

PENSIONS IN A CHANGING CLIMATE

This report assesses the pensions sector's response to the recommendations of the Task Force on Climate-related Financial Disclosures, and features an index of the world's 100 largest public pension funds rated on their approach to climate-related risks and opportunities | November 2018

ShareAction»

ASSET OWNERS/
DISCLOSURE PROJECT

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ABOUT AODP AND SHAREACTION

The Asset Owners Disclosure Project (AODP) rates and ranks the world's largest institutional investors and assesses their response to climate-related risks and opportunities. The ratings are made public, providing much-needed transparency for beneficiaries, clients, investors and stakeholders, and emphasised through advocacy and direct engagement to drive change.

In June 2017, ShareAction announced an agreement to take over the reins of the Asset Owners Disclosure Project (AODP). The intention was to build on the strong foundations established by 10 years of experience carrying out climate-related investor analysis. As the only comprehensive, climate-specific, independent, non-self-selective assessment, AODP prides itself on being the world's benchmark of climate leadership in the investment system.

CONTENTS

02	EXECUTIVE SUMMARY
04	SUMMARY FINDINGS
06	METHODOLOGY
10	PART 1: GLOBAL RANKING, KEY FINDINGS & REGIONAL PERFORMANCE
22	PART 2: GOVERNANCE & COMMUNICATIONS
32	PART 3: STRATEGY & RISK MANAGEMENT
44	PART 4: METRICS & TARGETS
52	CONCLUSION
54	APPENDIX
57	DISCLAIMER

EXECUTIVE SUMMARY

→ “Over 60% of pension funds publish little or no information on their climate responses, placing them at risk of breaching their legal duties to their beneficiaries.”

As long-term and diversified investors, pension funds are exposed to a variety of financially material climate-related risks and opportunities. In addition to physical risks such as extreme weather events and long-term climate system changes, pension funds also face transition risks associated with a rapid shift to a low-carbon economy. As these risks continue to escalate, so too do the expected economic costs, which have been projected to potentially reach [\\$360 billion a year by the next decade](#) in the United States alone.

This report assesses and ranks the responses of the world's 100 largest public pension funds to climate change, and its implications for savers. The data collected for this survey is arguably the most comprehensive source currently available and covers a range of dynamics and topics relevant for pension funds from a climate perspective. Furthermore, the underlying methodology is also thematically structured around the Taskforce on Climate-related Financial (TCFD) Disclosures recommendations, thereby also offering an 'industry barometer' on how the TCFD framework is being implemented.

The most striking finding of our analysis reveals that over 60% of pension funds publish little or no information on their climate responses, placing them at risk of breaching their legal duties to their beneficiaries. While a quarter of funds acknowledge their climate responses are aligned with their fiduciary duties, 11%

have published statements clarifying this important connection. Our assessment of formal climate policies finds that only 10% of funds, however, have a formal investment policy that seeks alignment with the goals of the Paris Agreement.

Our regional analysis finds the EMEA region (Europe, Middle-East, and Africa) to outperform Asia-Pacific and the Americas, driven largely by leadership from Netherlands and Sweden and despite average performance from the UK. Strong results from California and New York reveal a pocket of leadership within the United States, despite overall weak performance at the national level. Australia also demonstrates leadership in the Asia-Pacific region, outperforming neighbouring countries.

Our assessment identifies a large gap in the formal climate-risk assessment of portfolios, with nearly 90% of assets collectively managed by the funds (representing US\$10 trillion) yet to undergo assessment. In the minority of cases where this has been undertaken, we find that transition risks (especially stranded assets risk) are more widely assessed than physical risks. However, Only 15% of pension funds have developed a policy on phasing out exposure to coal-dependent assets. A greater proportion of funds, almost 20%, are performing forward-looking climate scenario analysis in their portfolios, as recommended by the TCFD. Carbon

footprinting remains the most widely used climate-metric, undertaken by roughly a third of funds, though generally performed across equity portfolios only.

Regarding climate governance, we find over 60% of funds lack basic board oversight or senior executive accountability for climate-related issues while 70% of funds are yet to identify climate change as a material level at the board level. Further analysis finds only a minority of funds undertake climate-related training for key decision-makers, which is generally ad-hoc and does not include boards and senior-executives. Communicating with beneficiaries on climate issues is also identified as a weak spot, with less than a fifth currently undertaking this.

Our research also identifies room for improvement in the area of managing key stakeholder relationships around climate issues. Over 60% of pension funds are yet to factor climate change into their asset manager relationships at the selection and monitoring stages. Around half of the pension funds assessed engage with their investee companies on climate issues, though these engagements largely focus on improving disclosure instead of action, and often lack an escalation strategy such as filing or voting on climate resolutions or embedding time-bound objectives.

On the topic of low-carbon investment, we find that on average only 1% of portfolios are currently being

allocated to low-carbon solutions. When calculated for AAA-A rated funds, this figure increases to 6%, signalling that it is realistic to increase green investments. Only 24% of funds, however, disclose and quantify their low-carbon investments, with our analysis revealing a fragmented and inconsistent approach to measuring and reporting.

This report also contains a number of supporting recommendations for regulators, members, and pension funds that aim to help lift the overall performance of the global pensions sector on managing climate-related risk.

- We call on regulators to clarify legal duties with respect to integrating climate issues into investment decision-making, install mandatory reporting requirements in line with the TCFD recommendations, and support the development of a harmonized taxonomy for low-carbon investments.
- We call on members and beneficiaries to hold their funds to account on how they both manage and communicate on climate issues.
- We call on the pension funds and their trustees to take immediate steps toward not only improving their climate-related disclosures, but to take meaningful steps toward decarbonising their portfolios and escalating their investments in low-carbon solutions.

PART 1: GLOBAL RANKING, KEY FINDINGS & REGIONAL PERFORMANCE

-  Finding 1: Leaders, Laggards, and most improved
-  Finding 2: Pensions sector houses stronger leaders than the insurance sector, but also more laggards
-  Finding 3: Size doesn't matter when it comes to leading approaches
-  Finding 4: Performance varies significantly across and within geographies

PART 2: GOVERNANCE & COMMUNICATIONS

-  Finding 1: Leaders indicate they have a fiduciary duty to consider climate risk in their investment decisions
-  Finding 2: Pension funds are failing to communicate with members on climate change
-  Finding 3: The majority of pension funds lack basic climate governance
-  Finding 4: Only a quarter of assessed funds provide climate-related training for employees
-  Finding 5: TCFD endorsement and disclosure yet to become mainstream

PART 3: STRATEGY & RISK MANAGEMENT

-  Finding 1: Climate-related risks are largely unidentified and unassessed
-  Finding 2: The vast majority of pension funds are failing to align with the Paris Agreement
-  Finding 3: Around half of global pension funds undertake company engagement on climate change

PART 4: METRICS & TARGETS

-  Finding 1. Only 1% of the assets managed by the world's largest 100 pension funds are invested in low-carbon solutions
-  Finding 2. The vast majority of the world's largest pension funds have no low-carbon asset allocation target
-  Finding 3 – Around one third of pension funds are measuring the carbon footprint of their investments

BACKGROUND

In its latest report, the Asset Owners Disclosure Project (AODP) has ranked the 100 largest public pension funds on their response to climate-related risks and opportunities. The objective of this sector assessment was to rank the 100 largest public pension funds, identify leading practice, compare approaches and evaluate the level of integration of climate risk into investment activities. The underlying analysis was carried out on public disclosures and collected via a dedicated survey.

The survey structure is broadly based on AODP's previous ranking of the 80 largest global insurance companies. As with this survey, it is aligned with the four core recommendations of the Task Force on Climate-related Financial Disclosures (TCFD): Governance, Strategy, Risk Management and Metrics & Targets. Survey questions further build on existing major reporting frameworks, including UN Principles for Responsible Investment.

This document outlines the methodology used for the collection, scoring and analysis of the data. The data was initially presented in 4 separate short reports that were released online between September–November 2018.

SCOPING

The index features the world's 100 largest public pension funds with combined assets under management of over 11 trillion USD. The assessment scope was determined

based on the published list of the largest global asset owners from a survey undertaken by Pensions & Investments/Willis Towers Watson (September 2017). AODP used this survey as a guide to identify the largest pension funds by assets under management (AUM).

The geographic regions of the Americas, Asia Pacific, and EMEA (Europe, Middle East, and Africa) are represented by the number of funds surveyed and cumulative AUM as in table 1.

The survey and assessment covered top-level strategic responses to climate change, the tools introduced to execute climate policy and the governance of this policy on each pension funds proprietary investment portfolios. This approach allows us to assess a portfolio or business-wide approach, rather than a niche investment choice. The full list of questions and the maximum scores available in each question and section can be found at the end of this document.

CONSULTATION

Prior to the 2018 cycle of AODP sector assessments, a number of stakeholders with relevant expertise and experience were consulted to provide feedback into the design of the questions and survey. This included representatives of global NGOs, leading institutional investors, industry experts, and experts on responsible investment reporting frameworks.

REGION	FUNDS SURVEYED	AUM (TRILLION USD)
Americas	51	4.5
EMEA	29	3.4
Asia Pacific	20	3.4
TOTAL	100	11.3

Table 1: Geographic split of 100 largest public pension funds

SURVEY PROCESS

The primary stage of the survey process was sending 'introductory' letters were sent to the Chief Executive Officers of the 100 funds invited to participate in the research process. The survey questions were then sent via email to the nominated respondent or to a relevant contact in the AODP contact database. Over 3 months was allowed for funds to complete the survey and submit their disclosure. Extensions were provided for some funds and feedback on the process was encouraged from participants.

QUESTIONNAIRE AND DATA COLLECTION

For funds who chose not to submit a survey questionnaire response the AODP research team populated a response based on publicly available information. Key sources included 2017 Annual and

Sustainability reports; CDP climate change disclosure and UN PRI transparency reports. In instances where information was not available in English, AODP hired external translators to work alongside our research team to populate the survey. Completed responses were then sent to non-disclosers prior to publication for verification and opportunity to provide further disclosure. In 2018, 30 pension funds participated in the research process totalling to over 5tn USD in AUM, equivalent to around 50% of AUM of all the pension funds surveyed. This represents an improved response rate from 2017.

RATING AND SCORING

The breakdown of question scoring can be seen at the end of this document. Where no information was available (either publically or from the private questionnaire), a score of zero was given for that question. We acknowledge that funds operate different kinds of schemes and in different regulatory environments, and as such the AODP research team tried to reflect these differences in the survey design and scoring of specific questions. We are happy to provide more specific details.

The survey was split into 4 sections that reflects the structure of the TCFD recommendations. As outlined in Table 2, each segment was given a broadly equal weighting.

SECTION	DESCRIPTION	% WEIGHTING
 Governance	Disclose the organisation's governance around climate-related risks and opportunities	20%
 Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's strategy	29%
 Risk Management	Disclose how the organisation assesses and manages climate-related risks	25%
 Metrics & Targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities	26%

Table 2: TCFD core recommendations – survey section weighting

This tables shows how we scored each section of the survey, with each recommendation broadly receiving similar weighting in the scoring process.

RATING BANDS	CATEGORY	DESCRIPTION
AAA-A	Leaders	Demonstrates leading performance in most capabilities
BBB-B	Challengers	Progressing to a wider variety of capabilities
CCC-C	Learners	Starting to take action
D	Bystanders	Limited disclosure on financial implications of climate-related risk
X	Laggards	Data shows no evidence of considering financial implications of climate change

Table 3: Rating bands with performance descriptors

After each participant was allocated an absolute score, rating bands were calculated relative to peers based on the number of standard deviations each fund sat from the mean score. Each participant was assigned a rating applicable to their aggregated score, from AAA through to D grade, with an additional X category for those with zero score.

As a relative measure, year-on-year changes in ratings might be caused by several factors and would not necessarily be an indication of a 'weakened' approach. Similarly, ratings in the AODP insurance sector assessment are not necessarily comparable to the pensions sector assessment, as rating bands are assigned based on their score relative to sector peers, not all asset owners.

While those in the leadership category show promising policy and practices when responding to climate-related risk relative to their industry peers, this is not necessarily indicative of best practices which continues to develop. AODP recent Winning Climate Strategies research provides a thorough qualitative summary of leading practice, barriers to leading practice and steps asset owners might choose to follow.

-
- ▶ The report assesses the 100 largest global public pension funds on their approach and response to climate change and its implications;
 - ▶ These pension funds were selected based on the size of assets under management (AUM);
 - ▶ Pension funds were invited to provide information through a questionnaire;
 - ▶ Pension funds which declined or did not respond had their questionnaire populated using public information. We then provided an opportunity for these funds to feedback and amend survey data;
 - ▶ The questionnaire was comprised of 27 questions covering proprietary investment activities;
 - ▶ The questions are closely aligned with the Task Force on Climate-related Financial Disclosures (TCFD) core recommendations and includes sector-specific questions;
 - ▶ Pension funds were rated from AAA – D based on their questionnaire score. Where no information was available (either publicly or privately) funds given an X rating;
 - ▶ Rating bands were calculated based on the distribution of scores relative to sector peers in 2018.

1 GLOBAL RANKING, KEY FINDINGS & REGIONAL PERFORMANCE



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The report uses new data to rank the world's 100 largest public pension funds on their approach to climate-related risks and opportunities.

This section explores the performance of pension funds at an individual, national and regional level, and considers the influence of climate policy debate and action on geographic performance.


**FINDING 1: LEADERS, LAGGARDS,
AND MOST IMPROVED**
1.4. Over 60% of funds have little or no approach to climate change (D or X rated).

1.1. AP4, Fonds de Réserve pour les Retraites (FRR), New York State Common Retirement Fund (NYSCRF), and ABP are all in the leadership group, rated either AAA or AA.

1.2. These funds all operate within different national jurisdictions and have different governance structures.

1.3. Keval, Quebec Pension Plan, ATP, PFA Pension, and Ontario Teachers' Pension Plan showed the most significant progress relative to the 2017 ranking.

