AustralianSuper

Climate change report

Managing the transition to a low carbon economy

May 2020

About this report

This report aligns with the Task Force on Climate-related Financial Disclosure frameworks (TCFD) recommendations on climate-related financial risk disclosure. It provides an overview of our governance, strategy, risk management and metrics in relation to climate change.

The TCFD is a market-driven initiative, set up to develop a set of recommendations for voluntary and consistent climate-related financial risk disclosures. The framework was initially designed for companies with public debt or equity and some aspects do not translate easily to investors. We have adopted the TCFD framework as far as practicable in this report.

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Foreword

Climate change is one of the most significant investment issues facing investors today. Climate related risks will impact all economies, asset classes and industries, whether directly or indirectly.

Mark Delaney
Deputy Chief Executive and Chief Investment Officer

AustralianSuper is committed to delivering the best possible retirement outcomes to members. If we are to meet our obligations to members we need to ensure that the assets we manage today, are capable of delivering strong returns in decades to come. This means thinking ahead about the key risks and issues that can impact their future growth prospects.

As global temperatures rise, we're seeing a shift in extreme weather events from being temporary or cyclical in nature to permanent ongoing trends.

Based on each country's current Paris commitments, average global warming is projected to increase to 3.1° Celsius by 2100 from pre-industrial levels[1]. If mitigation is successful in limiting global warming to below 2° Celsius, climate change is expected to reduce annual GDP by 1.8% globally by 2100, and 0.6% in Australia[2]. This compares to annual global GDP loss of 7.2% under a 4° Celsius warming scenario.

Investing for the future means being active today

Climate change will create risks and opportunities for businesses and create physical risks to assets, which has the potential to impact valuations and the ability of long-term investors to meet their investment objectives.

AustralianSuper actively considers and manages climate risks and opportunities. We integrate consideration of climate change risks and opportunities into our investment decision-making process, and stewardship actions once we own an asset.

AustralianSuper is committed to continually reviewing, building and improving our processes and disclosure on climate change in accordance with industry developments and best-practice.

Paris Agreement

The Paris Agreement is a global commitment to climate change action signed by nearly 195 countries, including Australia, in 2015. It aims to keep the average rise in global temperatures to well below 2° Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5° Celsius by 2100. The Paris Agreement sets out a framework to limit the devastating impacts of climate change by addressing greenhouse gas mitigation, adaptation and climate finance.

In its 2018 landmark report, the Intergovernmental Panel on Climate Change (IPCC) advised that global greenhouse gas emissions would need to reach net zero by 2050 to limit global warming to 1.5° Celsius. This requires "rapid and far-reaching transitions in land, energy, industry, buildings, transport, and cities".[3]

1 UN Environment Program (UNEP), Emissions Gap Report 2019

2 Australian National Outlook report 2019, CSIRO

3 Global Warming of 1.5°C, an IPCC special report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. **https://www.ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/**

Our climate change beliefs

AustralianSuper supports the goals of the Paris Agreement on climate change, which aim to limit global warming to well below 2° Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5° Celsius by 2100.

We also support a smooth and just transition to a low carbon economy, so that dislocated workers are supported in their transition to other industries. We believe this will minimise the economic cost of climate change and produce the best investment outcomes for members.

We monitor the scientific consensus on an ongoing basis, to validate the pathway required to achieve the Paris Agreement aim of limiting global warming to well below 2 degrees. Currently, the consensus view is that the world needs to generate net zero emissions by 2050 to meet this aim. AustralianSuper also supports the net zero 2050 goal.

We believe investors have an important role to play in driving the low-carbon transition across the global economy, and actively engage with our assets and investee companies on climate change risks and opportunities.

ESG and Stewardship Program

AustralianSuper has a comprehensive Environmental, Social and Governance (ESG) and stewardship program relating to climate change, which applies to all investment options and asset classes. The program ensures ESG factors are considered before we make an investment and continues for as long as we keep it, whether we're investing directly ourselves or through external managers.

Our ESG and Stewardship program aims to maximise long-term value for members across three pillars.

ESG Integration
Assessing and integrating ESG risks and value drivers when choosing and managing investments.

Stewardship
Exercising our rights and responsibilities as a shareholder to influence and improve ESG practices in companies. This is achieved through active company engagement, stock voting and participating in collaborative investor initiatives.

Choice
Considering member's values in our investment choices.

Our engagement agenda

The purpose of our engagement with companies is to seek their commitment to setting long-term science-based targets[4] aligned to the Paris Agreement, which are consistent with a net zero emissions economy by 2050.

We also expect companies to have appropriate governance frameworks in place to manage climate change risks and adequately report the information we need to assess the investment risks.

We're a founding member of Climate Action 100+, a group of more than 440 global investors representing over US$40 trillion in assets. The objective of Climate Action 100+ is to promote positive change in the world's largest carbon emitters[5].

We also advocate for the adoption of improved climate change reporting, such as the Financial Stability Board Task Force on Climate-related Financial Disclosures (TCFD).

4 Science Based Targets are GHG reduction targets adopted by companies that align to the latest climate science consensus requirements to meet the goals of the Paris Agreement. **https://sciencebasedtargets.org**

5 Climate Action 100+ focus companies account for around two-thirds of annual global industrial GHG emissions, based on 2018 emissions data from CDP/Climate Action 100+

Our investment risk and governance framework

AustralianSuper is Australia's largest superannuation fund and one of the 40 largest pension funds in the world. We are a profit for member fund with a single purpose: to help members achieve their best possible retirement outcome.

With members' assets of more than $168 billion, AustralianSuper is a significant investor in Australian and international markets. We are an active investor and manage diversified portfolios that are representative of the total economy and capital markets.

The ability to influence better Environmental, Social and Governance (ESG) outcomes is an important part of being a large, active asset owner and creating long-term value and multi-generational wealth for members.

Our investment risk framework

AustralianSuper's fiduciary duty is to maximise net investment returns, while prudently managing risks, so members can achieve their best possible retirement outcome. Our overarching investment objective for our Balanced investment option, which most members are invested in, is to return 4.0% pa. above the Consumer Price Index (CPI) over the medium to long term.

Our investment risk framework defines the Fund's greatest risk as the failure to meet its investment return objectives in the long term. AustralianSuper manages all risks that can impact its investment return objectives, including climate change and other ESG risks.

Climate change will create risks and opportunities for businesses and create physical risks to assets. As climate change has the potential to impact long-term asset valuations and investment performance, we manage climate change risk as an investment risk, alongside more traditional market factors such as economic growth, interest rates and inflation.

Climate change considerations are integrated into our day to day investment decision making. Once we own an asset, they become part of our stewardship actions through our ESG and Stewardship program.

Our approach to managing ESG and Stewardship issues is documented in our ESG and Stewardship policy, which is available to download at **australiansuper.com/ESGpolicy**

Integrating a top-down view of climate change

We are seeking to fully integrate climate change risks into our investment risk framework. Further integration of climate change risks into our investment processes is the subject of a major project underway this year.

Our investment team is engaging with industry leaders in climate change science, such as CSIRO Futures, to gain an understanding of the range, extent and timing of the transition and physical impacts on the Australian and global economy; and the potential impacts on key drivers of the Fund's long-term returns. We will use the insights from this research and further internal analysis to develop a framework for introducing climate change enhancements to our existing management and reporting processes, and to promote alignment between existing 'bottom-up' processes and a 'top-down' view of climate change risk.

Decision making hierarchy

Our Investment Governance framework defines the roles and responsibilities of AustralianSuper's Board, Investment Committee and Investment Department. The Board has approved an investment delegation framework that promotes timely decision making, transparency and accountability. As with any other material investment issue, responsibility for the management of climate change falls within this delegation framework.

1 **Board**

AustralianSuper's Board has identified climate change as a material issue for the investment portfolio. The ESG and Stewardship Team report to every board meeting on the key activities of the ESG and Stewardship program including climate change. The Board also approves the overall strategic direction and annual reviews of the ESG and Stewardship program including climate change.

2 **Investment Committee**

The management of climate change within the investment portfolio is specifically identified in the Investment Committee's terms of reference.

The Investment Committee has approved AustralianSuper's ESG and Stewardship Policy which forms part of the Fund's Investment Governance Framework. It states the Fund's belief that ESG issues (including climate change) can impact investment outcomes and will be managed by ESG integration and stewardship activities.

The ESG and Stewardship Team reports to every Investment Committee meeting on the key activities of the ESG and Stewardship program including climate change. The Investment Committee also approves the overall strategic direction and annual reviews of the ESG and Stewardship program including climate change.

3 **Chief Investment Officer**

The Investment Department is headed by the Chief Investment Officer (CIO), who is responsible, via delegation from the Investment Committee, for the design of AustralianSuper's investment strategy and the execution and implementation of its investment program. The CIO ensures climate change is appropriately embedded within the investment strategy and executed by the dedicated ESG and Stewardship team, Head of each Asset Class, Portfolio Construction team and asset class teams.

