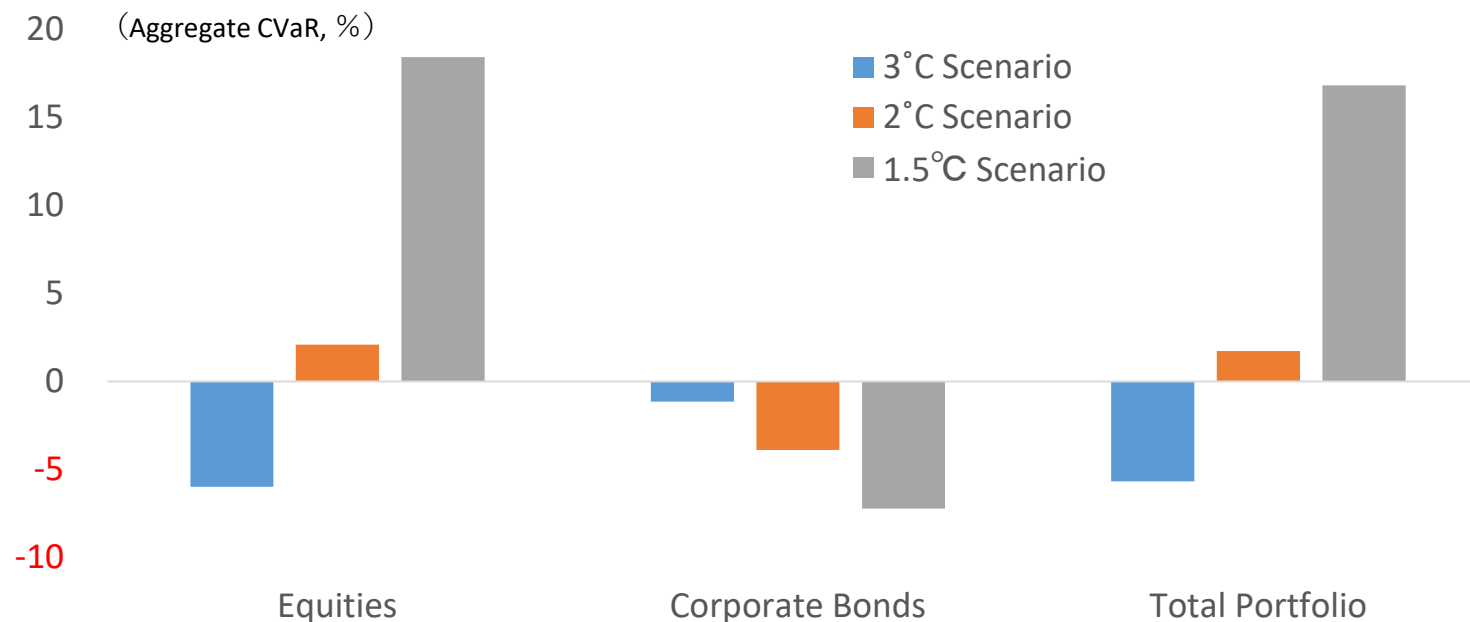
Low-Carbon Technology Opportunity CVaR Computed for Each Company

CVaR for GPIF Portfolio - 2°C Scenario



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Aggregate CVaR by Temperature Rise Scenario



【Aggregate CVaR Breakdown】

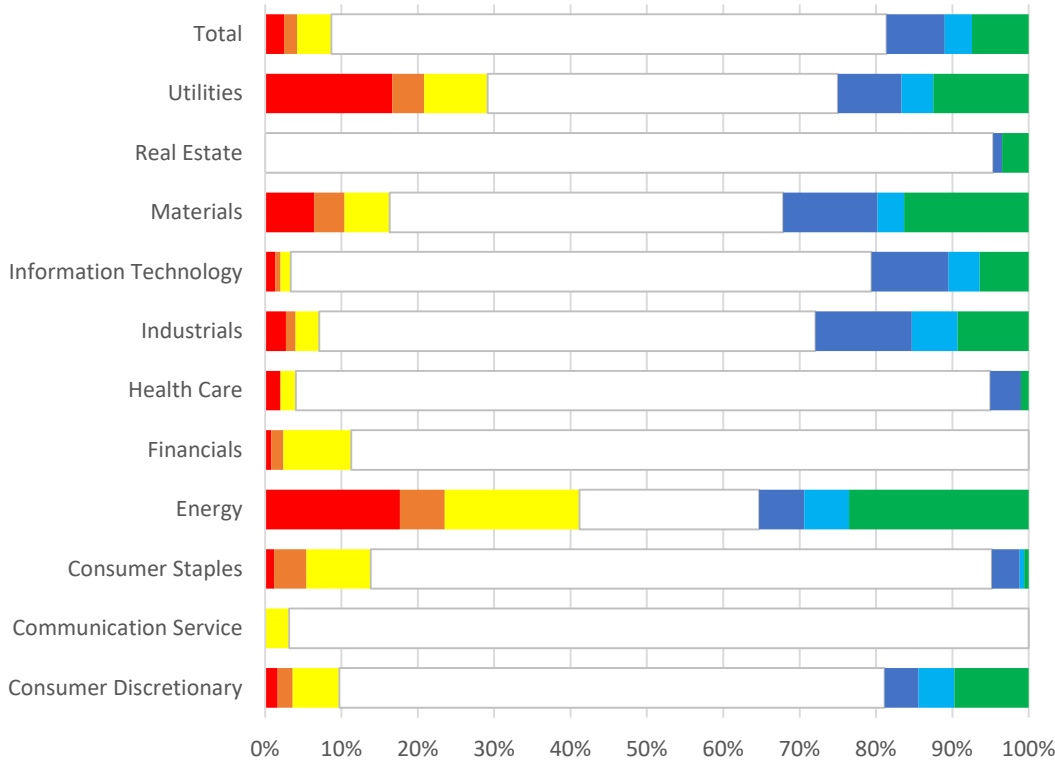
		(1) Transition Risks and Opportunities			(2) Physical	(3) Total
			Policy Risk	Tech Oppor.	Risks/Oppor.	
Equities	3°C Scenario	0.8	-1.7	2.5		-6.0
	2°C Scenario	9.8	-6.4	16.2	-6.7	3.1
	1.5°C Scenario	26.0	-10.2	36.2		19.3
Corporate Bonds	3°C Scenario	-0.4	-0.5	0.1		-1.2
	2°C Scenario	-3.1	-3.5	0.5	-0.8	-3.9
	1.5°C Scenario	-6.6	-7.3	0.7		-7.4