FUND	RATING	RANK	COUNTRY	REGION
Fjärde AP-Fonden (AP4)	AAA	1	Sweden	EMEA
Fonds de Réserve pour les Retraites (FRR)	AAA	2	France	EMEA
New York State Common Retirement Fund (NYSCRF)	AA	3	U.S.	Americas
ABP	AA	4	Netherlands	EMEA
Varma Mutual Pension Insurance Company	A	5	Finland	EMEA
Government Pension Fund Global (Norges Bank Investment Management)	A	6	Norway	EMEA
United Nations Joint Staff Pension Fund (UNJSPF)	A	7	U.S.	Americas
Tredje AP-Fonden (AP3)	A	8	Sweden	EMEA
Ilmarinen Mutual Pension Insurance Company	A	9	Finland	EMEA
Pensioenfondszorg en Welzijn (PFZW)	BBB	10	Netherlands	EMEA
Bedrijfstakpensioenfondszorg voor de Bouwnijverheid (BPF Bouw)	BBB	11	Netherlands	EMEA
California Public Employees Retirement System (CalPERS)	BBB	12	U.S.	Americas
First State Super	BBB	13	Australia	Asia Pacific
Sjunde AP-Fonden (AP7)	BBB	14	Sweden	EMEA
Andra AP-Fonden (AP2)	BBB	15	Sweden	EMEA
Ontario Teachers Pension Plan	BBB	16	Canada	Americas
ATP - Arbejdsmarkedets Tillaegspension	BB	17	Denmark	EMEA
AustralianSuper	BB	18	Australia	Asia Pacific
PFA Pension	BB	19	Denmark	EMEA
Keval	BB	20	Finland	EMEA
California State Teachers Retirement System (CalSTRS)	BB	21	U.S.	Americas
Public Service Pension Plan	BB	22	Canada	Americas

TABLE CONTINUES →

FUND	RATING	RANK	COUNTRY	REGION
Första AP-Fonden (AP1)	BB	23	Sweden	EMEA
Quebec Government and Public Employees Retirement Plan (RREGOP)	B	24	Canada	Americas
Quebec Pension Plan	B	24	Canada	Americas
Pensioenfond van de Metalektro (PME)	B	26	Netherlands	EMEA
Pensioenfond Metaal & Techniek (PMT)	B	27	Netherlands	EMEA
Universities Superannuation Scheme	CCC	28	U.K.	EMEA
PensionDanmark	CCC	29	Denmark	EMEA
University of California Retirement System	CCC	30	U.S.	Americas
UniSuper	CCC	31	Australia	Asia Pacific
Canada Pension Plan Investment Board	CCC	32	Canada	Americas
AMF Pension	CC	33	Sweden	EMEA
Alecta	CC	34	Sweden	EMEA
New York City Employees Retirement System (NYCERS)	CC	34	U.S.	Americas
Swiss Federal Pension Fund PUBLICA	C	36	Switzerland	EMEA
Government Pension Investment Fund	C	37	Japan	Asia Pacific
Railways Pension Scheme	D	38	U.K.	EMEA
Los Angeles County Employees Retirement Association (LACERA)	D	39	U.S.	Americas
Maryland State Retirement and Pension System	D	40	U.S.	Americas
Future Fund	D	41	Australia	Asia Pacific
Minnesota State Board of Investment	D	42	U.S.	Americas
B.C. Municipal Pension Plan	D	43	Canada	Americas
Washington State Investment Board	D	43	U.S.	Americas
Sampension	D	45	Denmark	EMEA
Pension Fund Association for Local Government Officials	D	46	Japan	Asia Pacific
Healthcare of Ontario Pension Plan	D	47	Canada	Americas
North Carolina Retirement System	D	48	U.S.	Americas
Florida Retirement System	D	49	U.S.	Americas
Teacher Retirement System of Texas	D	49	U.S.	Americas
National Pension Service	D	51	South Korea	Asia Pacific
Colorado Public Employees Retirement Association	D	52	U.S.	Americas
Employees Provident Fund (KWSP)	D	52	Malaysia	Asia Pacific
Federation of National Public Service Personnel Mutual Aid Associations (KKR)	D	52	Japan	Asia Pacific
Ontario Municipal Employees Retirement System	D	52	Canada	Americas
Organization for Workers Retirement Allowance Mutual Aid	D	52	Japan	Asia Pacific
Retail Employees Superannuation Trust (REST)	D	52	Australia	Asia Pacific
Japan Mutual Aid Association of Public School Teachers	D	58	Japan	Asia Pacific
Government Employees Pension Fund (GEPF)	D	59	South Africa	EMEA
Massachusetts Pension Reserves Investment Trust Fund	D	60	U.S.	Americas
New York State Teachers Retirement System	D	60	U.S.	Americas
Bayerische Versorgungskammer	D	62	Germany	EMEA

FUND	RATING	RANK	COUNTRY	REGION
State of Wisconsin Investment Board	D	62	U.S.	Americas
Electricity Supply Pension Scheme	D	64	U.K.	EMEA
AFP Cuprum	D	64	Chile	Americas
Ohio Public Employees Retirement System	D	64	U.S.	Americas
QSuper	D	64	Australia	Asia Pacific
Previ	D	68	Brazil	Americas
Pension Fund Association	D	69	Japan	Asia Pacific
Afore XXI Banorte	X	70	Mexico	Americas
AFP Capital	X	70	Chile	Americas
AFP Habitat	X	70	Chile	Americas
AFP ProVida	X	70	Chile	Americas
Arizona State Retirement System	X	70	U.S.	Americas
Bureau of Labor Funds	X	70	Taiwan	Asia Pacific
Employees Provident Fund Organisation	X	70	India	Asia Pacific
Illinois Municipal Retirement Fund	X	70	U.S.	Americas
Illinois Teachers Retirement System	X	70	U.S.	Americas
Indiana Public Retirement System (INPRS)	X	70	U.S.	Americas
Michigan Retirement	X	70	U.S.	Americas
National Council for Social Security Fund	X	70	China	Asia Pacific
National Federation Of Mutual Aid Associations For Municipal Personnel	X	70	Japan	Asia Pacific
National Pension Fund Association	X	70	Japan	Asia Pacific
National Wealth Fund	X	70	Russia	EMEA
Oregon Public Employees Retirement System	X	70	U.S.	Americas
Pennsylvania Public Schools Employees Retirement System	X	70	U.S.	Americas
Promotion and Mutual Aid Corporation for Private Schools of Japan	X	70	Japan	Asia Pacific
Public Employees' Retirement System of Nevada	X	70	U.S.	Americas
Public Institution for Social Security	X	70	Kuwait	EMEA
Public School and Education Employee Retirement Systems of Missouri	X	70	U.S.	Americas
South Carolina Public Employee Benefit Authority Retirement Benefits	X	70	U.S.	Americas
State of New Jersey Division of Pensions and Benefits	X	70	U.S.	Americas
State Teachers Retirement System of Ohio	X	70	U.S.	Americas
Teachers Retirement System of Georgia	X	70	U.S.	Americas
Tennessee Consolidated Retirement System	X	70	U.S.	Americas
The Retirement Systems of Alabama	X	70	U.S.	Americas
Thrift Savings Plan	X	70	U.S.	Americas
Utah Retirement Systems	X	70	U.S.	Americas
Virginia Retirement System	X	70	U.S.	Americas
Western Conference of Teamsters Pension Plan	X	70	U.S.	Americas

Table 4: AODP rating table 2018 – Pension Funds

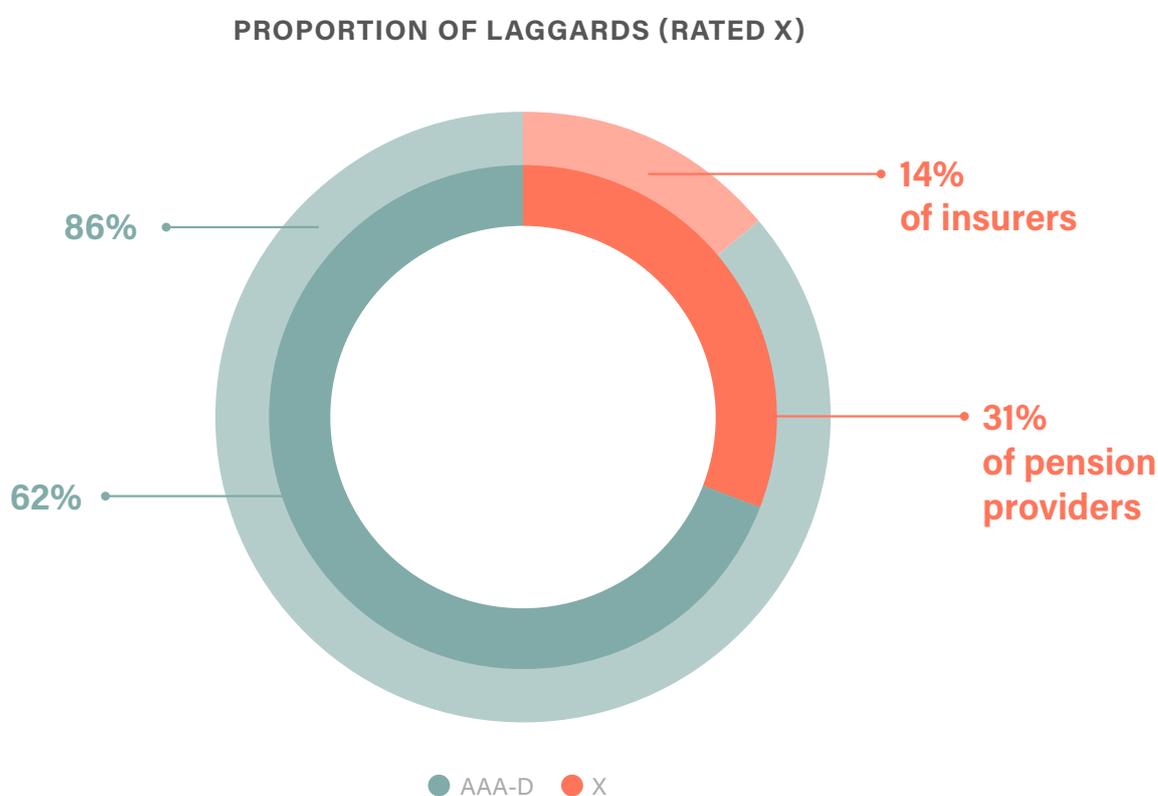


Figure 1: Proportion of laggards (rated X) in AODP pensions sector assessment against insurance sector assessment. Outer ring shows insurance sector performance, inner ring shows pensions sector performance.



FINDING 2: PENSIONS SECTOR HOUSES STRONGER LEADERS THAN THE INSURANCE SECTOR, BUT ALSO MORE LAGGARDS

2.1. Pensions sector has a higher proportion of funds that show climate leadership and innovation compared to insurance sector.

In May 2018, AODP published a survey of the world's 80 largest insurers' responses to climate change and its implications. The structure, wording, and focus of the questions were similar to those in the pensions sector assessment, allowing comparison between the findings from the two surveys.

When compared to the largest insurers, the 100 largest pension funds were found to house stronger

examples of climate leadership. Over 1 in 4 pension funds received a AAA-B rating compared to only 1 in 6 insurers. A qualitative assessment of the leading pension funds against leading insurers also revealed that leading pension funds generally demonstrate more robust and innovative approaches in their climate responses. This is reflected in AODP's recent Winning Climate Strategies report, which found the strongest and most innovative climate responses emerging from the pension funds sector.

2.2. However, the 100 largest global pension funds also house a higher proportion of X rated funds (which scored zero) relative to insurers.

The pensions sector is showing a greater number of laggards than the insurance sector, with around 1 in 3 pension funds assessed receiving an X rating, indicating no public information was available during

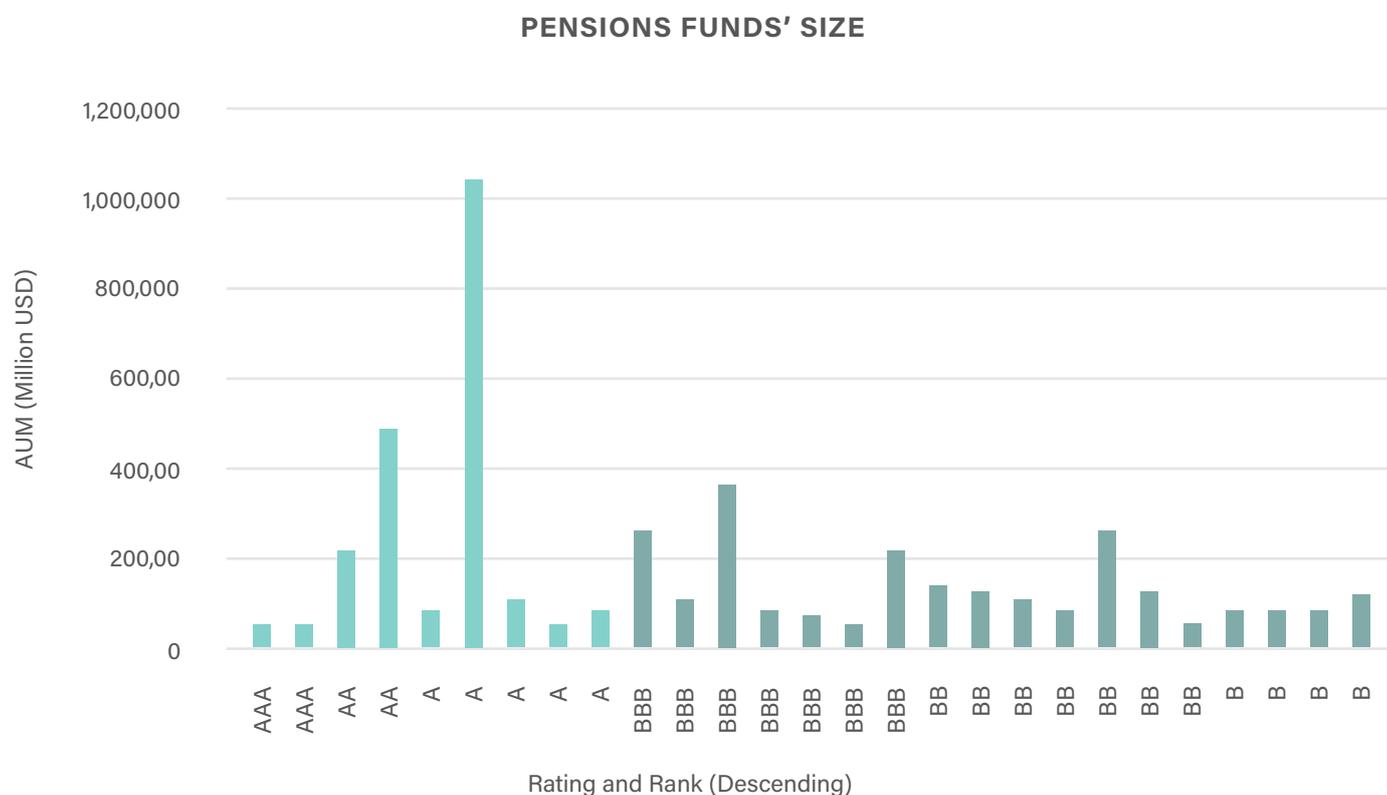


Figure 2: Pension funds' size relative to rating.

The columns on this chart show the AUM of each fund rated AAA to B, with the highest to lowest from left to right. As can be seen, there is little correlation between AUM and rank achieved. This conclusion is supported by a correlation coefficient of <0.2 between AUM and score across the whole data set, indicating no significant correlation.

the assessment period. This ratio is significantly higher than the AODP insurance sector assessment, where 1 in 7 funds received an X rating.

 **FINDING 3: SIZE DOESN'T MATTER WHEN IT COMES TO LEADING APPROACHES**

3.1. There is no correlation between the size of a fund and achieving a leading rating (AAA - B).

As the figure below illustrates, the highest rated pension funds in this assessment vary considerably by proprietary assets under management. This highlights that climate leadership is achievable for pension funds regardless of size, capabilities and resources. This finding is also reflected in our recent AODP leading

practices report Winning Climate Strategies, which noted that 22 of the world's leading asset owners vary remarkably by size, location and type (including pension funds, sovereign wealth funds, insurers and faith-based investors).



Figure 3: 100 largest pension funds geographic split across regions



FINDING 4: PERFORMANCE VARIES SIGNIFICANTLY ACROSS AND WITHIN GEOGRAPHIES

The map below shows the geographic coverage of the world’s 100 largest public pension funds. Around half of the 100 pension funds included within the survey are from the Americas region, followed by 29% from EMEA (Europe, Middle-East, and Africa) and 20% from Asia Pacific. The 100 funds have combined assets under management (AUM) of 11.3 trillion USD.

4.1. EMEA is the clear regional leader.

As illustrated in the figure below, EMEA (Europe, Middle East, and Africa) is the clear regional leader, with the largest number of leaders (rated AAA – B) and the fewest number of laggards (rated X). The Americas represents the next largest number of leaders, however the region also houses the most laggards. Asia Pacific represents the highest proportion of D rated laggards. This is a similar regional pattern to the AODP insurance sector ranking.

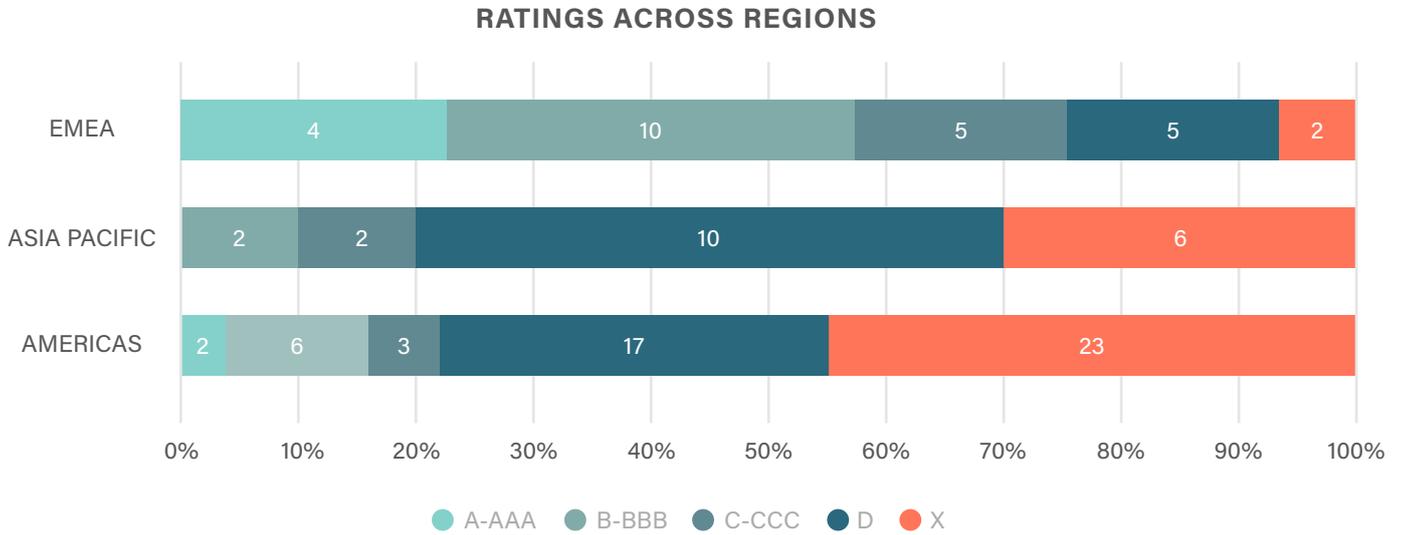


Figure 4: Ratings across regions. Size of bar shows proportion (%) of funds achieving the rating across the region. Numbers on bars represent the actual number of funds who achieved that rating in the region.