4 **Asset Class and ESG and Stewardship teams**

The ESG and Stewardship team is responsible for implementing AustralianSuper's ESG and Stewardship Policy and for contributing to the management of climate change within the portfolio as directed by the CIO.

Asset class teams are responsible for taking into account ESG considerations, including climate change risks, when making investment decisions. The ESG and Stewardship team works closely with the teams to integrate ESG considerations in the investment and ongoing stewardship processes. The team draws on research and data from internal and external fund managers, ESG data service providers and membership of investor organisations that have climate change expertise.

The ESG and Stewardship team also performs a range of climate-related advocacy, engagement, collaboration and reporting responsibilities.

CASE STUDY

Low carbon investment opportunities

Climate change presents future opportunities in new industries and investments, such as the renewable energy sector.

As clean energy technologies become more affordable and grow in scale, renewable energy becomes more attractive from an economic and investment perspective. More than 33% of the world's total installed power generation capacity comes from renewable sources[6]. Solar and wind generation are now the cheapest forms of energy production for most of the world's population, including Australia. It is also becoming cheaper to build new sources of clean energy than operate existing thermal energy plants.

In some jurisdictions, regulatory, tax and policy environments are becoming more favourable. For example, the US offers long-term power purchase agreements (PPAs) for renewable electricity and wind energy projects. PPAs are long-term contracts which enable companies to buy renewable energy from energy generation companies at agreed volumes and prices. They help to provide financial certainty and secure renewable energy sources for companies, while encouraging investment in new renewable energy developments.

We're starting to see increasingly ambitious top-down commitments from governments in some countries, particularly at the state level. As at 2018, 169 countries at the national or state level had set renewable energy targets, with some adopting 100% targets[6].

6 REN21, Renewables 2019 Global Status Report

AustralianSuper's investments in low carbon and renewable assets

AustralianSuper currently invests in a range of renewable energy projects across markets with favourable economic, regulatory and technological conditions, with plans to invest over $1 billion in the sector. We expect this allocation to continue to grow over time.

Generate Capital

Generate is an investment platform specialising in distributed energy and sustainable infrastructure based in San Francisco in the United States. The company is leading the market in its delivery of infrastructure-as-a-service. Generate owns, operates and finances infrastructure assets covering electric transportation and technologies. These include battery storage, solar, energy efficiency, electric vehicle, fuel cells, water treatment and waste management. In the last five years, Generate has built US$1 billion in sustainable infrastructure assets.

Quinbrook Infrastructure Partners

Quinbrook is an infrastructure manager focusing on US, UK and Australian renewable energy with significant opportunities in US solar, wind and battery investments. The company invests in lower carbon and renewable energy supply infrastructure and businesses with the aim of helping households, businesses and governments transition to a lower carbon economy. It funds the development, construction and ongoing operations of lower carbon and renewable energy supply infrastructure, such as onshore wind, solar photovoltaic ('PV') power, biomass, hydro, geothermal and efficient gas fired power. It also invests in emerging and critical energy storage solutions, such as battery storage.

Quinbrook does not invest in energy generation powered by coal, nuclear, native woodlands or biomass. Quinbrook currently has over US$1.6 billion in commitments, and has developed the AC Gemini Solar + Battery Storage Project in Nevada, which is the second largest solar project in US history.

National Infrastructure Investment Fund (NIIF)

NIIF was set up by the Indian government in 2015 to attract foreign investors to finance its domestic infrastructure, and is now 51% owned by private investors. NIIF's key focus is on investing equity capital in India's core infrastructure sectors: transportation, energy and urban development. A large part of the investment opportunity set is in the renewable energy sector, with a focus on wind and solar.

The Indian government has set renewable energy targets of 175 Gigawatts (GW) by the year 2030, equivalent to 40% of power generated from renewable sources. To capture this mandated growth in renewables, NIIF is a 22.6% owner in a renewables platform, Ayana India, which has commitments of US$100 million. The platform currently has a 300 Megawatt (MW) solar project in Rajasthan and two 250 MW projects in Andhra Pradesh.

$1 billion

AustralianSuper's current commitments to renewable energy investments.

33%

World's total installed power generation capacity from renewable sources.

169

Countries that had set renewable energy targets as at 2018.

Identifying climate change risks

Investment decision-making at AustralianSuper incorporates the belief that embedding ESG considerations into investment decision making and being an informed and active owner supports long-term value creation.

The ESG and Stewardship program ensures that climate change and other ESG risks and opportunities are integrated into the Fund's investment process and guides our actions once we own an asset.

Types of climate change risks

Climate change poses two major risks to the long-term valuations of our assets.

1 **Transition risks**
The risks and opportunities created as the world transitions to a low carbon economy. This is primarily a technology disruption theme. Public policy risk (the expectation of an inevitable policy response[7]) and stranded asset risk (the risk that fossil fuel reserves will suffer a significant loss in value if no longer required) are also components of this theme.

2 **Physical risks**
The physical risks to assets from changing weather patterns such as severe weather events, longer-term shifts in climate and rising sea levels.

7 The Inevitable Policy Response (IPR) is an initiative from PRI, Vivid Economics and Energy Transition Advisors to help investors prepare for the market impact and associated portfolio risks from future policy responses to climate change. The IPR project is forecasting a policy response by 2025 that will be forceful, abrupt, and disorderly because of the delay. **https://www.unpri.org/inevitable-policy-response/what-is-the-inevitable-policy-response/4787.article**

Transition risks

Energy and business transition accounts for around 90% of Australia's total GHG emissions.

The Australian Department of Industry, Science, Energy and Resources' National Greenhouse Gas (GHG)[8] Inventory provides a useful framework for investors, highlighting the key areas of focus required to manage climate change risks in investment portfolios:

› As investors, understand and price the risks associated with the low carbon transition in each investment decision.

› As stewards, influence the transition to low carbon in each emissions sector.

Share of total annual emissions by sector
for the year to September 2019

This chart shows the annual share of GHG emissions for each inventory sector. Emissions from each sector will need to reduce to achieve the transition to a low carbon economy. This will require a business process transition where company operations become net zero by 2050. Growth in sectors that sequester carbon such as tree planting or other atmospheric carbon removal technologies (shown as 'LULUCF' in the chart) also contribute to a lower carbon economy.

Energy transition

› **Electricity:** Transition from coal and other fossil fuels to renewable energy.

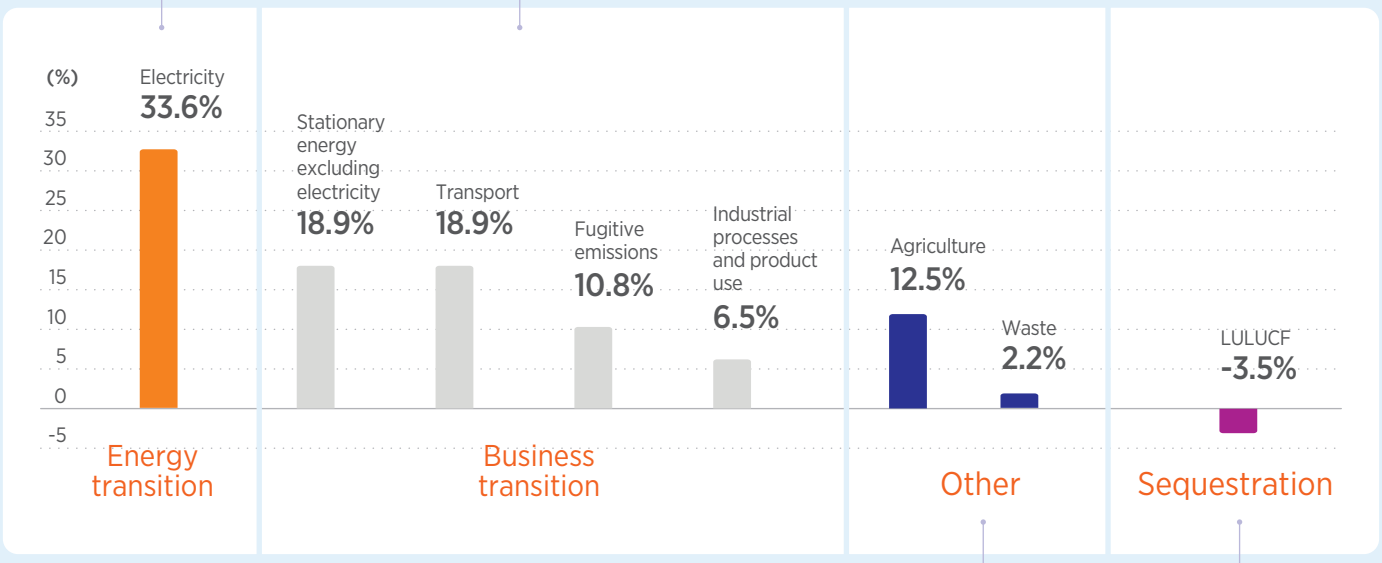
Business transition

› **Stationary energy:** direct combustion of fuels from manufacturing, mining, residential and commercial sectors.