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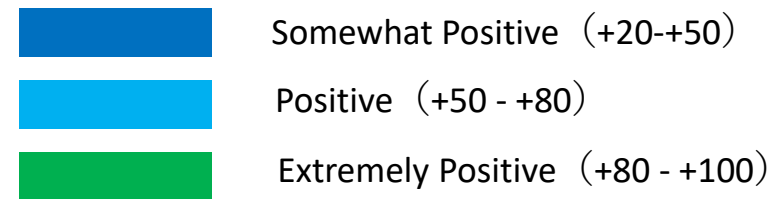
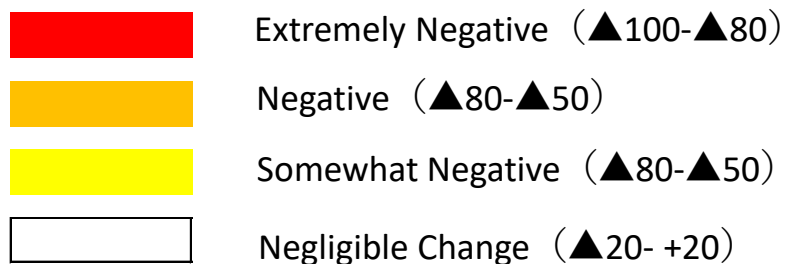
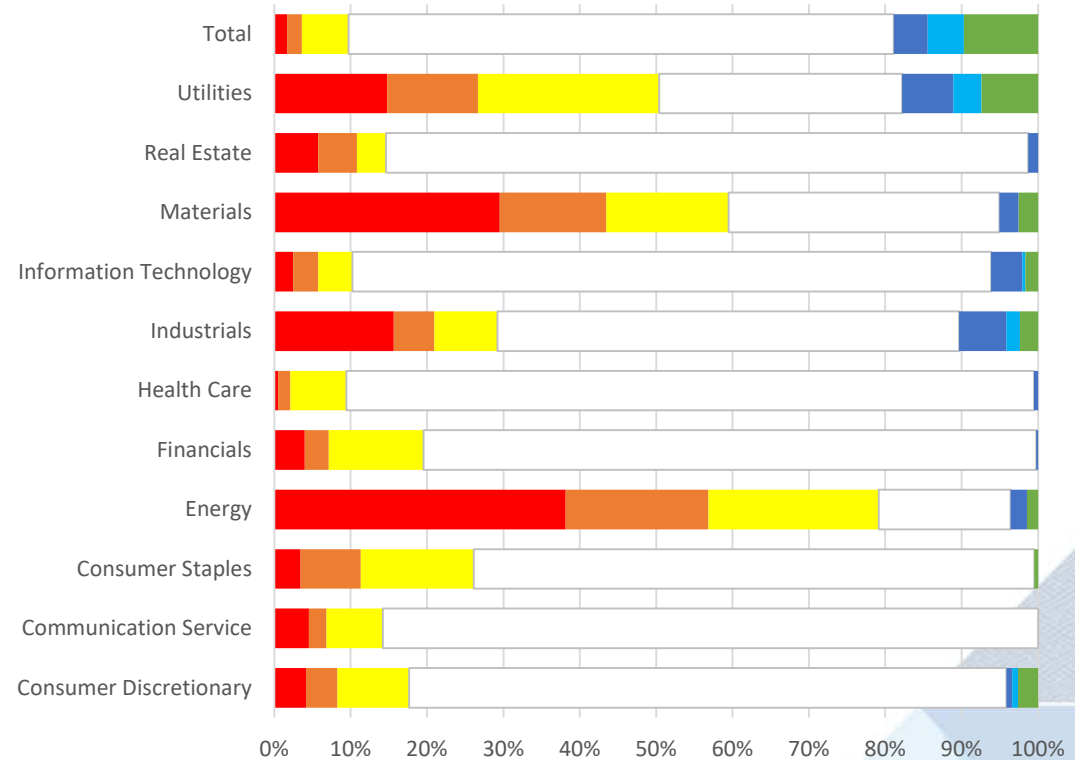
Distribution of Aggregate CVaR by Industry

(Number of Companies, 2°C Scenario)

Japanese Equities



Non-Japanese Equities



Key Implications

- ① **There are substantial potential low-carbon technology-related revenue opportunities for Japanese companies. This implies a greater possible upside for Japanese equities relative to non-Japanese equities as the world transitions to a low-carbon society.**
- ② **As environmental policy restrictions are tighter under a 1.5°C scenario than a 2°C scenario and a 2°C scenario than a 3°C scenario, there are more low-carbon technology-related revenue opportunities and thus more upside potential for equities under lower temperature scenarios.**
- ③ **While corporate value for a large number of companies in high environmental impact sectors such as energy, utilities and materials is estimated to sharply decline, there are also several companies whose corporate value is expected to jump significantly, leading to a notable contrast between winners and losers within each industry.**