4.2. Sweden and the Netherlands are driving leadership from Europe.

A detailed analysis of the ratings shows that Northern European countries are driving leadership across Europe. This is in contrast to the relatively weak performance of the UK’s largest pension funds. As with the AODP insurance sector survey, Europe dominates the leaderboard with around 80% of AAA – A rated funds and over 50% of BBB – B rated funds based in Europe. The overall positive performance of European pension funds reflects growing efforts to reform regional regulation on climate risk, as well as mounting pressure from civil society, fostering greater

awareness on the materiality of climate-related risks and opportunities for investors. For instance, the European Commission’s action plan on sustainable finance is driving progress on the development of a sustainable investment taxonomy and green finance product labels, as well as clarifying investors’ duties regarding sustainability.

Driving the strong regional performance of Europe are the Netherlands and Sweden, each housing five pension funds with a AAA-B rating, and reflecting the overall positive performance of the Nordic countries in this year’s assessment.



Figure 5: Number of funds rated AAA-B by region and country (for EMEA)



Figure 6: Average percentage score of UK relative to rest of EMEA

4.3. The largest pension funds in the UK largely lag behind European peers of a similar size.

Our research also shows that the UK's largest pension funds are lagging behind their regional peers, as highlighted in Figure 6 below. This is disappointing in the context of smaller UK funds (which fall outside of the 100 largest funds) such as The Church Commissioners for England and Environment Agency Pension Fund, showing climate leadership (as featured in AODP's recent Winning Climate Strategies Report). It is also disappointing when compared to the leadership shown by Aviva and Legal & General in AODP's 2018 global insurance ranking.

4.4. New York and California perform well, despite weak performance across the majority of US pension funds.

Geographic differences also exist within countries. In the US, our data reveals a clear difference in approaches from pension funds in New York and California, which both house some of the highest rated pension funds, compared to the overall weak performance from other parts of the US. The table below shows the extent to which California and New York outperform the rest of the US.

Despite a lack of commitment from the US government on climate change, local political leadership from New York and California appears to have supported an environment where public pension funds are willing and able to take strong positions on these issues. California, for example, has passed a series of progressive climate regulations covering cap-and-trade programs and targets for clean energy, pollution and greenhouse gases, and their Governor Jerry Brown hosted the Global Climate Action Summit in September 2018. New York is also pursuing a range of ambitious climate goals covering clean energy growth and reducing greenhouse gas emissions, with their Governor, Andrew Cuomo, demonstrating clear public support on climate issues.

US STATE/ REGION	FUNDS RATED AAA-C	FUNDS RATED D – X
California	3	0
New York	3	1
Rest of US	0	30

Figure 7: Intra US regional differences

→ “Despite a lack of commitment from the US government on climate change, local political leadership from New York and California appears to have supported an environment where public pension funds are willing and able to take strong positions on these issues.”

4.5. Australia outperforms Asia in Asia Pacific region.

Within the Asia Pacific region, Australian pension funds showed stronger performance than their Asian peers. In Australia, 1 in 3 funds were rated BBB – B, while no other countries from Asia Pacific had funds that achieved higher than a C rating. Similarly, Australia housed no X rated funds whereas in the rest of Asia Pacific, over 40% of funds are X rated, as illustrated in Figure 8 below.

In Japan, while the AODP insurance survey recorded a notable improvement in the rating of Japanese insurers compared to 2017, no such trend was identified for the pensions sector. GPIF was the highest rated Japanese fund (receiving a C rating), while 90% of Japanese funds showed laggard performance receiving either a D or X rating, and showing no year on year improvement.

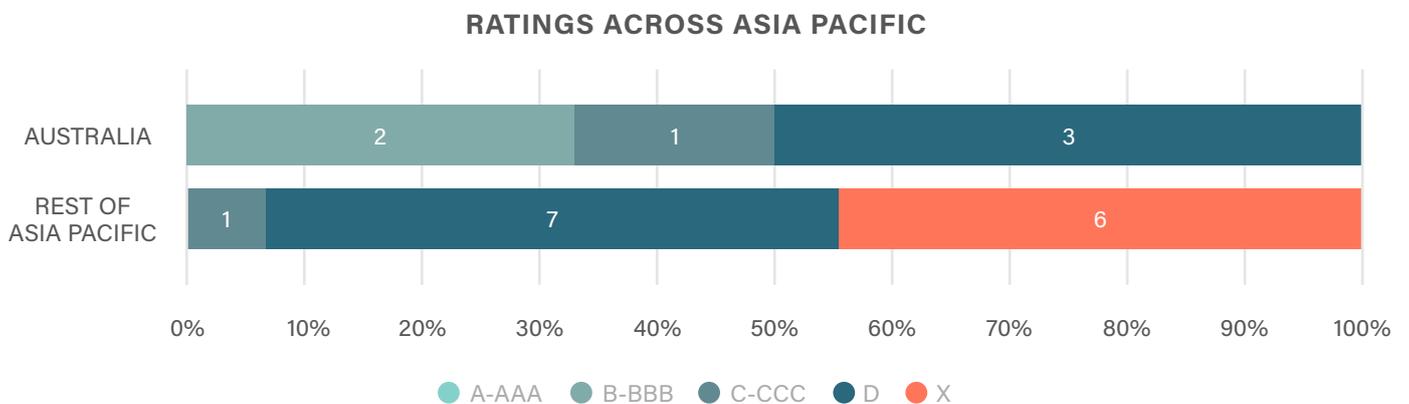


Figure 8: Ratings across Australia and rest of Asia Pacific. Size of bar shows proportion (%) of funds achieving the rating across the region. Numbers on bars represent the actual number of funds who achieved that rating in the region.

It is our view that large global pension funds have a responsibility to manage their funds in the long-term interests of their members and beneficiaries, which includes building appropriate responses to climate change as a material investment risk. Our analysis shows that the vast majority of the world's 100 largest pension funds are yet to have developed competent responses to climate change and its implications. This potentially leaves millions of the world's savers facing a 'climate lottery' of whether their fund's response is 'fit for purpose'.

FOR REGULATORS

► **Reduce the climate lottery by making TCFD reporting mandatory**

We believe that introduction of mandatory reporting in line with the TCFD recommendations will help reduce the climate risk lottery across the world's largest pension funds. Regional pension supervisors need a clear mandate to drive up standards among regulated funds, with respect to climate-related risk management. It is our view that mandatory TCFD-aligned reporting requirements will help drive the development of stronger climate responses from the largest pension funds. In France, for example, Article 173 of the French Energy Transition Law requires the disclosure of climate-related risks by asset owners and asset managers. We believe it has helped influence the relatively strong performance of French insurers and pension funds in our recent survey of investors.

FOR MEMBERS/BENEFICIARIES

► **Mobilise fellow savers and beneficiaries**

This survey has identified that over 60% of the world's largest pension funds have little or no approach to climate change. Pension fund members and beneficiaries have the most to lose from the inaction

of their schemes. Civil society organisations and pension savers themselves should mobilise and encourage better climate responses from their pension funds. They should demand an improved quality of communication around climate issues.

FOR PENSION FUNDS

► **Align climate strategy with the long-term interests of your members**

As has been highlighted by the TCFD recommendations, national regulatory bodies, and leading asset owners, the materiality of climate-related financial risks for all investors is indisputable. Pension funds, whose duty it is to invest in the long-term interests of their members, should be investing in line with a low carbon transition, and with internationally agreed climate goals. Despite this, the majority of funds surveyed have little or no response to climate change and its implications. We therefore urge pension funds, regardless of their size or location, to take the crucial next steps in taking action on climate change. AODP's Winning Climate Strategies guide for asset owners includes ten key steps recommended by leading asset owners for improving their climate response, regardless of where they are on their climate strategy journey.

2 GOVERNANCE & COMMUNICATIONS



This section presents five key findings relating to how the world's 100 largest pension funds have responded to climate change in their governance structures and communication with savers. These findings cover the following areas: fiduciary duty, communication with members, board oversight and executive accountability, climate-related training, as well as TCFD support and reporting.

- “A failure to act without urgency on climate change is a failure on your fiduciary duty.”
– Al Gore, PRI in Person, San Francisco (2018)



FINDING 1: LEADERS INDICATE THEY HAVE A FIDUCIARY DUTY TO CONSIDER CLIMATE RISK IN THEIR INVESTMENT DECISIONS

1.1. Leading pension funds are publishing statements on fiduciary duty and climate risk

Our data shows that around a quarter of the largest pension funds indicate that they have a fiduciary

duty to consider climate risk in their investment decisions, with the majority of those who recognise their fiduciary duty to climate-related risk receiving a rating of B or above. It is positive to note that 11 of the largest leading pension funds have released public statements on fiduciary duty and climate risk. This trend is reflected in our recent Winning Climate Strategies report, which found that leading asset owners recognise that the consideration of climate risk is part of their fiduciary duty.

FIDUCIARY DUTY

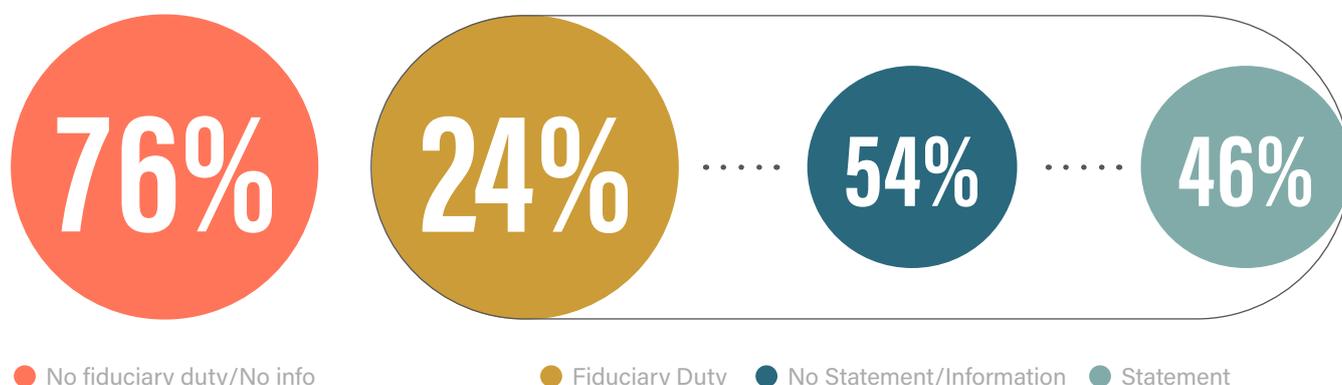


Figure 1: Climate as a material issue and link to fiduciary duty*

* Figure shows the percentage of funds who indicated they approach climate from a fiduciary duty perspective and the percentage of those who make a public statement to that effect.

Pension fund trustees who recognise they have a fiduciary duty to consider climate risk in their investment decisions and asset stewardship are well placed to meet an ever-evolving policy and regulatory environment. This is particularly relevant as regulation is developing to clarify investors' fiduciary duties around climate risk. For example, the European Commission is in the process of clarifying investors' duties with respect to considering financially material sustainability issues. In the UK, the Department for

Work and Pensions (DWP) has recently announced it will require pension fund trustees to disclose their investment approaches to ESG and climate-related risks.

FUNDS ACKNOWLEDGING FIDUCIARY DUTY

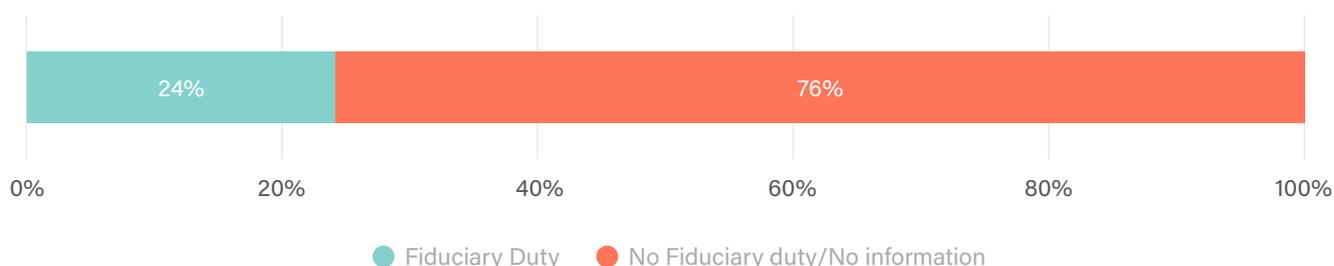


Figure 2: Proportion of funds indicating they have a fiduciary duty* to consider climate risk.
 * AODP acknowledges that the term 'fiduciary duty' is not used in some jurisdictions (such as in Sweden), and factors into this analysis any indication from funds that climate issues are considered in the long-term best interests of their ultimate beneficiaries.

CLIMATE AS A MATERIAL ISSUE

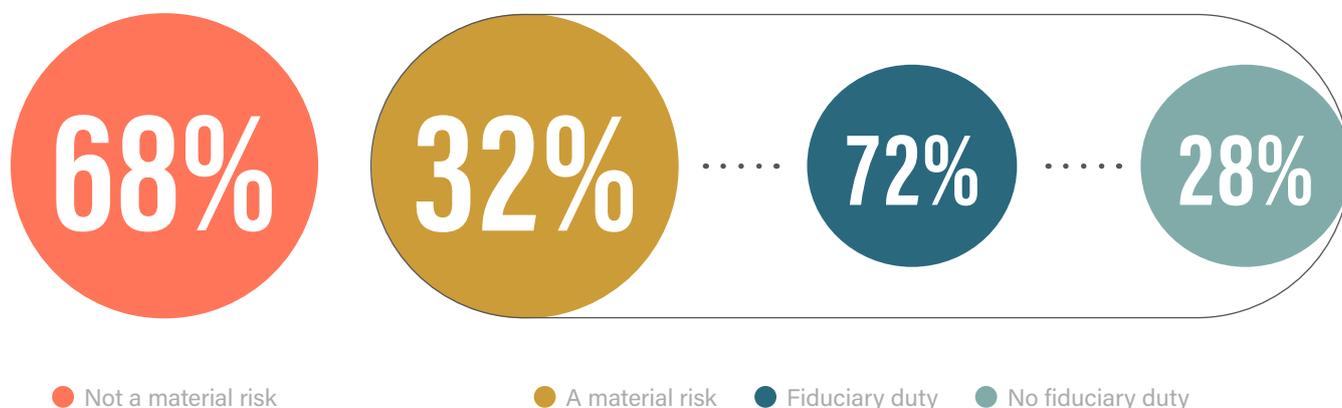


Figure 3: Climate as a material issue and link to fiduciary duty*.
 * Figure shows the percentage of funds recognising climate change as material and shows the percentage who acknowledge climate change within their fiduciary duty.

1.2. The majority (68%) of funds do not recognise climate change and its implications as a material risk

Despite the Paris Agreement, the emergence of global consensus around the TCFD recommendations, and rising climate volatility, it is surprising to find that the majority of the world's largest pension funds do not recognise climate change as a material risk.

1.3. A quarter of the funds that acknowledge the materiality of climate change are yet to make the link to fiduciary duty

28% of the funds that acknowledge climate change as a material issue have not yet linked climate-related risks and opportunities to their fiduciary duty. For those funds who do not recognise climate change as material

risk, further regulation and legal clarification around fiduciary duty and ESG issues may be required.