› **Transport:** direct combustion of fuels in transportation by road, rail, domestic aviation and domestic shipping.

› **Fugitive emissions:** from production, processing, transport, storage, transmission and distribution of fossil fuels.

› **Industrial process and product use:** from by-products of materials and reactions used in production processes.



Source: Department of Industry, Science, Energy and Resources. Quarterly Update of Australia's National Greenhouse Gas Inventory: September 2019

Other sectors

› **Agriculture:** Methane, nitrous oxide and carbon dioxide with livestock methane emissions the main contributor.

› **Waste:** Landfills, wastewater treatment, waste incineration and biological waste treatment.

Sequestration

› **LULUCF:** Carbon sequestration from tree planting and other atmospheric carbon removal technologies.

8 **https://www.industry.gov.au/data-and-publications/national-greenhouse-gas-inventory-september-2019**

Physical risks

Physical climate hazards pose material financial risk to companies through asset-level impacts on corporate facilities, as well as through supply chain and market impacts upstream and downstream of a company's direct operations.[9]

Market

Evaluated according to two measures:

› where a company generates its sales

› how its industry has historically responded to weather variability.

Heat stress

Changes in the frequency and severity of hot days and average temperature over time can impact energy demand and costs, labour productivity, grid reliability and human health.

Supply chain

Measured by two indicators:

› Country of Origin: measures the risk in countries that export the commodities a company depends on.

› Resource demand: measures the level of a country's dependency on climate-sensitive resources such as water, land and energy across the supply chain.

Water stress

Changes in drought-like patterns can impact company operations, community relations and exposure to regulatory risk.

Sea level rise

The absolute and relative increase in the frequency of coastal floods, due to sea level risk, storm surge and high tides.

Floods

The severity and frequency of historical floods, the frequency of future heavy rainfall events, and the intensity of prolonged periods of heavy rainfall can have direct and indirect impacts on company operations and damage property and nearby infrastructure.

9 Upstream activities are performed closer to the source such as exploration, extraction and production of raw materials. Downstream activities occur closer to the end user of the product such as refiners, distributors and retail outlets.

Managing transition and physical risks in the portfolio

As a signatory and supporter of *The Investor Agenda*[10], AustralianSuper has adopted a four-stage framework to manage climate change risk in its portfolios. Our climate change risk management framework is implemented through our ESG and Stewardship program working closely with each asset class team.

1 Investment	2 Stewardship	3 Collaboration & advocacy	4 Disclosure & measurement

10 The Investor Agenda was developed to help the global investor community accelerate actions critical to tackling climate change and achieving the Paris Agreement. Visit: **theinvestoragenda.org**

1. Investment

Making sure ESG factors are considered starts before we make an investment and continues for as long as we keep it. Our investment process makes sure ESG factors are taken into account when we make investment decisions, whether we're investing directly ourselves or through external managers.

We integrate consideration of climate change risks and opportunities into our investment decisions within each asset class including the equity, infrastructure, property and direct credit portfolios. The approach we take for each asset class is tailored to the nature of the risk and our investment process for that asset class.

Australian and international equities

AustralianSuper invests around $82 billion in companies listed on Australian and international stock exchanges. Approximately 60% of the Australian equity portfolio and 38% of the international equity portfolio is managed by our in-house management team[11].

Internally managed equities

As part of our internal equities investment process, we consider the key value drivers for companies in the S&P/ASX 200 companies and all Australian and international companies our internal equities teams invest in. We identify which sectors are susceptible to valuation impacts due to climate change risks and evaluate each underlying company on their management of these risks. This information feeds into the active investment process that determines which companies we invest in.

Key Value Driver (KVD) Risk Framework

AustralianSuper has developed a proprietary ESG risk framework for listed companies. This assessment aims to identify material ESG issues that could impact a company's key value drivers, its current strategy or its business as usual activities. Climate-related risks and opportunities are identified in this process. Companies are assessed on this risk and the ESG and Stewardship team incorporates these insights into its engagement meetings with each company.

Externally managed funds

AustralianSuper monitors the integration of climate change considerations by the external fund managers who invest on our behalf. We review listed and private equity managers on an annual basis on their management of climate change issues. We recently expanded our climate change assessment to private equity managers.

We assess each manager's approach to climate change through a TCFD aligned framework. For example, we ask managers to articulate their approach to managing stranded asset and climate change risks within their respective portfolios, and how they consider transition and physical impact risks in the companies in their portfolios.

Infrastructure and property

AustralianSuper invests around $17 billion in infrastructure assets, with more than 42% managed by our in-house team. The property portfolio currently totals $11 billion with 44% managed internally.[11]

AustralianSuper integrates an assessment of climate change risk and management into its due diligence and ongoing management plans for unlisted assets. When we consider investing in a property or infrastructure asset, we consider significant risks and opportunities including climate change. Our ESG due diligence risk matrix ensures business transition is considered as part of the acquisition assessment process and ongoing ownership reviews.

If there is a valuation impact, the potential size of that impact is assessed. Identified issues are included in the management plan if we buy the asset. An example of this is how we consider energy efficiency, future product demand, energy transition and climate change adaptability when bidding for an asset.

For some of our major Australian infrastructure investments, we've undertaken a climate change adaptability risk assessment. This helps us to understand the potential physical impact of climate change on these investments and to build strategies to manage physical impacts in long-term asset management plans.

We conduct annual ESG reviews on our directly-owned infrastructure assets. This includes a climate change risk assessment and review of how the business is managing issues such as air emissions, toxic materials, waste, renewables strategies and emergency preparation.

We continue to evolve our ongoing internal review process to ensure that climate-related risks are appropriately managed at each of our directly owned assets, now and in the future. We also monitor the integration of climate risk factors into the investment process of our core external infrastructure and property managers.

To assist our monitoring of core property managers, we use the annual Global Real Estate Sustainability Benchmark (GRESB). Each year, our core external property managers, ISPT and QIC, undertake the GRESB assessment, which measures the energy efficiency, water usage and impact on society of the portfolios we are invested in. We review these results and compare them across managers and broader peer groups.

Every six months, the ESG and Stewardship Team meets with counterparts at each of our core external property managers. The purpose of these meetings is to update our understanding of the progress of each manager's sustainability initiatives and to address challenges and gaps.

Asset-specific resilience work for our property assets is primarily undertaken by our external managers with AustralianSuper overseeing these activities.

11 The asset allocation and other investment information are current as at 31 March 2020, unless otherwise stated. AustralianSuper may change asset allocations and investments from time to time to suit market circumstances.

Investment portfolio – 31 March 2020

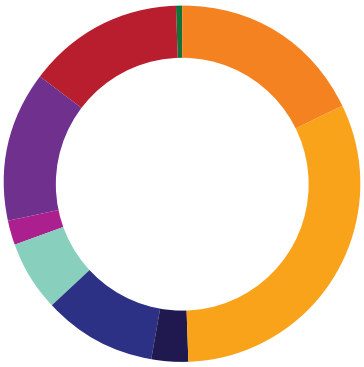
With members assets of more than $168 billion, AustralianSuper is a significant investor in Australian and international markets. We are an active investor and manage a broad investment mandate, investing across multiple asset classes, geographic markets and at different points in the capital structure.

AustralianSuper currently invests 51% of its total portfolio within Australia. At just under half the portfolio, the proportion of international assets is expected to grow over time.

The proportion of the portfolio currently managed internally is 38%.

Our climate change integration is heavily focussed on listed equities given the size of the asset class. We also integrate climate change considerations while undertaking due diligence on infrastructure and property assets, particularly given their large illiquid nature.

Investment portfolio composition
as at 31 March 2020



- Australian Equities 18%
- International Equities 31.5%
- Private Equity 3.3%
- Infrastructure 10.3%
- Property 6.5%
- Credit 2.3%
- Fixed Income 13.6%
- Cash 14%
- Other 0.5%

CASE STUDY

King's Cross, UK a model in sustainability

AustralianSuper members own more than two-thirds of the King's Cross estate redevelopment project in London. King's Cross is the largest urban regeneration project in Europe and is transforming a former industrial area into a unique place to live, work, study and play. When complete, the 740,000 square metre estate will house 7,000 residents, 30,000 workers and 5,000 students and include 26 acres of public space.

The King's Cross development is built on sustainable principles, which are woven through its design, construction and operations. In partnership with developer and part-owner, Argent, AustralianSuper is helping to foster more sustainable ways of living by combining minimal environmental impact with cultural and social diversity and community connections.

King's Cross aims to have a positive impact on the surrounding community by creating partnerships that foster collaboration and maximise opportunities. 'King's Cross Recruit' has placed more than 1,000 people into work since 2014, with more than two-thirds from the surrounding borough. To help maximise the social value of the development, 'Camden Giving' was established by the King's Cross Partnership, which last year distributed £380k in grants to charities aiming to address inequality in the locality.

The office buildings have been designed to achieve energy performance of at least 40% better than required in building regulations – so far seven offices have achieved the highest level of international green building certification, BREEAM Outstanding, which is a quarter of all 'Outstanding' offices in the UK.

The development provides affordable, low carbon energy via one of the UKs most sophisticated district energy networks that has helped reduce the Estate's carbon emissions by 50% compared to 2005 levels and is fundamental towards achieving the Estate's zero carbon ambitions.

Fast facts

22,000m²
green roofs representing 40% of new roof space

40%
of development is open space

400
new trees planted

100%
of heat demand and 33% of electricity demand met by the on-site energy centre

4,000m²
solar panels

Zero
waste to landfill

First
new office development in the UK to be financed by a 'Green Loan'

2. Stewardship

As an active investor we exercise the rights and responsibilities of being a large shareholder. Our objective is to communicate our long-term investment interests to companies so that we can improve returns for members.

Direct engagement enables us to influence the composition of company boards and encourage positive behaviour on issues that can impact members' returns, like climate change. We engage with companies to ensure they have appropriate governance around climate change, are setting emissions reductions that are aligned with the Paris Agreement and are disclosing the information that we need to make investment decisions that consider climate change.

We also influence companies by voting on company and shareholder resolutions. This includes active consideration of climate change-related shareholder resolutions.

Company engagement

AustralianSuper regularly engages with the companies we invest in and the fund managers who invest on our behalf on climate change risks. We believe that proactive engagement with companies on ESG factors gives us the ability to influence outcomes that can maximise long-term investment performance for members.

Engagement on climate change involves members of the investment team engaging with the listed company directors and senior management. Discussion topics include TCFD disclosure, GHG emissions mitigation and target setting, climate change adaptation, stranded assets, governance structures to appropriately manage climate change and incorporating climate change metrics into remuneration structures. For companies which own coal assets, we also engage with them on the potential for clean coal technologies, and their future business robustness and model under a net zero 2050 scenario.

Voting

AustralianSuper votes on all company resolutions for:

- S&P/ASX200 companies
- any other Australian listed company in which AustralianSuper is a substantial shareholder
- all Australian companies held in internally managed portfolios
- most listed international companies.

We also vote on shareholder resolutions based on the materiality and nature of our holdings in the entity, and have voted on a number of climate change resolutions.

The Fund supports resolutions that enhance value, promote or require appropriate disclosure, ensure appropriate and effective board composition and operation, and encourage performance-based remuneration practices and fair quantum pay outcomes. The Fund may consider advice from proxy advisors but is ultimately responsible for making decisions in the best interests of members. We publish our quarterly voting records on our website at: **australiansuper.com/ResponsibleInvestment**

CASE STUDY

Collaborating for a bigger impact

AustralianSuper is one of the five founding member of Climate Action 100+ (CA100+), a global group of investors with assets totalling around US$40 trillion. AustralianSuper is also a member of the CA100+ global steering committee, which our Director of ESG and Stewardship is chairing for a six month rotation from April 2020.

CA 100+ is promoting change in the world's largest carbon emitters. It targets the world's top 100 carbon emitters (ranked by carbon emissions) plus 61 other companies nominated by CA100+ signatories that have been identified as having material climate change investment risk.

CA100's goals are consistent with how AustralianSuper manages climate change risks and include:

- reducing carbon emissions consistent with the Paris Agreement of limiting global warming to well below 2 degrees from pre-industrial levels by 2100
- improving governance on the management of climate change risks and opportunities
- improving climate change disclosures (including TCFD reporting).

Each of the target 161 companies has been assigned to a lead investor to set the engagement strategy.

AustralianSuper is the lead investor on Qantas and co-lead on Rio Tinto. We have been successfully engaging with both companies to ensure their climate change strategies are aligned with CA100+ objectives. Since beginning these engagements, Rio Tinto have exited from coal, published their second TCFD report aligned to the Paris Agreement goals and set asset by asset emissions targets. Qantas recently announced a package of responses to climate change including their intention to cap emissions at 2020 levels, be net zero emissions by 2050 and help develop bio-fuels as part of a sustainable aviation fuel industry in Australia.

Since the establishment of CA100+ in December 2017:

- four out of the 13 focus companies in Australia have made net-zero by 2050 commitments
- BHP is the first mining company which plans to set scope 3 emissions reduction targets
- Bluescope and Woolworths have committed to setting science-based targets
- globally, almost 20% of focus companies have set or committed to set a science-based target for reducing their greenhouse gas emissions and 40% have conducted climate scenario analysis.

Examples such as these illustrate the importance of business transition in solving climate change and our role as a shareholder to encourage such transition.

For more information on Climate Action 100+ visit **www.ClimateAction100.org**

Climate Action 100+

Global Investors Driving Business Transition

3. Collaboration and policy advocacy

Investors have a vital role to play in driving the low-carbon transition across the global economy.

We believe we can make a bigger, more lasting impact by working with companies and other asset owners for positive change.

AustralianSuper participates in broader industry networks and forums to help improve the operation of the financial system with regard to climate change risk.

We engage in significant advocacy initiatives and are active participants in peer groups and networks to advocate for improved climate risk management and transparency. This also provides the opportunity to exchange ideas and develop practical solutions.

Climate Action 100+
Climate Action 100+ (CA100+) is a global collaborative investor initiative that engages with companies with heavy exposure to climate change and fossil fuel assets to ensure they understand climate change and carbon risks, have appropriate risk management strategies in place and are appropriately valuing those assets with regard to potential future carbon constraints. AustralianSuper is a founding member of CA100+ and joined the steering committee in 2017.

Asia Investor Group on Climate Change
The Asia Investor Group on Climate Change (AIGCC) is an initiative to create awareness and encourage action among Asia's asset owners and financial institutions about the risks and opportunities associated with climate change and low carbon investing. AIGCC provides capacity and a trusted forum for investors active in the Asia region to share best practice and to collaborate on investment activity, credit analysis, risk management, engagement and policy related to climate change. AIGCC was launched in 2016, with its increasing member base now responsible for assets under management of over USD9 trillion. AustralianSuper is a founding member of AIGCC.

The Investor Agenda
The Investor Agenda has been developed to help the global investor community accelerate actions critical to tackling climate change and achieving the Paris Agreement. AustralianSuper is a signatory to the global investor statements to G7 and G20 governments on climate change.

Carbon Disclosure Project
The Carbon Disclosure Project (CDP) works with investors, companies and cities to improve the quality and disclosure of greenhouse gas (GHG) emissions data and raise awareness of climate risks. AustralianSuper joined the CDP in 2008, and participated in its 2018 campaign to expand the level of disclosure on carbon emissions by companies.

Investor Group on Climate Change
IGCC represents institutional investors, with total funds under management of over $2 trillion, and others in the investment community interested in the impact of climate change on investments. IGCC aims to encourage government policies and investment practices that address the risks and opportunities of climate change, for the ultimate benefit of superannuants and unit holders. AustralianSuper has been a member of IGCC since 2008 and is also on the management committee.

Signatory of:

Principles for Responsible Investment
The United Nation's Principles for Responsible Investment (PRI) provides climate change information, engagement with global policy makers, facilitates collaborative investor engagement opportunities and provides climate change related investment information. AustralianSuper has been a signatory to PRI since 2007, joined the PRI advisory committee on TCFD aligned climate disclosure in 2017 and supports the 2018 investor commitment to a just transition to climate change.

Australian Council for Superannuation Investors
AustralianSuper, with other major Australian super funds, is a member of the Australian Council for Superannuation Investors (ACSI). ACSI engages with companies and policymakers with the ambition of progressing material ESG issues on behalf of its members. We also use ACSI as a proxy voting advisor, which is a key input into our active voting process. ACSI encourages resources, energy, insurance and materials companies to disclose how they address climate change risks and opportunities and advocates for increased adoption of the TCFD framework.

Australian Sustainable Finance Initiative
The Australian Sustainable Finance Initiative is a collaboration between the financial services sector, which aims to deliver a Sustainable Financial Roadmap to improve the financial system's resilience and stability in managing shocks such as climate change impacts. AustralianSuper is a member of the sustainable financial system working group, which is tasked with creating a more sustainable, resilient and stable finance system by embedding sustainability into systems, markets, products and services to better account for risk and impact.