FINDING 2: PENSION FUNDS ARE FAILING TO COMMUNICATE WITH MEMBERS ON CLIMATE CHANGE

2.1. Less than one-fifth of funds communicate with members on climate change

Our data shows that only 18% of the largest pension funds communicate directly with their members on climate change. Failing to communicate with members around climate issues has already resulted in incidences of litigation for pension funds, as evidenced by REST, an Australian fund, currently being taken to court by a member over alleged inadequate disclosure around climate change.

MEMBER COMMUNICATION ON CLIMATE

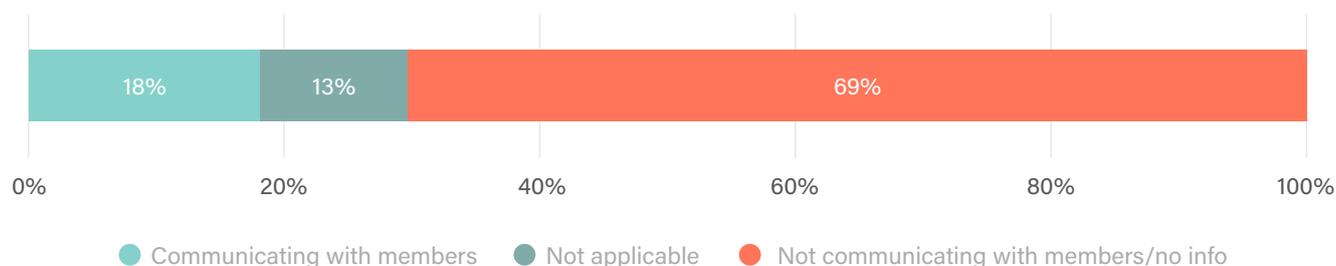


Figure 4: Communication with members on climate issues

Our *Winning Climate Strategies* report revealed that the most common approaches used to communicate with members on climate-related issues include newsletters and online content (including social media and webinars). Even among leaders, few have taken the next step towards building a meaningful two-way dialogue with their members via innovative approaches such as member delegate programmes or climate-focused events.

2.2. Where applicable, just over 10% of funds offer climate-related investment options to members

Where members are able to self-select investments (usually defined contribution (DC)/401K schemes), just over 10% of funds offer savers an investment option that is climate aware in its approach (sustainability, ESG, SDG, low-carbon etc).



FINDING 3: THE MAJORITY OF PENSION FUNDS LACK BASIC CLIMATE GOVERNANCE

strongly correlated with robust climate performance across all TCFD areas: Strategy, Risk Management, and Metrics & Targets.

3.1. The majority of pension funds lack basic climate governance

As reflected in figure 5, the majority of the largest pension funds show no indication of considering climate change at the non-executive board level. Only a third of non-executive boards discuss their fund's strategy on climate change.

A high score on governance of climate change showed strong positive correlation (0.75 correlation coefficient) with overall percentage score. This illustrates that robust governance of climate issues is absolutely central to good management of climate-related risks and opportunities. This finding is supported by AODP's Winning Climate Strategies.

3.2. Governance oversight and accountability are correlated with good overall performance

Our analysis shows non-executive board-level oversight and senior executive accountability are

A similar picture can be seen in figure 6 at the executive level, with only a quarter of funds having a specific senior executive (C-level) accountable.

NON-EXECUTIVE OVERSIGHT

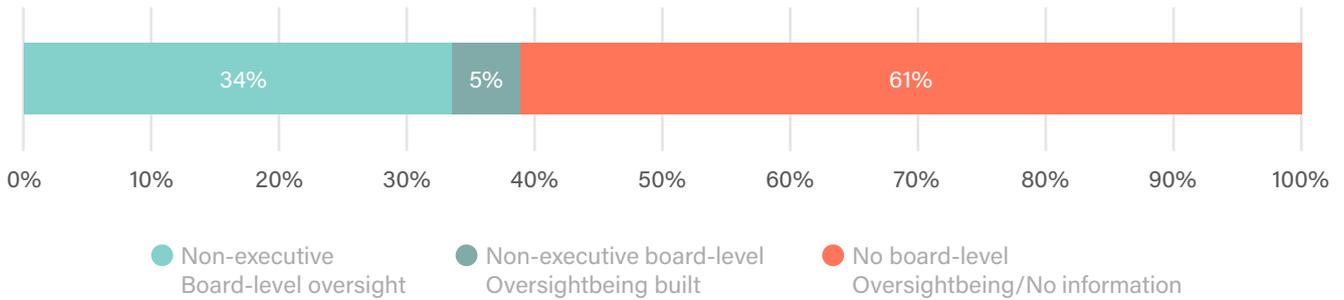


Figure 5: Non-executive board oversight of climate issues

EXECUTIVE ACCOUNTABILITY

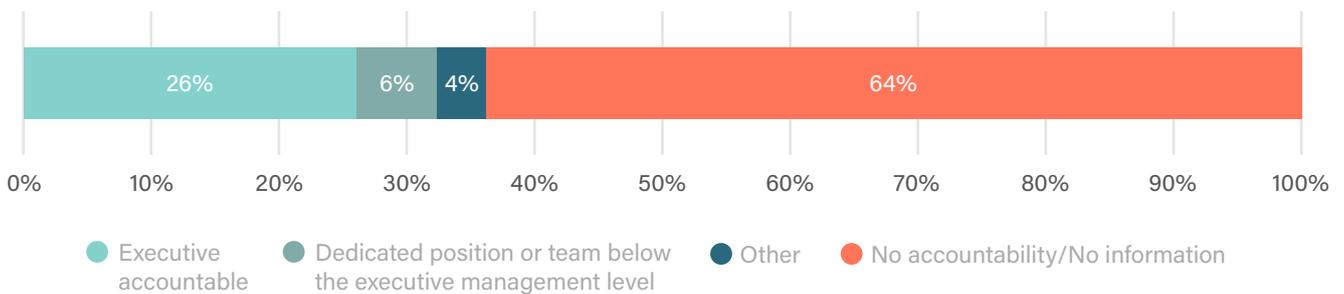


Figure 6: Executive accountability on climate issues



FINDING 4: ONLY A QUARTER OF ASSESSED FUNDS PROVIDE CLIMATE-RELATED TRAINING FOR EMPLOYEES

4.1. The majority of climate training is ad-hoc

Just 10% of the world's largest pension funds have disclosed that they provide structured climate specific training for their employees. Other funds (just under 15%) provide only ad-hoc training, or climate training combined with ESG issues for employees.

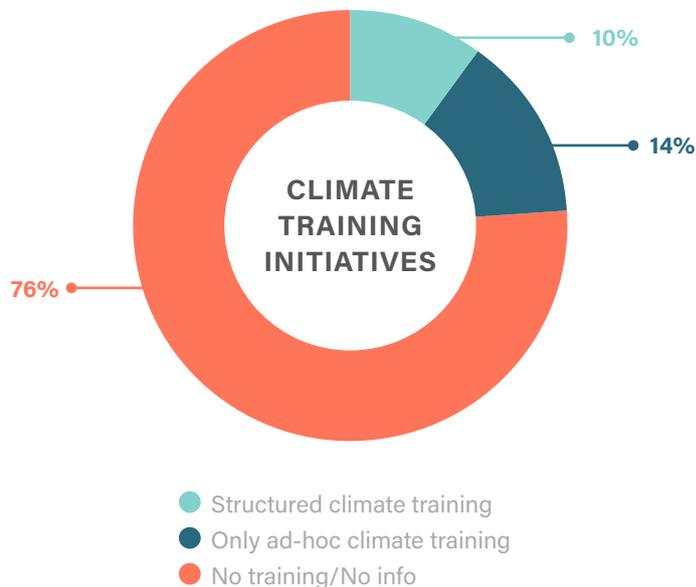


Figure 7 (RIGHT): Overview of climate training initiatives at company and non-executive board level

4.2. Only 5% of non-executive boards receive structured training on climate issues

Of the 10% of funds who provide structured climate training, only half provide it for non-executive board members. A small number of pension funds undertake climate-specific training targeted below the board or executive level, leaving out key decision-makers.

Our *Winning Climate Strategies* report reveals how asset owners with advanced climate governance programs are undertaking structured climate-learning programmes targeted at board trustees and executive management. Examples include sharing experience with peers and utilising external experts. These leading approaches ensure structured training is undertaken at the board and senior executive levels.

BREAKDOWN OF CLIMATE TRAINING

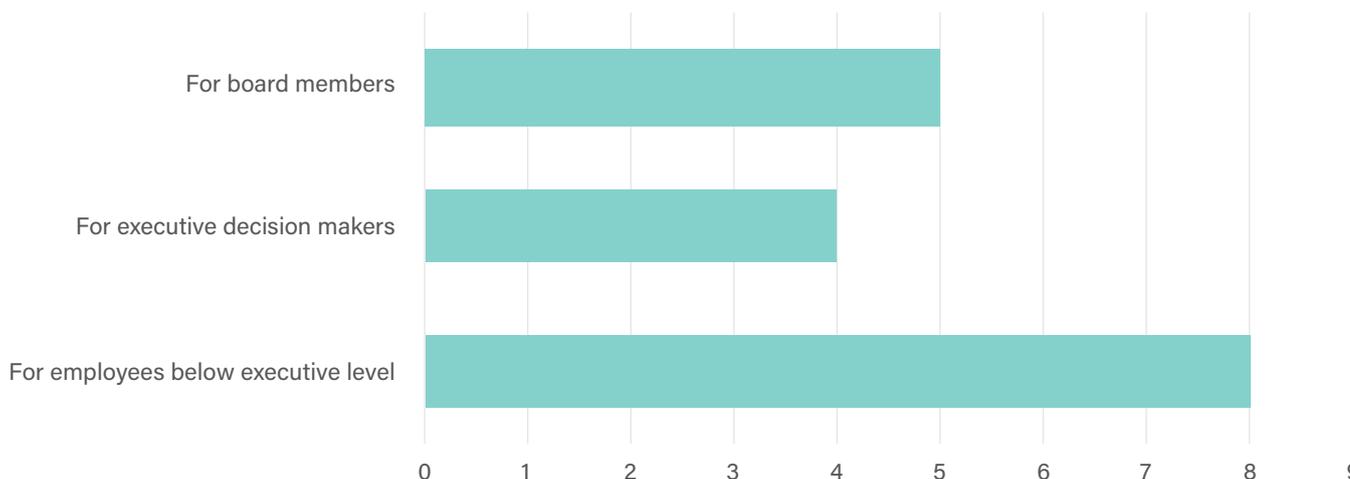


Figure 8: Breakdown of structured climate-training



FINDING 5: TCFD ENDORSEMENT AND DISCLOSURE YET TO BECOME MAINSTREAM

5.1. Less than 20% of funds undertake or intend to undertake TCFD-aligned reporting

Our data shows that less than 20% of funds are already reporting or intending to report in line with the TCFD recommendations. These funds are well prepared for possible regulatory changes requiring mandatory disclosure of climate-related risks and opportunities.

Our Winning Climate Strategies report reveals how some asset owners are already integrating TCFD-aligned reporting into their public disclosures, either as stand-alone reports or sections of pre-existing public reports.

5.2. There is limited public support among pension funds for the TCFD recommendations. Where public support has been forthcoming, these approaches are starting to be incorporated into corporate engagement.

Our research shows that only a quarter of the world's largest pension funds have expressed public support for the implementation of the TCFD recommendations by companies or investors.

The majority of these have also incorporated the TCFD framework into company engagement practices by encouraging TCFD-aligned reporting. The findings suggest that the TCFD disclosure framework is becoming recognised as best practice for engagement with corporations by investors seeking improved disclosure.

TCFD-ALIGNED REPORTING

12%

EXPLORING POSSIBILITY OF TCFD REPORTING

.....

17%

ALREADY REPORTING OR INTEND TO REPORT IN LINE WITH TCFD RECS

.....

71%

NOT REPORTING OR NO INFORMATION

Figure 9: Funds reporting or intending to report in line with the TCFD recommendations

PUBLIC SUPPORT OF TCFD

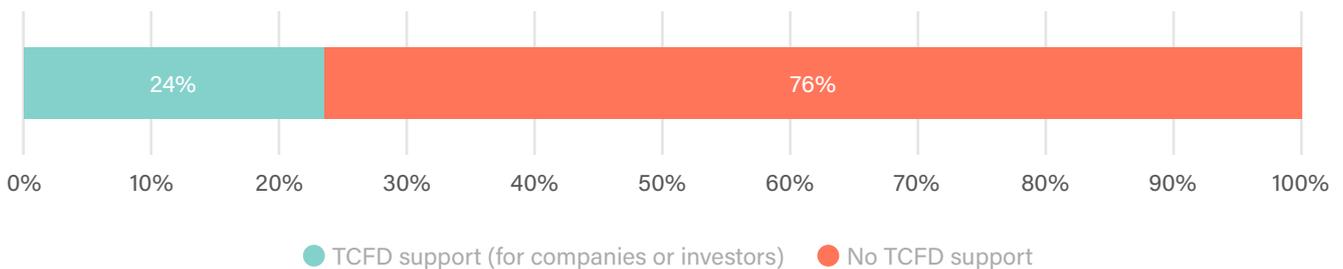


Figure 10: Public support of TCFD by pension funds



Industry perspective on challenges in TCFD implementation

AODP's 2018 pension fund survey included a question asking for feedback and challenges regarding the implementation of the TCFD recommendations. We briefly discuss some key themes identified in this report. These reflect some of the common barriers identified in AODP's recent Winning Climate Strategies report.

1. Scenario analysis

The most commonly identified challenge among respondents was scenario analysis. Respondents commented on lack of clarity and guidance as to how investors are expected to perform scenario analysis and incorporate the findings in investment strategy. We explore the pension funds' industry response to scenario analysis in Part III.

2. Lack of data

Respondents commented that there was a lack of reliable data to improve investment decisions. Our Winning Climate Strategies report noted that while climate data is far from perfect, it can still be used in a variety of innovative and constructive ways.

It is our view that large global pension funds have a fiduciary duty to manage their funds in the long-term interests of their members and beneficiaries, which includes building appropriate responses to climate change as a material investment risk. Our research shows that the majority of the world's largest 100 pension funds are yet to acknowledge climate change as a material issue, have built a basic climate governance framework, communicate with their members on climate-related issues, or have published TCFD-aligned reporting.

FOR REGULATORS

► **Introduce mandatory climate disclosure and provide guidance on fiduciary duty and climate-related risk**

The data collated in this survey (Part I and II) highlights the need to improve the quality of reporting on material climate-related issues among pension funds. In response to this issue, we believe regulators should be introducing mandatory reporting requirements in line with TCFD recommendations.

This report indicates that there is a significant amount of uncertainty toward trustees' fiduciary responsibility in relation to climate change and its implications. Regulators can help pension fund trustees by providing clarification on investors' fiduciary duties around managing material ESG risks.

FOR MEMBERS/BENEFICIARIES

► **Encourage funds to clearly communicate climate-related risks and opportunities**

The findings have revealed a clear lack of member and saver communication around climate issues. Members and savers are

encouraged to engage directly with their pension providers to improve the quality of climate-related reporting. Failure to do so may constitute a breach of legal duties on the part of providers.



FOR PENSION FUNDS & TRUSTEES

► **Ensure climate governance is fit for purpose**

Robust governance, employee and executive educational programs, and clearly structured reporting are central to ensuring climate-related risks and opportunities are adequately understood, managed, and clearly communicated to savers and external stakeholders. Pension funds without adequate climate governance structures are encouraged to refer to AODP's Winning Climate Strategies report, which provides building blocks and best practice examples from leading asset owners in this area.

3 STRATEGY & RISK MANAGEMENT



This section presents three key findings relating to how the world's 100 largest pension funds have responded to climate change in their strategy and risk management practices. These findings cover the following areas: identification of risks and opportunities, scenario analysis, Paris-aligned investment strategies, coal policies, relationships with asset managers, and company engagement.



FINDING 1. CLIMATE-RELATED RISKS ARE LARGELY UNIDENTIFIED AND UNASSESSED

1.1. 87% of the assets managed by the world’s 100 largest pension funds have not been assessed for systematic risks associated with the low-carbon transition

Our data reveals that 87% of the assets invested by the world’s largest 100 pension funds, equivalent to 9.8 trillion USD, are yet to have undergone assessment for systematic risks associated with the low-carbon

transition. As such, the overwhelming majority of assets managed by global pension funds may be exposed to a range of physical and transition climate-related risks, posing material financial risks to members and beneficiaries.