The Institutional Investors Group on Climate Change
The Institutional Investors Group on Climate Change (IIGCC) provides investors with a collaborative platform to encourage public policies, investment practices, and corporate behaviour that address long-term risks and opportunities associated with climate change. AustralianSuper joined the IIGCC in 2018.

Responsible Investment Association Australasia
The Responsible Investment Association Australasia (RIAA) is a network of over 240 members across Australia and New Zealand who manage more than $9 trillion in assets globally. RIAA's mission is to promote, advocate for, and support approaches to responsible investment that align capital with achieving a healthy and sustainable society, environment and economy.

4. Measurement and reporting

AustralianSuper is committed to improving transparency on ESG issues across the investment industry, and discloses information on our activities and progress on the Fund's website and annual report. The Fund also supports voluntary reporting initiatives like the TCFD and participates in external verification of our climate change approach through carbon footprinting and benchmarking.

Carbon emissions and footprinting assessment

We undertake portfolio carbon foot printing and portfolio physical impact assessments every year alternating between the two.

We believe these analyses are complementary, providing a top down portfolio perspective on the two climate change investment themes of transition risk (the carbon foot printing) and physical impact risk (the physical impact assessment).

We have been conducting the portfolio foot printing since 2013 and commenced the physical impact analysis in 2019.

Carbon footprint metrics

AustralianSuper's carbon exposure assessment is performed by external carbon consultancy, Trucost (part of S&P Global). The aim of this analysis is to understand the carbon risk exposure of the Fund's total equities portfolio and monitor trends.

We collaborate with the asset class teams to integrate the results of this analysis into our investment process and also use the output in our stewardship engagement with companies.

The **latest** Trucost assessment was completed in 2020 (using September 2019 data).

AustralianSuper's carbon intensity is lower than the index

AustralianSuper's equity and fixed interest portfolios are more carbon efficient than their respective benchmarks, using the revenue method of analysis. Similar results are observed using the invested capital and weight average carbon intensity methods.

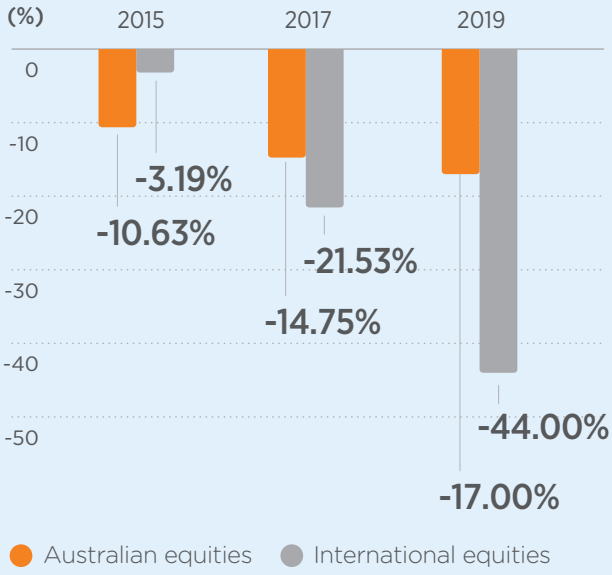
Australian equities	International equities	Global fixed interest
-17%	-44%	-47%

Our carbon intensity is falling over time

This chart illustrates the carbon intensity in AustralianSuper's Australian and international equity portfolios for the last six years. It illustrates how our portfolio is less carbon intensive than the market index, and how our carbon efficiency has been improving over time.

AustralianSuper's international equity portfolio doubled its carbon efficiency between 2017 and 2019, with carbon intensity falling from 21.53% to 44% below the benchmark.

AustralianSuper equities portfolio
Carbon intensity relative to market index



Source: S&P Global/Trucost ESG Analysis. Portfolio data at 30 September 2015, 2017, 2019. Carbon to revenue (C/R) calculated by dividing the apportioned CO2e by the apportioned annual revenues for Direct and First Tier Indirect Emissions.

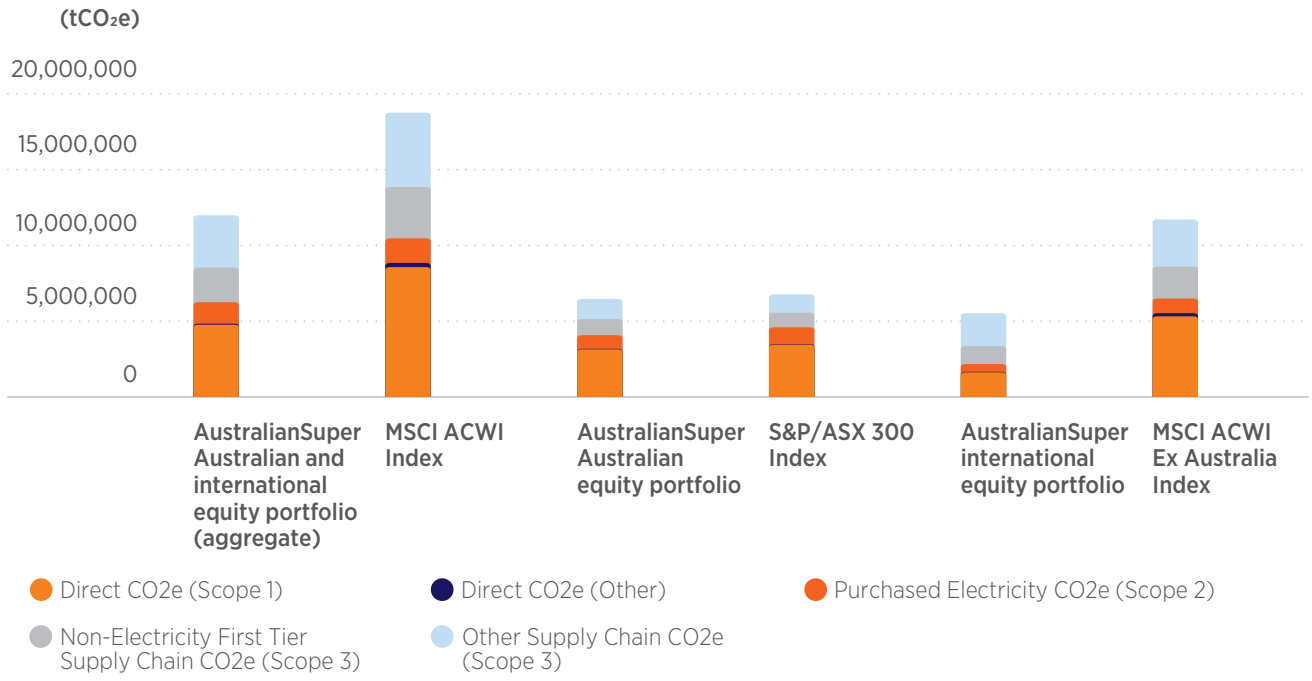
Indices: Australian equities: S&P/ASX 300 International equities: MSCI ACWI ex AUS Index Global Fixed Interest: Composite Index: 50% S&P Australia Aggregate Bond Index & 50% S&P Global Developed Aggregate Ex-Collateralised Bond Index

Carbon emissions by scope

This chart shows the total carbon apportioned to AustralianSuper's aggregate, international and Australian equity portfolios by scope. This illustrates the absolute contribution to climate change from companies in the portfolio across their value.

Carbon emissions by scope

Total apportioned carbon by scope (tonnes)



GHG Protocol Corporate Standard classifies a company's emissions into three 'scopes':

Scope 1
Direct emissions from owned or controlled sources.

Scope 2
Indirect emissions from the generation of purchased energy.

Scope 3
Includes indirect emissions that occur across a company's value chain.

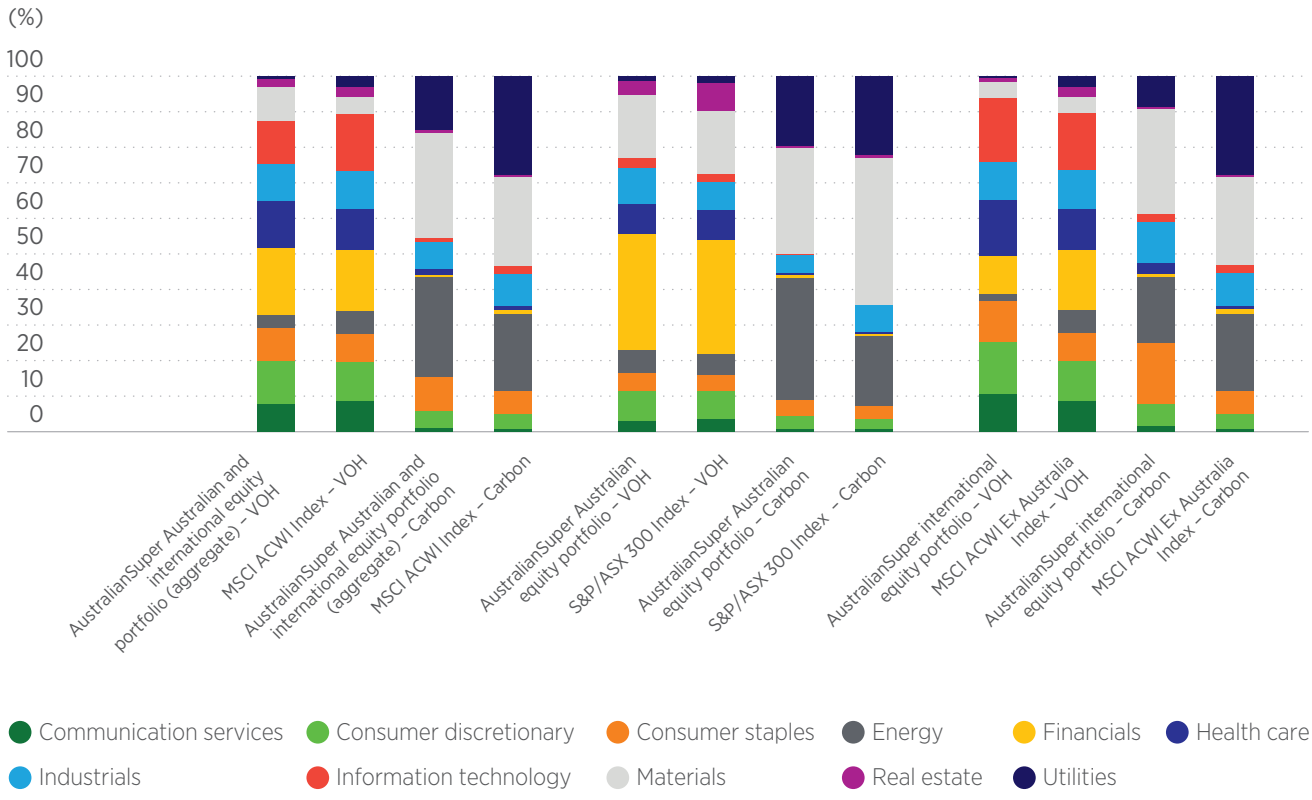
Source: Trucost ESG Analysis/S&P Global – 2 March 2020. Portfolio data at 30 September 2019

Sector value and carbon share

This graph shows each sector's value based weight (VOH Share) in the portfolio, and compares this to the carbon share of each sector against the market index.

Carbon footprint metrics

VOH vs carbon share by sector



Source: Trucost ESG Analysis/S&P Global – 2 March 2020. Portfolio data at 30 September 2019.

Stranded assets exposure

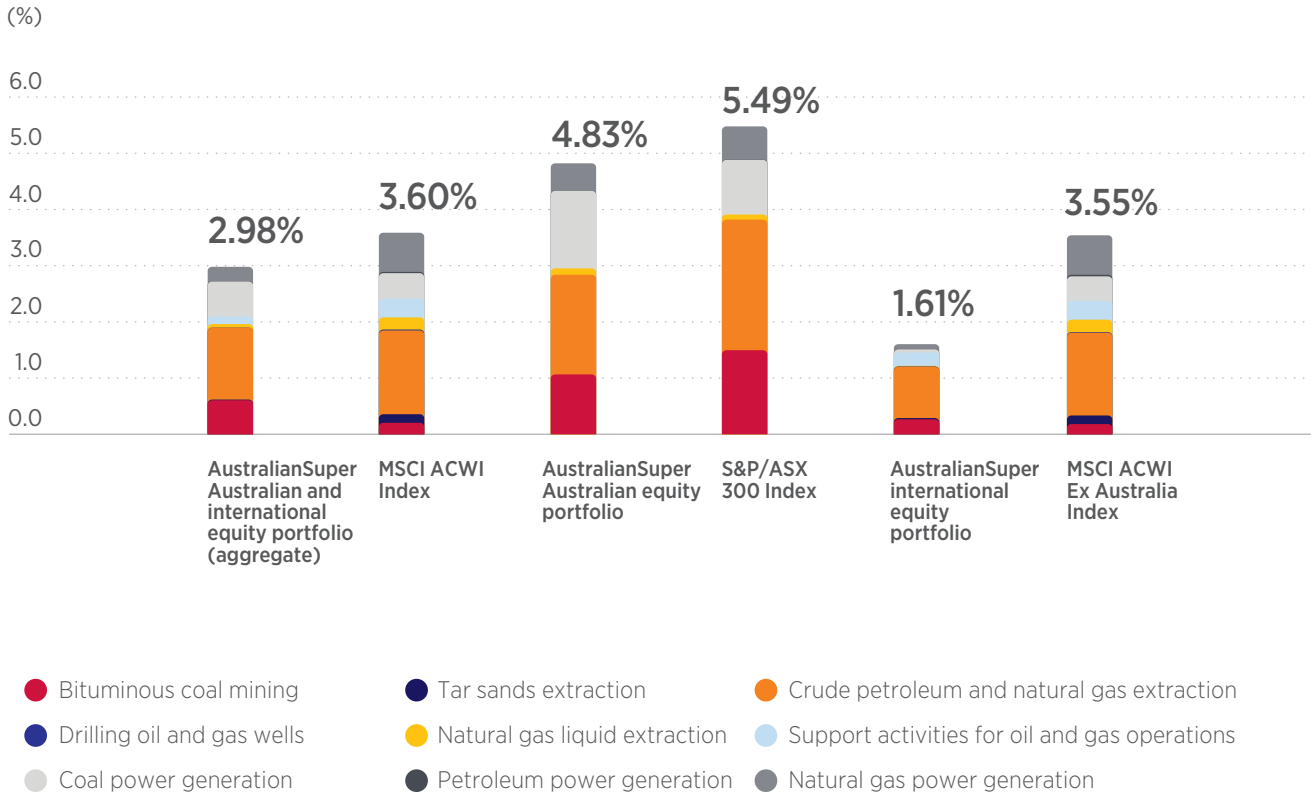
Future emissions from fossil fuel reserves must fall from current expectations if they are to meet the carbon budget required to limit global warming to 2 degrees or lower below pre-industrial levels. Assets that do not have adequate plans in place to transition to the low carbon economy risk being unexpectedly or prematurely written down or devalued and becoming 'stranded'.

This analysis helps to identify assets which have a higher risk of becoming stranded as the world transitions to a low carbon economy across the fossil fuel extraction and energy generation industries.

Extraction-related activities	Energy-related activities
› Crude petroleum and natural gas extraction › Tar sands extraction › Natural gas liquid extraction › Bituminous coal underground mining › Bituminous coal and lignite surface mining › Drilling oil and gas wells › Support activities for oil and gas operations	› Coal power generation › Petroleum power generation › Natural gas power generation

This chart compares the level of revenue dependency companies have in extraction and energy related activities for AustralianSuper's portfolio and the index. AustralianSuper's Australian and international equity portfolios both have a lower exposure to stranded asset risk than the broader market indices.

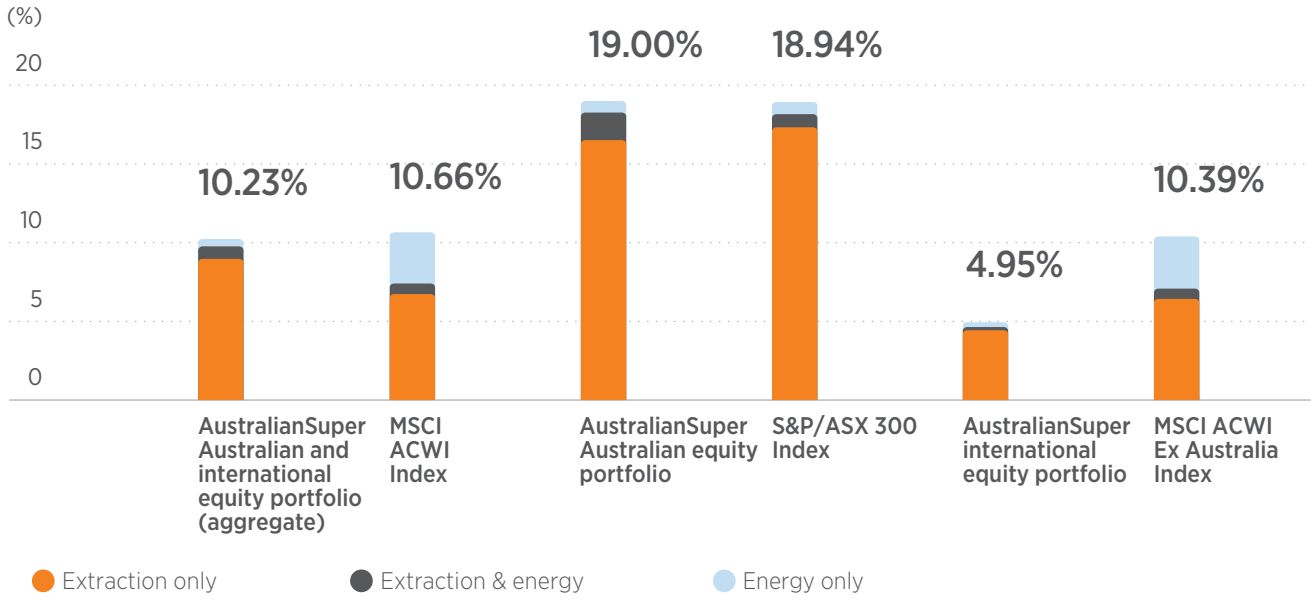
Fossil fuel activities revenue breakdown
Share of total fossil fuel related revenue