Figure 2 shows that in cases where investment portfolios have been assessed for climate-related risks, transition risks (including stranded assets, regulatory developments, expected carbon liabilities, technology, market, and reputation) are more likely to be considered than physical risks.

CLIMATE-RISK ASSESSMENT

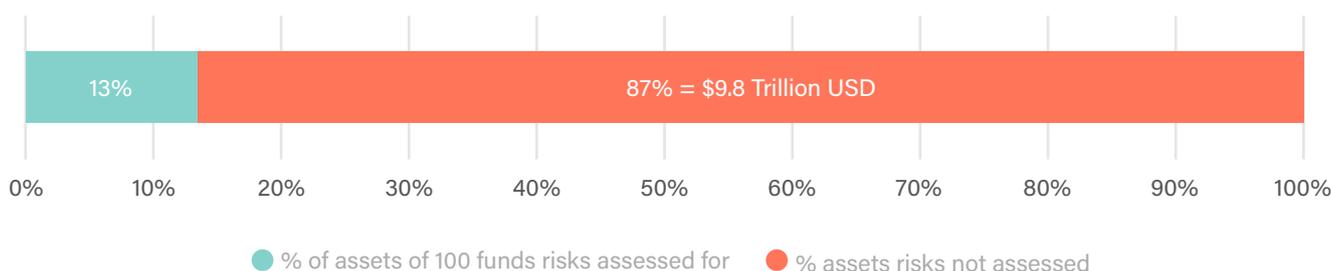


Figure 1: Climate-risk assessment: Proportion of pension funds by collective AUM*
 * Representing combined assets of world’s 100 largest pension funds (~\$11 trillion USD)

MOST COMMONLY ASSESSED

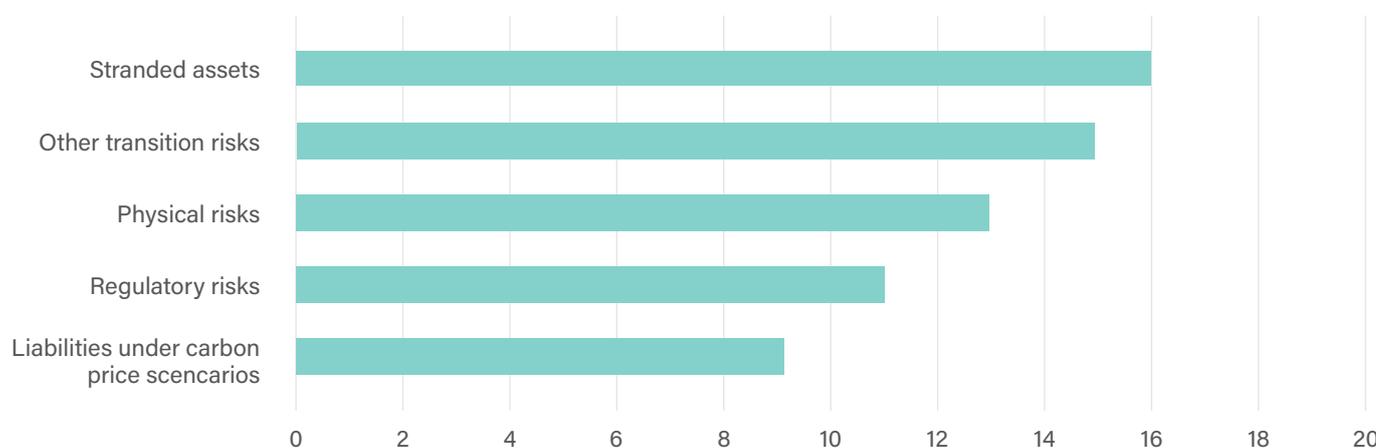


Figure 2: Climate-risk assessment: most common approaches

1.2 Almost one fifth of funds are already carrying out climate scenario analysis

In June 2017, the [TCFD recommendations](#) encouraged organisations to undertake forward-looking climate scenario analysis to better understand the range of climate-related risks and under a range of plausible global warming outcomes. Given the uncertainty around how climate-related risks and opportunities are expected to materialise, scenario analysis is recommended as an invaluable tool available to help organisations better understand their risk exposure.

Our data shows that 18% of the world’s largest 100 pension funds have performed climate scenario analysis. This proportion is effectively double compared against the [insurance sector](#) (10%). A further 10% of pension funds are considering performing scenario analysis, indicating that the industry is making some progress in this area, however the majority of global pension funds appear to be taking no action.

Figure 3 illustrates that the majority of funds who undertake climate scenario analysis are doing so

against multiple scenarios, including a less than 2 degree scenario, as is recommended by the TCFD. Some funds have undertaken scenario analysis under just one scenario.

Part II of this report series discussed qualitative feedback from survey participants regarding challenges around implementing the TCFD recommendations. Scenario analysis was identified as the most common challenge, particularly in terms of a lack of guidance and clarity regarding how investors are expected to undertake climate scenario analysis and incorporate the findings into real actions such as asset allocation and investment decision-making. In our [Winning Climate Strategies](#) report, we reviewed a variety of approaches leading asset owners approaching climate scenario analysis.

We acknowledge that ‘fit for purpose’ climate-risk assessment should represent a holistic approach capturing both forward-looking and historical approaches. With respect to the use of backward-looking data for risk assessment, we discuss carbon footprinting in part IV of this series.

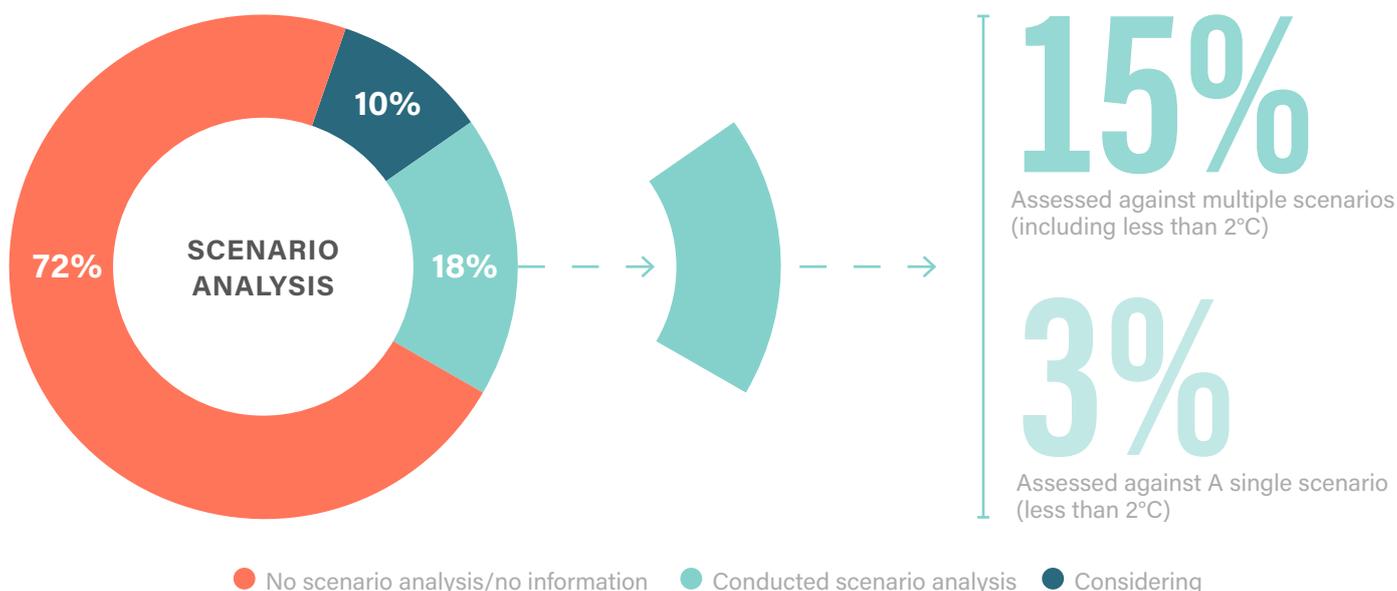


Figure 3: Scenario analysis: Performance by pension funds

CLIMATE-RELATED RISKS AND OPPORTUNITIES

RISKS IDENTIFIED		OPPORTUNITIES IDENTIFIED
TRANSITION	PHYSICAL**	LOW-CARBON INVESTMENT
POLICY/REGULATION/ STRANDED ASSET	ACUTE	RENEWABLE ENERGY
TECHNOLOGICAL	CHRONIC	ENERGY EFFICIENCY
LIABILITY		REAL ESTATE/ INFRASTRUCTURE
REPUTATION		GREEN BONDS
		TIMBERLAND/ FOREST
		ENERGY STORAGE

Figure 4: Climate-related risks and opportunities: Most commonly identified*

* Darker shades represent risks/opportunities most commonly identified

** Acute physical risks refer to the impact of specific events, for example flooding. Chronic risks refer to risks that develop over a longer term, for example changes in temperature and precipitation leading to drought, land degradation etc.

1.3 Stranded assets is the most commonly identified climate-related risk, while renewable energy is the most commonly identified opportunity

The heat-map above visualises which climate-related risks and opportunities are most commonly identified by pension funds (darker shades represent more frequently identified risks/opportunities). The most common risk identified is around regulation, policy and stranded assets, while the most common opportunity identified is around renewable energy.

A qualitative assessment of pension funds' responses to this topic reveals that asset owners are commonly viewing risks and opportunities in terms of their

potential impact on asset allocation. Some funds, for example, have identified the high exposure of assets held in fossil fuel dependent sectors to a range of transition risks, including expected policy developments and stranded assets. Other funds have identified the physical risks (both acute and chronic) facing their investments across asset classes, also factoring in exposure across supply chains. On the opportunities side, some funds have identified a range of opportunities across asset classes expected to emerge from the low-carbon transition.

As a proportion of total pension funds, only 30% identified climate-related opportunities, while 36% of assessed funds identified climate-related risks.



FINDING 2. THE VAST MAJORITY OF PENSION FUNDS ARE FAILING TO ALIGN WITH THE PARIS AGREEMENT

2.1. Only 10% of pension funds have a policy to align their investment portfolio with the goals of the Paris Agreement.

Just 10% of funds have formally adopted a pledge to align their investment portfolio with the goals of

the Paris Agreement (to limit global temperature rise to well below 2 degrees of warming relative to pre-industrial levels). A further 25% of funds have adopted a formal climate-specific investment policy, while 18% of funds have a broad ESG or RI policy that contains no specific reference to climate change. The remaining 47% of the world's 100 largest pension funds have no policy in place at all. As such, the majority of funds have no formal policy to manage the range of financially relevant climate-related risks and opportunities.

CLIMATE POLICY APPROACHES

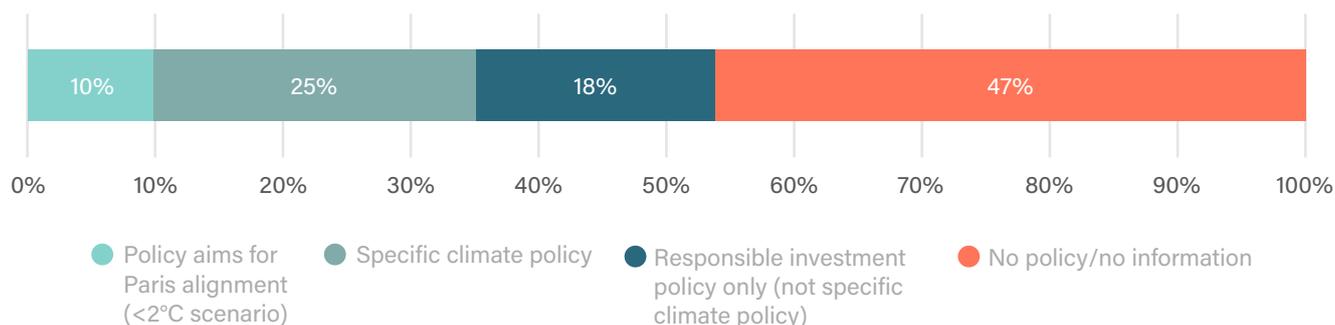


Figure 5: Aligning with Paris: Taxonomy of climate policy approaches across world's 100 largest pension funds

2.2 Climate-related policy commitments cover a range of topics, with coal exclusion lagging behind more popular approaches

Of the 35% of pension funds who have adopted a formal climate-related policy, coal exclusion is among the least common policy commitments (see figure 6). Company engagement is the most popular policy commitment, followed by low-carbon investing, engaging with service providers (including fund managers), policy engagement and coal exclusion. Low-carbon investing is explored in further detail in part IV of this report series.

2.3. Despite pension funds commonly identifying stranded assets as a major risk, 85% of funds are not taking any action on thermal coal

Only 15% of pension funds have developed a formal policy commitment to exclude or phase out the most polluting fossil fuel companies from their investments. The majority of these policies focus exclusively on thermal coal, while some pension funds have broadened their policies to also limit exposure to the oil and gas sector (targeting companies who provide no information on how they intend to respond to the low-carbon transition).

The UN's recent IPCC report has stressed the urgent need for stronger policy actions to avoid catastrophic climate change, concluding that coal must be phased out of the global energy mix by 2050 to stay on a 1.5°C pathway (relative to pre-industrial levels). Our data shows that four out of five pension funds have no formal policy on investments in thermal coal, and potentially exposed therefore stranded asset risks.

Though pension funds tended to identify stranded assets risks as the most common climate-related risk (see finding 1.3), this awareness is yet to be translated into formal policy commitments.

Our analysis of funds' responses reveals that pension funds are taking a variety of approaches in their coal exclusionary policies. For instance, exclusionary thresholds applied as a proportion of revenue vary between 20% and 50%. This shows that work still needs to be undertaken on formalising approaches

and developing a harmonised taxonomy relating to the exclusion of thermal coal assets.

[The Global Coal Exit List](#) provides a database of companies who derive more than 30% of revenue from coal, or who produce more than 20 million tons of coal annually, or who operate more than 10,000 MW of coal-fired capacity. AODP recommends that pension funds adopt this list as a minimum reference point for developing exclusionary thresholds for investments dependent on thermal coal.

CLIMATE POLICY COMMITMENTS

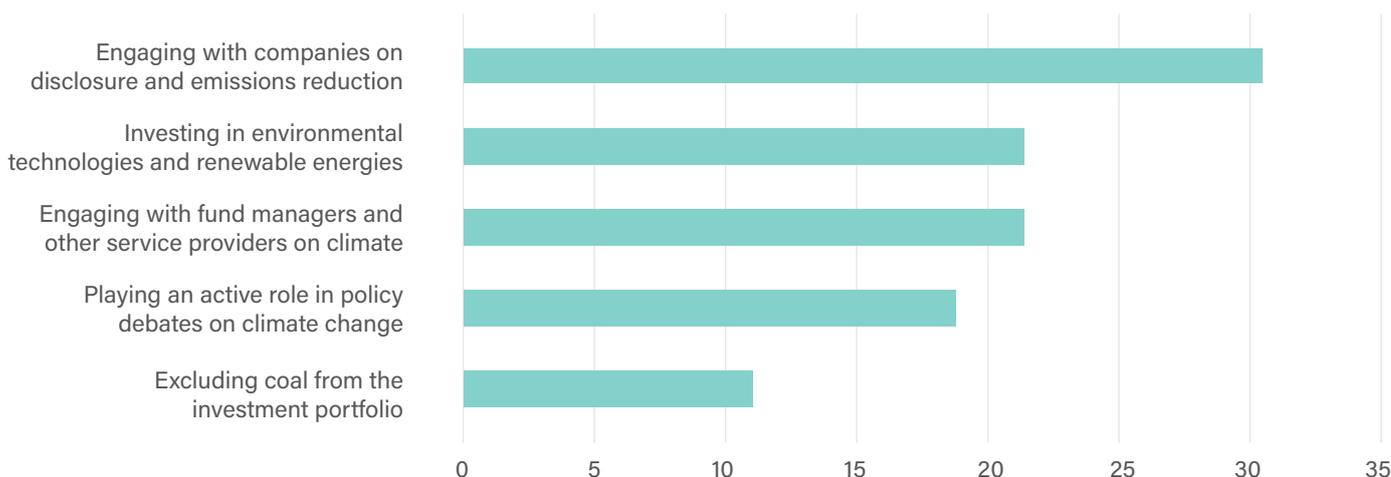


Figure 6: Climate policy commitments: Most popular policies

COAL EXCLUSION



Figure 7: Coal exclusion policies

2.4 Majority of pension funds yet to factor climate-related issues into asset manager relationships

Our data indicates that the vast majority of pension funds provide no information on how they require their asset managers (whether internal or external) to incorporate climate-related issues into their investment decision-making. This is true both for how pension funds are selecting asset managers, and also how they monitor and evaluate performance with regard to climate change (see fig 8). Considering the extent to which pension funds often outsource investment

decision making to external asset managers, these gaps are concerning.