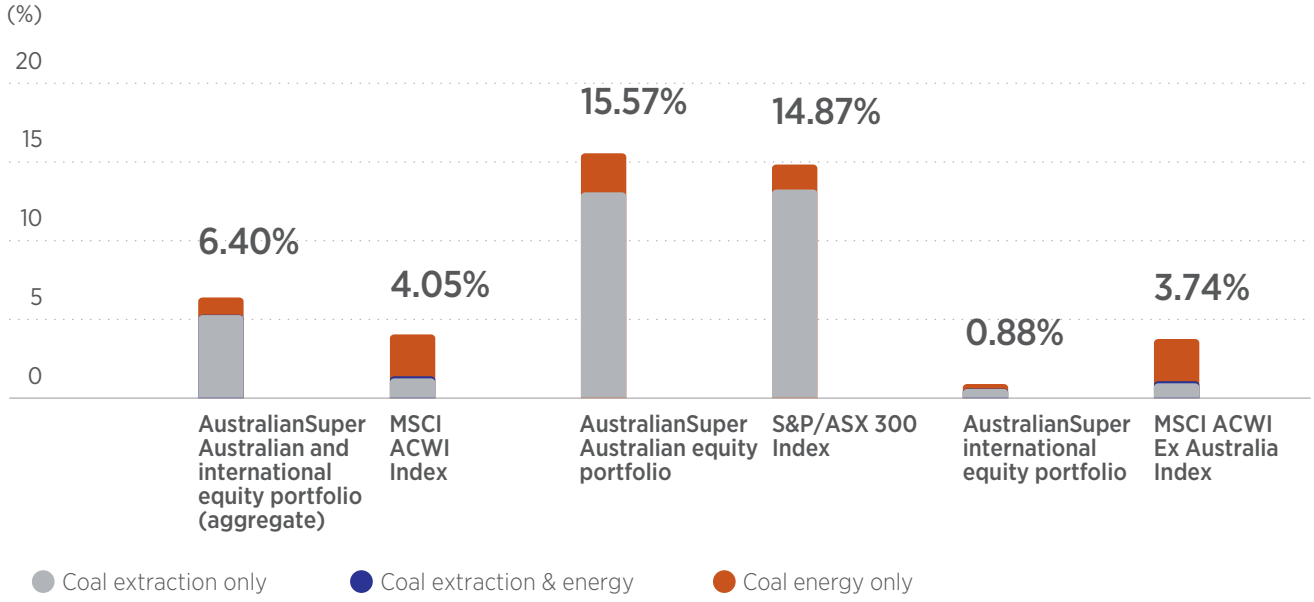
Source: Trucost ESG Analysis/S&P Global – 2 March 2020. Portfolio data at 30 September 2019.

The following charts show the percentage share of the portfolio's total value invested in companies that derive any revenue from fossil fuel related activities, and also exposure to companies engaging in coal activities. The charts show AustralianSuper has similar exposure to the benchmark for Australian equities, and significantly lower exposure in the international equity portfolio.

Fossil fuel and stranded assets exposure metrics
VOH exposure to fossil fuel activities



Fossil fuel and stranded assets exposure metrics
VOH exposure to coal activities



Source: Trucost ESG Analysis/S&P Global –2 March 2020. Portfolio data at 30 September 2019.

Portfolio physical risk assessment

AustralianSuper commissioned research from Four Twenty Seven, a specialist provider of market intelligence on the economic risk of climate change. Four Twenty Seven assessed the Fund's listed and unlisted asset portfolios as at 31 December 2018 to understand their physical risks with results published in May 2019.

The review assessed the risk of an asset being affected by key climate-related hazards such as future floods, sea level rise, heat stress, water stress, hurricanes and typhoons out to 2040 using an above-average warming scenario. The analysis generated company and portfolio level scores for operational, supply chain and market risks for companies in the listed portfolio. For the unlisted portfolio, the analysis identified the 'hotspots' or facilities most exposed across 46 infrastructure and 117 property assets.

AustralianSuper is engaging with those companies identified as 'high risk' in the Four Twenty Seven report to gain a better understanding of how they are managing these risks.

Australian equities portfolio

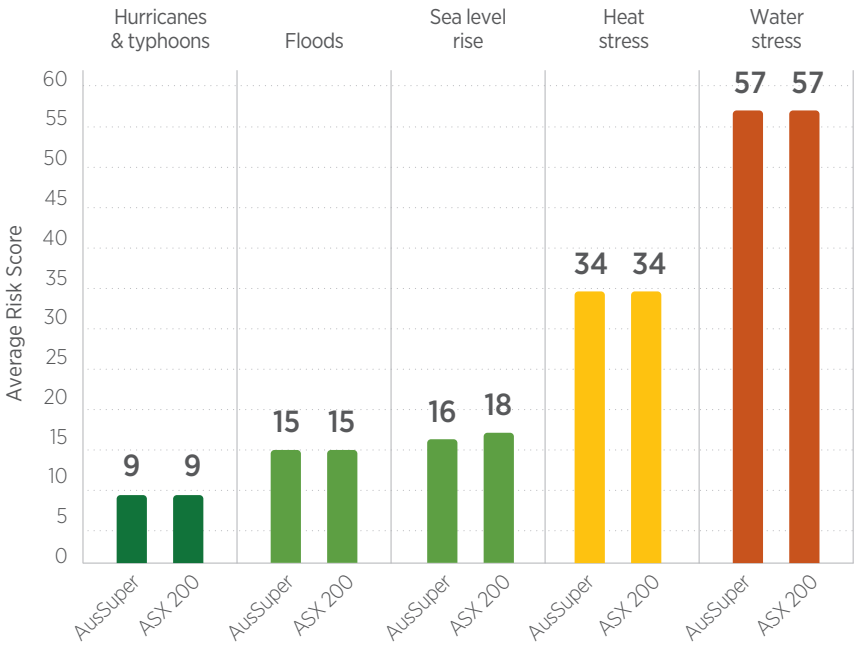
The Four Twenty Seven report found that the Australian equities portfolio is exposed to a high level of risk for water stress and a medium level of risk for heat stress, specifically:

- About 50% of the facilities of companies in the ASX portfolio are in the East Asia and Pacific region, with the majority of these being in Australia, which is highly exposed to water and heat stress.
- About 23% and 24% of the portfolio's facilities are in Europe and North America respectively, with other facilities distributed across Central and South America, Africa and Asia.
- Facilities in the East Asia and Pacific region tend to have high exposure to heat stress and hurricanes and typhoons, while exposure to water stress is prevalent across the western United States, southern Europe, India and Australia.
- The Energy, Consumer staples and Industrials sectors are the most exposed to physical climate change risks.
- The research also highlighted the 10 most exposed companies to physical risks. Among the largest weights in the portfolio, water stress and heat stress were the major risks, with several large companies exposed to multiple hazards. Many of the companies in the portfolio are energy and mining companies, which are highly sensitive to climate hazards.

Average risk scores

AustralianSuper Australian equity portfolio vs S&P/ASX Index

The Australian equities portfolio and its benchmark the S&P/ASX 200, have similar risk exposure overall, with the highest average scores being for water stress and heat stress. This graph shows the average risk scores of the Australian equity portfolio alongside those of the benchmark, S&P/ASX 200 for each climate hazard. Red represents the highest risk exposure and dark green represents the lowest.