Our *Winning Climate Strategies* report reveals how leading asset owners are taking charge and applying creativity in their relationships with their external asset managers around climate-related issues. Some examples include undertaking comprehensive climate-related due diligence, systematically integrating climate-related issues into monitoring of performance, and in some cases allocating pre-determined carbon budgets asset managers are required to invest within.

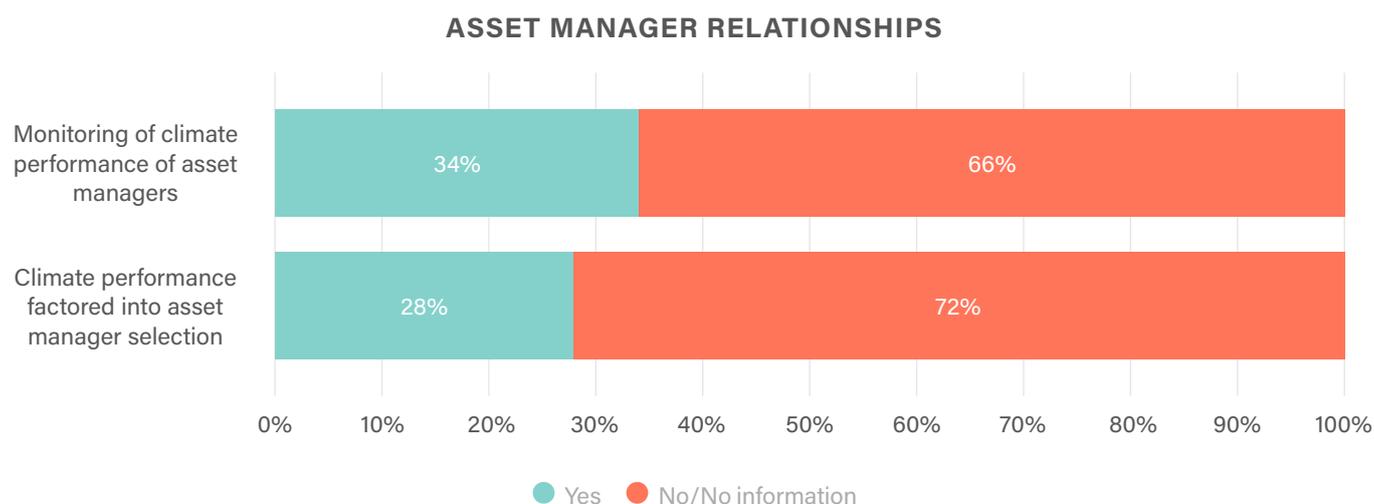


Figure 8: Climate-related monitoring and selection of asset managers



FINDING 3 - AROUND HALF OF GLOBAL PENSION FUNDS UNDERTAKE COMPANY ENGAGEMENT ON CLIMATE CHANGE

3.1 Climate-related company engagement largely limited to improving disclosure

The most popular company engagement theme identified in our research related to improving climate-related disclosure. As figure 9 illustrates, half of disclosure-related engagements relate to improving TCFD-aligned disclosure. This reflects our finding from part II, that pension funds who have supported

the TCFD recommendations are also incorporating the framework into company engagement practices. It is encouraging to see the TCFD being used as an engagement framework, and we expect to see broader use by pension funds in the coming years. However, our data shows there is room for pension funds to broaden the scope and quality of their company engagements by also challenging companies on how they are actively managing climate-related risks and opportunities across their business (see figure 10).

COMPANY ENGAGEMENT - DISCLOSURE

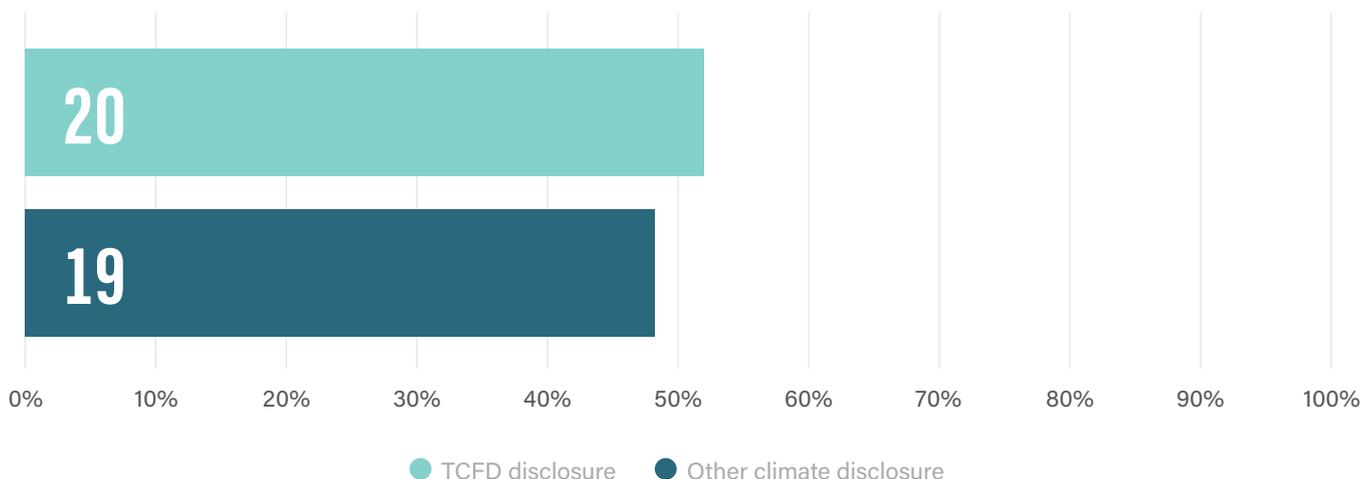


Figure 9: Company engagement: General climate-related disclosure vs TCFD-aligned disclosure

Our research shows that leaders are engaging with companies on disclosure as well as topics such as decarbonisation pathways, scenario analysis, climate-linked remuneration, and withdrawing from controversial trade associations. This finding is also

supported by our [Winning Climate Strategies](#) leading practice research. While improving disclosure is important, leading practice company engagement also focuses on driving actionable outcomes, such as building Paris-aligned business models and strategies.

COMPANY ENGAGEMENT - THEMES

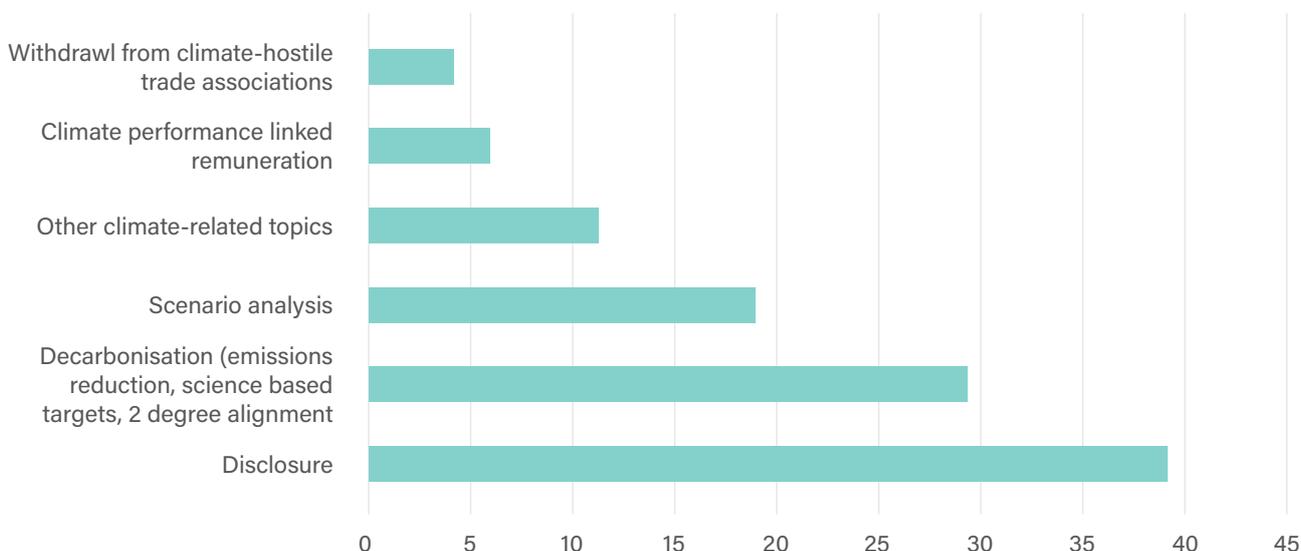


Figure 10: Company engagement: most popular themes

3.2 Company engagement: The escalation gap

Only 35% of those pension funds that do undertake climate-related company engagement have established an escalation strategy in case of engagement failure. Escalation processes ensure that engagement is meaningful and impactful by leveraging shareholder influence to take further action against companies if they do not show sufficient progress. Examples of common escalation approaches are outlined in figure 11, which include voting on climate-related shareholder

resolutions followed by filing/co-filing resolutions, divesting, or setting time-bound engagement objectives.

3.3 Pension funds more likely to undertake climate-related company engagement than insurers

Our data shows that roughly half of global pension funds are undertaking company engagement on climate-related topics, which is a much higher proportion than found in the insurance sector (30%).

COMPANY ENGAGEMENT - ESCALATION

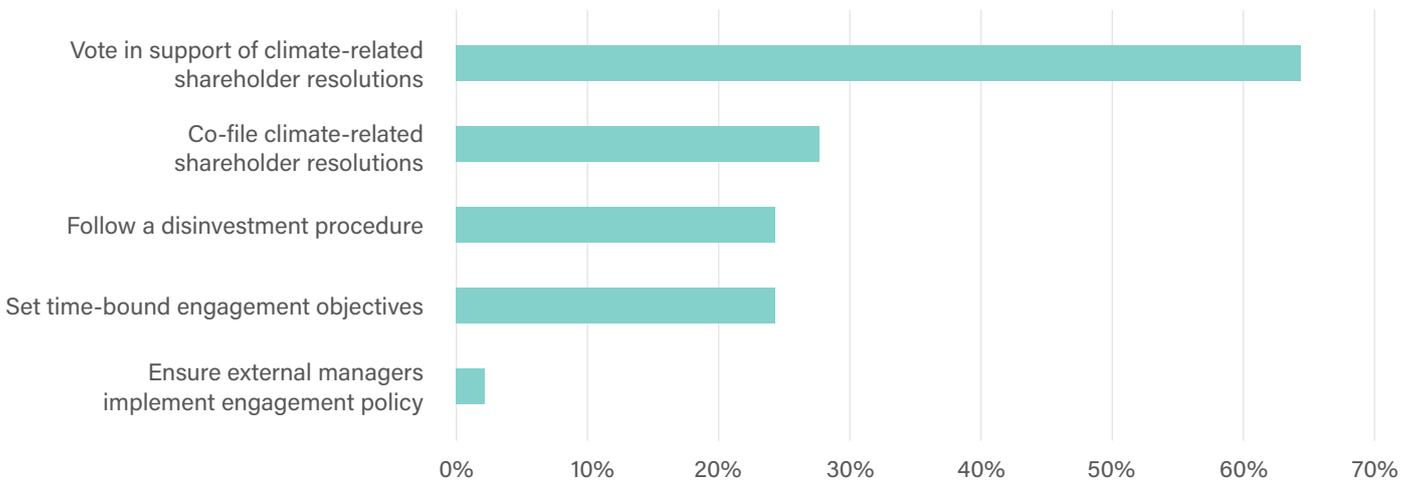


Figure 11: Company engagement: Escalation approaches in case of engagement failure*
 * refers to % of funds who engage with companies on climate change

COMPANY ENGAGEMENT - PENSION FUNDS VS INSURERS

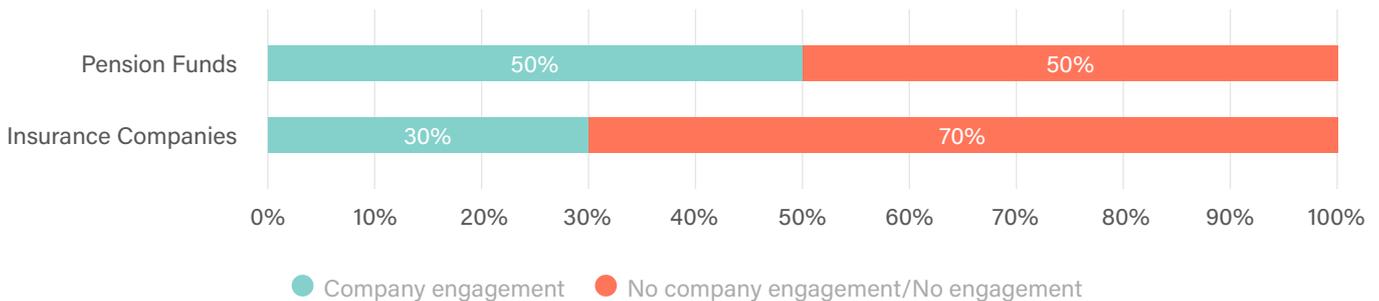


Figure 12: Company engagement: Pension funds vs Insurers



Industry perspective on being 'universal owners'

The UN's recent [IPCC report](#) outlined the magnitude of climate-related impacts between 1.5 and 2 degree global warming scenarios. Meeting the minimum requirements of the Paris Agreement by limiting warming to 2 degrees will be met by significant economic disruption from both physical and low-carbon transition impacts of climate change. As the report outlines, "climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase further with 2°C. As such, institutional investors need to be aware not only of how their portfolios are exposed to these risks, but how their asset allocations are currently aligned with the goals of the Paris Agreement.

A number of pension funds have indicated in their survey responses to AODP that they are approaching the issue of climate change from a 'universal owner' perspective. These funds have recognised that their investment portfolio is spread across asset classes, sectors, and regions, and therefore represent a 'slice' of the global economy. These funds also realise that their portfolios are exposed to the same climate-related risk and opportunities facing the global economy. This perspective has caused some funds to work towards better understanding the full range of climate-related systemic risks (both at physical and transitional levels) and opportunities they are exposed to. These funds are also building 'systems-level' responses such as portfolio-wide decarbonisation or low-carbon investment targets that seek alignment with the goals of the Paris Agreement to curb global warming to 2 degrees or under.

The UN's recent IPCC report highlighted that the actions taken in the next 12 years will determine whether the worst consequences of catastrophic climate change can be averted; rising sea levels, lack of food security, increasing frequency and intensity of weather events. These consequences would cause a surge in climate-related economic losses, which have already increased by around 2.5 times in the last 20 years, totalling \$2.9 trillion USD. In order to mitigate these effects, the international community will need to put into place significant measures to accelerate the low-carbon transition. Whichever pathway the transition takes, there will be material impacts on pension funds' investment portfolios.

Our research shows the vast majority of the world's largest 100 pension funds have inadequate strategies and risk management processes with respect to climate change and its implications.

FOR REGULATORS

► **Clarify trustees' duties in respect to managing climate change as a material financial risk**

Throughout this report series and our Winning Climate Strategies report, we have found that robust regulation plays a key role in driving better disclosure and management of climate-related risks and opportunities. Though recent years have seen some promising progress in this area, we believe regulators must do much more to prompt a stronger response by clarifying trustees' duties in respect to reporting and managing climate-related risks.

FOR MEMBERS/BENEFICIARIES

► **Challenge your pension fund to make a pledge to align its investment portfolio with the goals of the Paris Agreement**

Our research has shown pension funds members only have a 1/10 chance of being in a fund that has formally committed to aligning its investment portfolio with the goals of the Paris Agreement. We believe members can play important role by using their influence to challenge lagging pension funds to improve their performance on managing climate related risks and opportunities.

 **FOR PENSION FUNDS & TRUSTEES**

► **Improve identification and assessment of climate-related risks across the investment portfolio**

Our data shows the vast majority of assets managed by the world's largest 100 pension funds have not been assessed for climate-related risks. Pension funds have a responsibility to their members to ensure that their investment portfolios have undergone rigorous identification and assessment processes for both climate-related physical and transition risks. A number of tools are widely available to help asset owners assess their exposure to climate-related risks in their equity and fixed income portfolios.

► **Escalate engagement with investee companies on climate-related topics**

We believe if pension funds are to effectively contribute to the low-carbon transition they must do more to hold the companies they invest in to account on climate-related issues. We support and recommend collaborative initiatives such as Climate Action 100+ as a convenient, yet powerful, forum for engaging with companies. For pension funds already engaging with companies on climate issues, we recommend broadening the scope of climate-related topics from disclosure to action (for example setting science-based targets, stress testing business models against a range of climate scenarios, installing decarbonisation pathways, or shifting capital expenditure towards more < 2 degree pathway aligned enterprises).

4 METRICS & TARGETS

This section explores the performance of the world's 100 largest pension funds on their approach to metrics and targets. The findings in this part cover the following areas: low-carbon investment, climate-related targets, and carbon footprinting.



FINDING 1. ONLY 1% OF THE ASSETS MANAGED BY THE WORLD'S LARGEST 100 PENSION FUNDS ARE INVESTED IN LOW-CARBON SOLUTIONS

1.2. The world's largest pension funds are on average investing only around 1% of their portfolios in low-carbon solutions

Our data reveals that on average, the world's 100 largest pension funds are only investing 1% of their assets in low-carbon solutions, representing around \$100 billion. Across only those funds which do publicly report their low-carbon investments (see finding 1.2), the average percentage of their assets invested is 3.8%.

These figures are dramatically shy of the [\\$90 trillion which will need to be invested in low-carbon technology by 2030](#) in order to build the infrastructure necessary for a successful low-carbon transition.

Our data clearly shows that as a sector, the global pension fund community will need to rapidly escalate their low-carbon asset allocation if a

successful low-carbon transition is to be realised. Some leading pension funds are showing that substantially increasing allocation to low-carbon technologies is possible for large pension funds. An analysis of low-carbon investment disclosures from pension funds achieving a rating between AAA and A reveals that on average, these leaders are investing 6% of their portfolios in low-carbon solutions, with the highest reported low-carbon investment figure at 19% of assets under management.

1.2 Only a quarter of pension funds measure and report their low-carbon investments

Only 24% of funds are quantifying and disclosing their level of investments in low-carbon solutions. A further 12% provide broad statements around their low-carbon investing activities, but do not quantify them, while 64% provide no information. This leaves 76% of pension funds who do not provide decision-useful information on their low-carbon investment activities, leaving stakeholders unable to determine whether progress on low-carbon investing is fit for purpose.

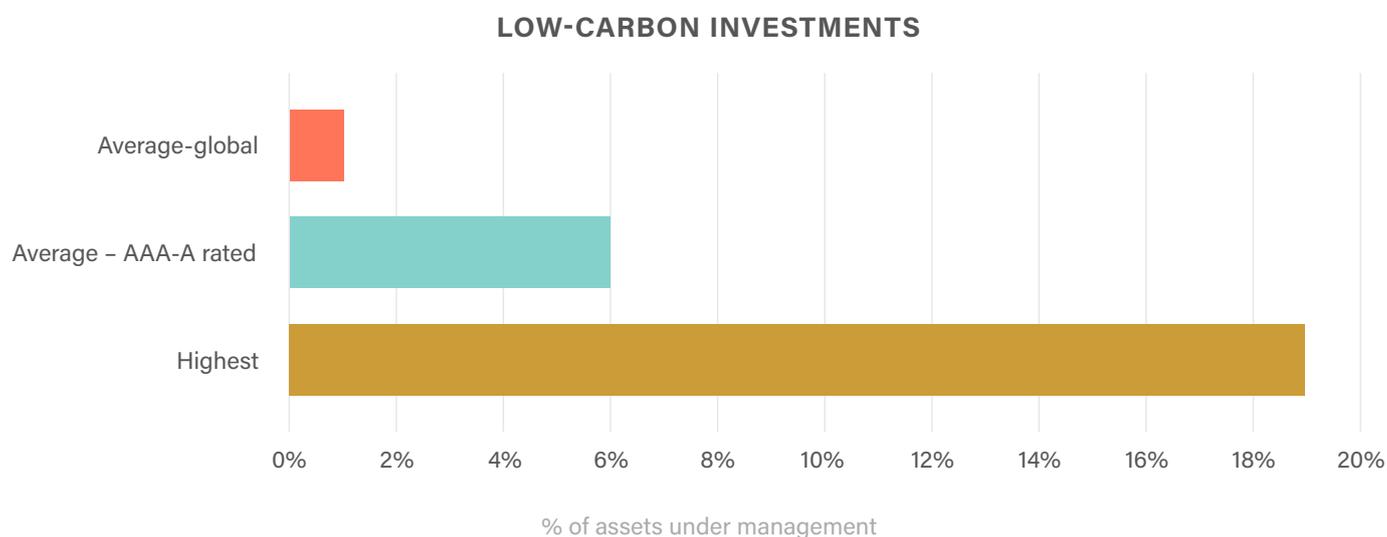


Figure 1: Low-carbon investments: AAA-A rated vs global average of 100 largest pension funds

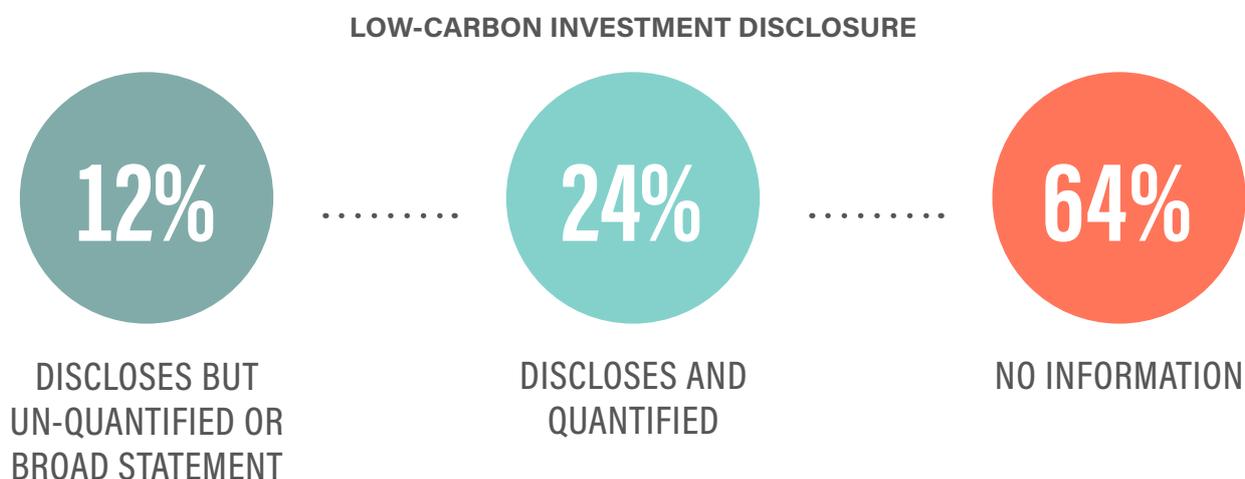


Figure 2: Disclosure of low-carbon investments

1.3 Absence of a standard taxonomy on defining and measuring low-carbon investments leaves pension funds taking a fragmented approach

Our data reveals a distinct lack of consistency in the frameworks and methodologies used to define and disclose low-carbon investments. Some of the frameworks and definitions used include [LCI Registry's](#)

[Taxonomy of Eligible Investments](#), the [Climate Bonds Taxonomy](#), and companies with a set percentage of revenue tied to the low-carbon transition among others. The inconsistent use of such frameworks and definitions leaves stakeholders unable to meaningfully compare and contrast low-carbon investing initiatives among pension funds.

1.4 Renewable energy is the most widespread low-carbon investment

A qualitative analysis of survey responses around low-carbon investment approaches reveals that investing in renewable energy projects is the most popular low-carbon investing activity. Climate-related equity and green bonds represent the next most popular approach followed by certified real-estate, low-carbon aligned companies and SDG-related approaches.

FINDING 2. THE VAST MAJORITY OF THE WORLD’S LARGEST PENSION FUNDS HAVE NO LOW-CARBON ASSET ALLOCATION TARGET

2.1 Just 20% of the world’s 100 largest pension funds have set a low-carbon asset allocation target

Only 20% of assessed pension funds have set a target or policy related to their low-carbon asset allocation practices.

Portfolio level targets and policies are the most common (13% of funds), while 5% set targets for specific asset classes. This leaves 82% of pension funds who have not yet set climate-related targets or policies for their asset allocation activities.

We noted a range of approaches by pension funds to setting low-carbon investment targets;

LOW CARBON INVESTMENTS

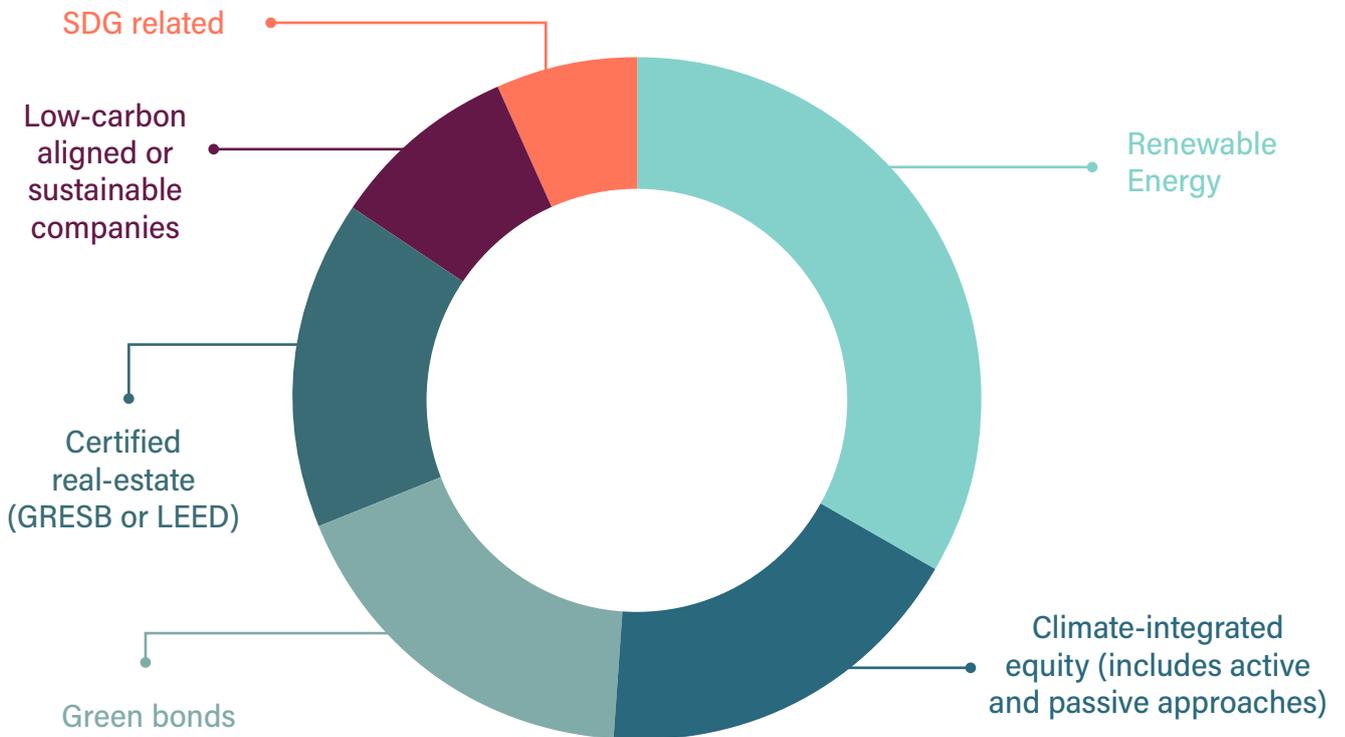


Figure 3: Low-carbon investments
* Based on a qualitative analysis of survey responses

some funds have set explicit low-carbon investment targets, such as percentage targets against a baseline year or an absolute target. For other funds, low-carbon investment sits under the umbrella of ESG or sustainability targets. Some funds are approaching targets in terms of portfolio decarbonisation and introducing steps such as divestment targets from certain emissions-intensive sectors.

While we commend those forward looking funds taking action to allocate capital to low carbon technology, our analysis of the quality of low-carbon investment targets being set shows that 64% of targets set by funds are at a lower percentage than the current average for low-carbon investment of 3.8% of assets under management (see 1.1). Given that some funds

have managed to set targets of over 10% of assets under management, we believe there is scope for all funds, even those with existing targets, to be more ambitious.



FINDING 3 - AROUND ONE THIRD OF PENSION FUNDS ARE MEASURING THE CARBON FOOTPRINT OF THEIR INVESTMENTS

3.1 32% of pension funds are performing carbon footprinting, the majority of which only cover equity portfolios

Our data reveals that almost a third of pension funds are carbon footprinting the emissions of their investment portfolios.

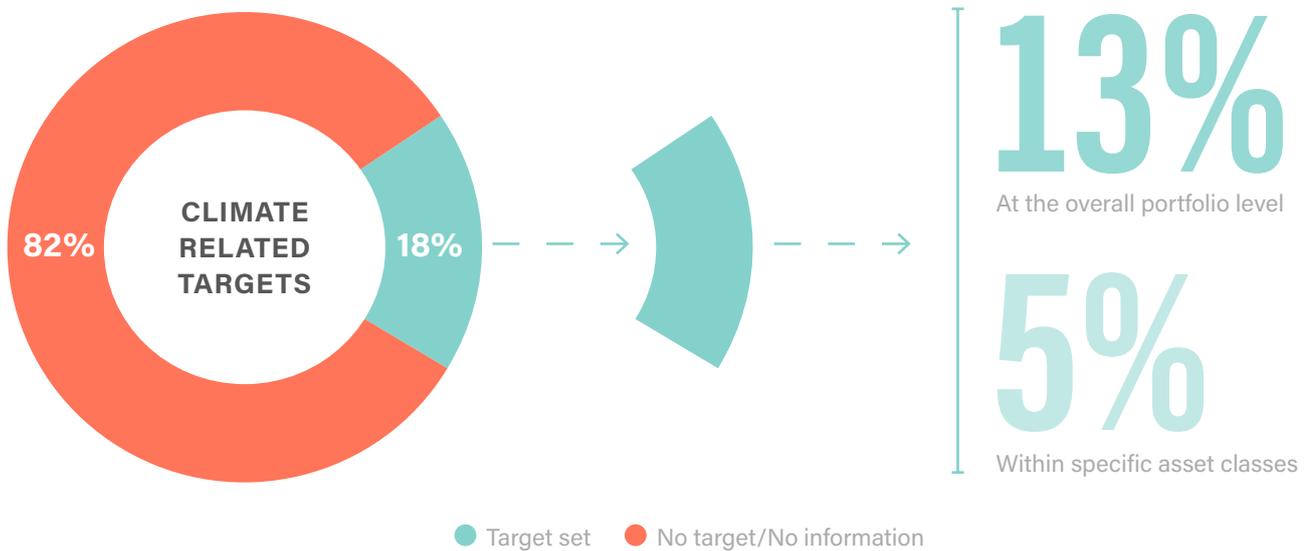


Figure 4: Climate-related targets for asset allocation

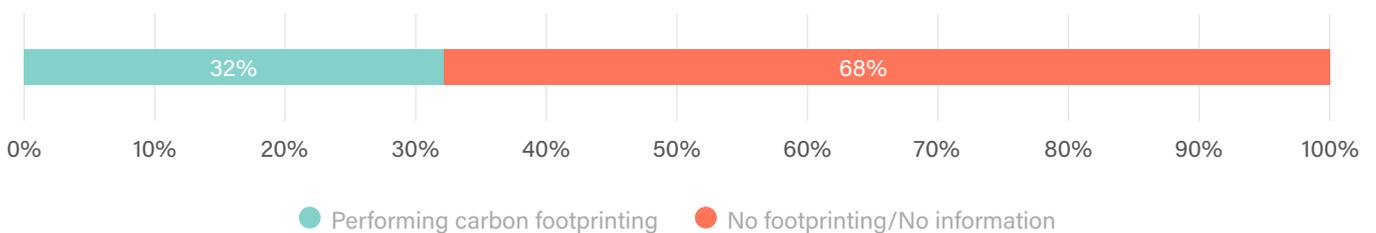


Figure 5: Pension funds and carbon footprinting

A minority of pension funds are undertaking carbon footprinting across their whole portfolios with the vast majority only performing it on active and passive equity, while corporate bonds and real-estate portfolios receive relatively far less coverage.

3.2 Carbon footprinting is the most widespread metric being used by pension funds

A qualitative analysis of survey responses revealed metrics related to carbon footprinting (including absolute or relative emissions, carbon intensity, and invested value) are the most common category of climate-metrics used by pension funds. Exposure to carbon-intensive assets or sectors was the second most popular category, followed by ESG research from external service providers, renewable energy exposure, and SDG-related metrics.

CARBON FOOTPRINTING AND ASSET CLASSES

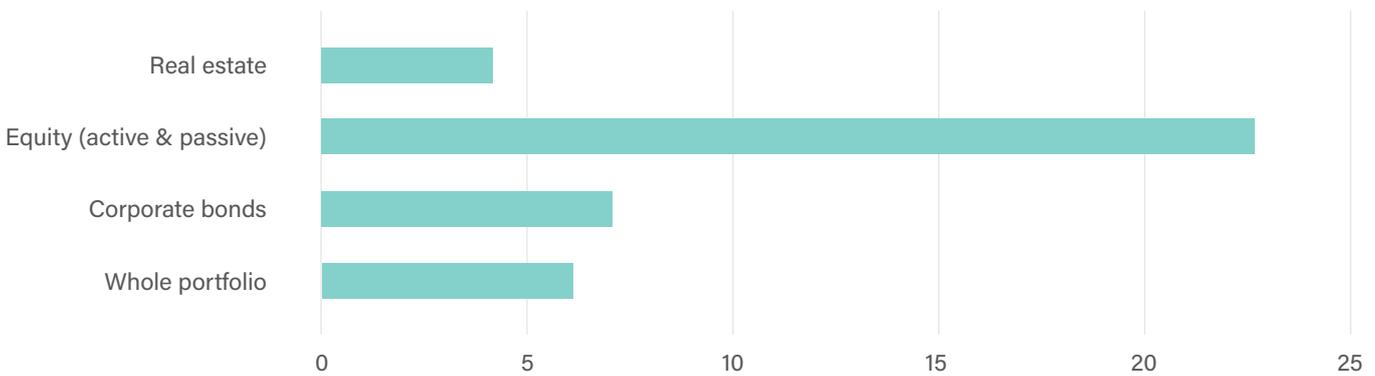


Figure 6: Carbon footprinting and asset classes.
 * Axis indicates number of funds who report footprinting asset class

COMMON CLIMATE METRICS

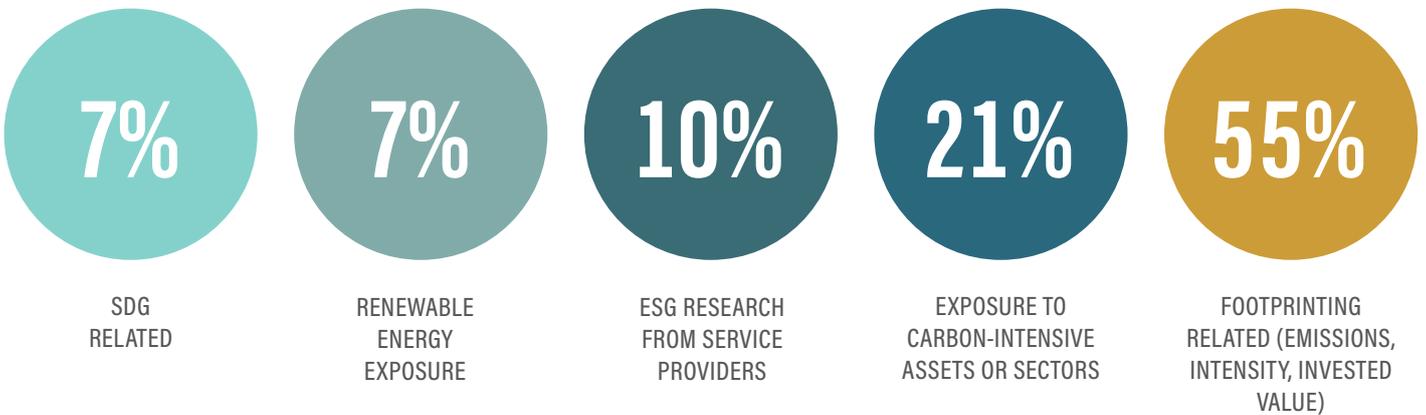


Figure 7: Common climate metrics*
 * Based on a review of qualitative survey responses

3.3 Company engagement is the most widespread use of footprinting data

As highlighted in the chart below, pension funds who perform carbon footprinting are utilising this data in a variety of ways, with company engagement being the most widespread application

This finding is significant as it shows the multiple points of value that undertaking carbon footprinting can provide. It is also consistent with research findings from our [Winning Climate Strategies](#) report, which revealed how global asset owners with leading climate strategies are creatively applying footprinting data in a number of ways, such as setting pre-allocated carbon budgets for their asset managers.

APPLICATIONS OF FOOTPRINTING DATA

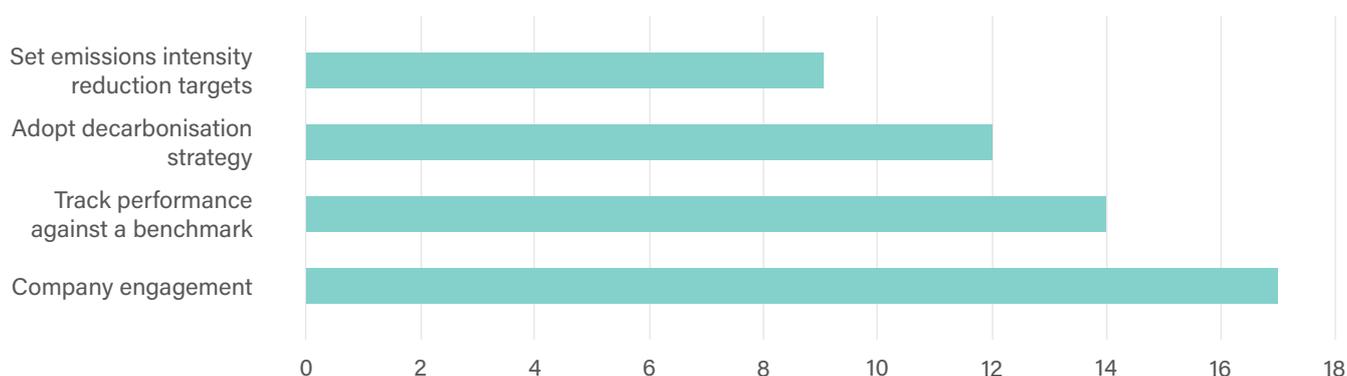


Figure 8: Common uses of carbon footprinting data



Industry perspectives on barriers/challenges on low-carbon investment.

AODP's 2018 pension fund survey included a question asking for feedback and challenges on low-carbon investment from pension funds. We briefly discuss some key themes identified in this report. These reflect some of the common barriers identified in AODP's recent [Winning Climate Strategies](#) report.

We noted a perceived lack of opportunities for low-carbon investment. In particular, some funds noted having difficulty finding low-carbon investment opportunities that had an appropriate risk-return profile. Similarly, some noted difficulty in identifying scalable low-carbon investment opportunities. However, other funds commented that they did not have an issue identifying appropriate low-carbon opportunities, and indeed many funds set ambitious low-carbon investment targets.

Some funds noted that a lack of data quality, coverage and consistency from companies was proving a barrier to investment decision making for low-carbon assets. As is reflected in our recommendations to regulators in the earlier [parts](#) of this report, some funds voiced their support for company disclosure in line with the TCFD recommendations, to increase data quality and comparability for investors.

In order to support the transition to a low-carbon economy and to avoid the most catastrophic outcomes of climate change, a massive amount of capital needs to be allocated in low carbon solutions; \$90 trillion will need to be invested by 2030. Pension funds account for around half of all assets controlled by asset owners globally, and therefore must play an instrumental role in allocating the necessary capital. However, our research shows the vast majority of the world's largest 100 pension funds have inadequate metrics and targets with which to measure and therefore improve upon, their impact on the climate.

FOR REGULATORS

► **Support the development of a low-carbon investment taxonomy**

This report highlights the fragmented approach by pension funds in defining and disclosing their low-carbon investment activities. This leaves stakeholders unable to meaningfully compare and contrast approaches. We support the current work of the [European Commission](#) in building a sustainable investment taxonomy, and indeed many assessed funds voiced to us their support for this regulation. We call on all other regulators to support such initiatives.

FOR MEMBERS/BENEFICIARIES

► **Challenge your pension funds to set demanding climate-related targets and policies**

99% of the money being saved in the world's 100 largest pension funds is not being explicitly allocated to support the low-carbon transition, with only around 1% being reported as being set aside for low-carbon investment. Despite this, the vast majority of these funds have not committed to targets or pledges to increase their investments that support the low-carbon transition. We call on members and

beneficiaries to challenge their pension funds to commit to increasing their low-carbon asset allocation, and take the first step to contribute to the green transition.

FOR PENSION FUNDS & TRUSTEES

► **Increase disclosure and action on low-carbon investment**

As has been highlighted in this report, if pension funds are to meaningfully contribute to the low-carbon transition, a huge amount of capital needs to be allocated to low-carbon solutions. However, far too few pension funds are properly measuring and reporting their investments, let alone making pledges to increase low-carbon investment. We call on pension funds to do more to measure and report on these investments (including definitions and taxonomies used) and also publicly commit to increase low-carbon investments.

► **Improve carbon footprinting practices**

A third of assessed pension funds are performing carbon footprinting, and have used footprinting constructively in a variety of ways including company engagement and setting decarbonisation strategies. Clearly, carbon footprinting can still play a valuable role as part of a holistic climate-risk assessment framework, with benefits that extend beyond simply tracking risk. We call on pension funds who are not yet undertaking carbon footprinting to do so for their equity portfolio, for which available tools and services are most developed.

- “A mandatory requirement for TCFD-aligned reporting would not only improve the range of climate-related data available, but also help raise awareness of financially-relevant climate issues among laggard funds.”

The clear message emerging from this report is that as a sector, pension funds have a lot of work to do in ensuring their climate responses are fit for purpose. Over 60% of funds assessed publish little or no information, leaving their beneficiaries and stakeholders ‘in the dark’ on how these funds are responding on an issue with enormous implications for the long-term performance of their investment portfolios. A mandatory requirement for TCFD-aligned reporting would not only improve the range of climate-related data available, but also help raise awareness of financially-relevant climate issues among laggard funds.

With almost 90% of collectively managed assets yet to undergo formal climate-risk assessment, pension funds are in clear need of further guidance and support on learning how to fully understand to what extent their portfolios may be at risk. With a leadership pack of funds from Europe, who are applying systematic approaches to climate-risk assessment, the sector may benefit from more sharing of approaches, tools, and methods. Encouragingly, a fifth of pension funds are already performing climate scenario analysis, in line with

the TCFD recommendations, though our analysis reveals that pension funds are seeking further guidance and clarification on how to leverage this forward-looking risk assessment tool to its full potential.

Our analysis also reveals that pension funds are underinvesting in low-carbon solutions, which on average currently accounts for around 1% of investment portfolios. The highest-rated funds (AAA-A) have an average of 6%, demonstrating that stronger commitments are possible. Finally, our research has found no correlation between overall positive performance and investor size, highlighting that leadership is attainable for all funds.

FULL QUESTION LIST AND PERCENTAGE SCORING

DISCLOSE THE ORGANISATION'S GOVERNANCE AROUND CLIMATE-RELATED RISKS AND OPPORTUNITIES		
#	QUESTION	% SCORE
GOVERNANCE - CORE		
G1.1	Which of the following best describes the board oversight of climate-related issues?	3%
G1.2	Has your organisation assigned climate-related responsibilities to an executive management-level position?	4%
G1.3	How have you responded to the final TCFD recommendations?	2%
GOVERNANCE - ADVANCED		
G2.1	How are climate-related issues integrated into the board discussions and meetings?	3%
G2.2	Has the board identified climate change as a material issue?	3%
G2.3	Has the fund introduced structured educational/awareness programmes for key internal decision makers on the potential impact of climate-related risks?	3%
G2.4	What steps the fund has taken to engage its members on climate-related issues?	3%

DISCLOSE THE ACTUAL AND POTENTIAL IMPACTS OF CLIMATE-RELATED RISKS AND OPPORTUNITIES ON THE ORGANISATION'S STRATEGY		
#	QUESTION	% SCORE
STRATEGY - CORE		
S1.1	Have climate-related risks and opportunities that could have a material financial impact been identified?	5%
S1.2	How have you factored climate-related risks and opportunities into the portfolio-level investment strategy or policy?	2%
S1.3	Does your policy framework include a formal commitment to any of the following?	3%
S1.4	Have you assessed the resilience and alignment of your investment strategy, taking into consideration different climate-related scenarios?	9%

STRATEGY - ADVANCED

STRATEGY - ADVANCED		
S2.2	For any of the following, do you have climate-related incentives, which are forward-looking and based on long-term investment horizons?	2%
S2.2	Has the board identified climate change as a material issue?	2%
S2.3	For professional service providers (proxy voting advisors, investment consultants, asset managers, etc.), how is the management of climate-related risks embedded into your contractual agreements?	3%
S2.4	For assets managed externally, how are climate-related issues factored into asset manager selection process by your investment consultant or internal investment executive?	2%
S2.5	For members that are able to self-select investments (usually DC/401k savers), are any climate-related funds being offered or are under development?	1%

DISCLOSE HOW THE ORGANISATION ASSESSES AND MANAGES CLIMATE-RELATED RISKS

#	QUESTION	% SCORE
RISK MANAGEMENT - CORE		
RM1.1	Have you incorporated climate-related issues into your engagement with investee companies, key service providers and external parties?	4%
RM1.2	Please select the collaborative engagement initiatives and industry associations you participate in.	2%
RM1.3	Have you undertaken a portfolio-wide assessment of potential systematic risks associated with the transition to a low-carbon economy?	10%
RM1.4	Have you developed tools to help identify and assess climate-related risks and opportunities in portfolio construction, stock selection or asset allocation?	3%
RISK MANAGEMENT - ADVANCED		
RM2.1	Do you encourage any of the following during your engagement with investee companies and corporate issuers?	6%
RM2.2	Do you publish annual voting records on proxy votes?	2%

(CONTINUED)

DISCLOSE THE METRICS AND TARGETS USED TO ASSESS AND MANAGE RELEVANT CLIMATE-RELATED RISKS AND OPPORTUNITIES		
#	QUESTION	% SCORE
METRICS & TARGETS - CORE		
MT1.1	Have you developed metrics used to assess climate-related risks and opportunities in line with your investment strategy?	4%
MT1.2	Do you measure investments that support the transition to a low-carbon economy, such as low-carbon assets, climate impact assets, green finance, etc.?	3%
MT1.3	Have you developed climate-related targets used to manage climate-related risks and opportunities and performance against targets in line with your investment strategy?	3%
MT1.4	Have you introduced a target or an asset allocation policy on low-carbon assets (or similar, based on the definition used)?	5%
METRICS & TARGETS - ADVANCED		
MT2.1	Have you calculated your aggregate or specified portfolio emissions intensity?	10%

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ABOUT SHAREACTION

ShareAction (Fairshare Educational Foundation) is a registered charity that promotes responsible investment practices. ShareAction believes that responsible investment helps to safeguard investments as well as securing environmental and social benefits.

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ABOUT AODP

The Asset Owners Disclosure Project (AODP) is a ranking of global asset owners and asset managers that is managed by responsible investment charity ShareAction. The objective of the AODP is to protect retirement savings and other long-term investments from the risks posed by climate change by improving disclosure and industry best practice.

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