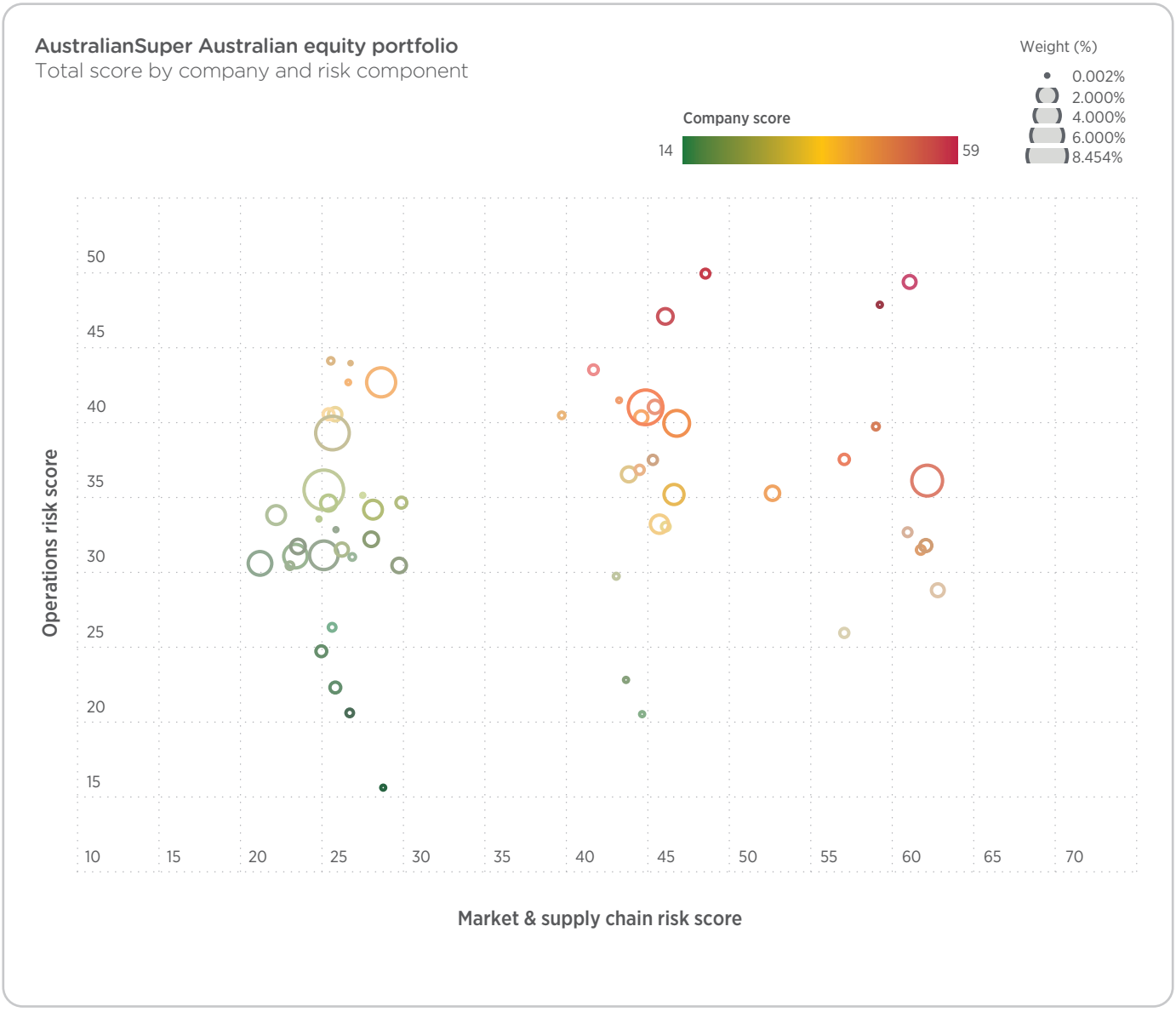


Source: Four Twenty Seven. AustralianSuper data as at 31 December 2018

Operations risk in the Australian equity portfolio

Facility exposure can lead to financial impacts on a company through operation disruptions, increased energy costs, repair costs, merchandise loss and reputation risk. These issues can impact the profit and loss and/or the balance sheet of a company. Companies with operations that are sensitive to hazards such as heat and water stress, floods, sea level rise and typhoons and hurricanes face more severe risks if a large percentage of their facilities are exposed to these hazards.

The graph below shows the operations risk, and the market and supply chain risk of the Australian companies held in AustralianSuper's Australian equity portfolio. Red circles represent the most highly exposed companies, while dark green represent the least exposed. The size of the circles indicates a company's weight in the portfolio, with the larger circles representing larger weights.



Operations risk in the Australian equity portfolio by sector

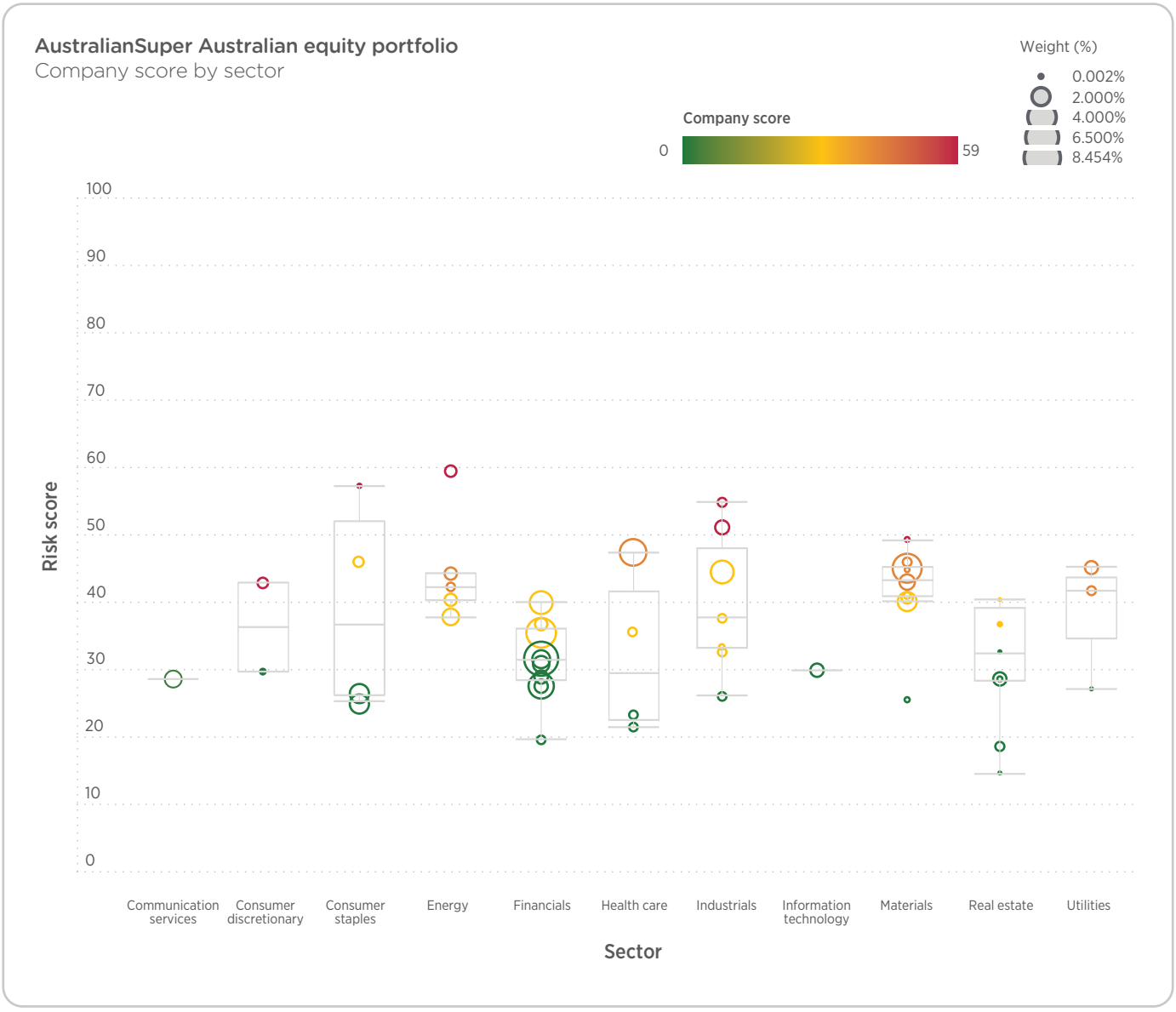
Energy, consumer staples and Industrials stand out as the most exposed sectors in the portfolio.

› Energy and industrials rely on heavy equipment which can incur costly damage during hurricanes and typhoons; and outdoor operations which can be hindered by flooding or extreme heat events.

› Consumer staples, such as beverage companies, have high water demands, which makes them sensitive to increased costs and reputation risks in case of prolonged drought.

› Utility companies also have high risk scores. These companies are highly sensitive to equipment damage and operations disruptions during hurricanes and typhoons and extreme rainfall. Utilities can also experience disruptions due to extreme heat events and water stress that reduce their cooling ability and threaten capacity.

The diagram below shows the companies in AustralianSuper's Australian equity portfolio, by sector, with average risk scores on the y-axis. Red circles represent the most highly exposed companies, while dark green represent the least exposed. The size of the circles indicates a company's weight in the portfolio, with the larger circles representing larger weights.



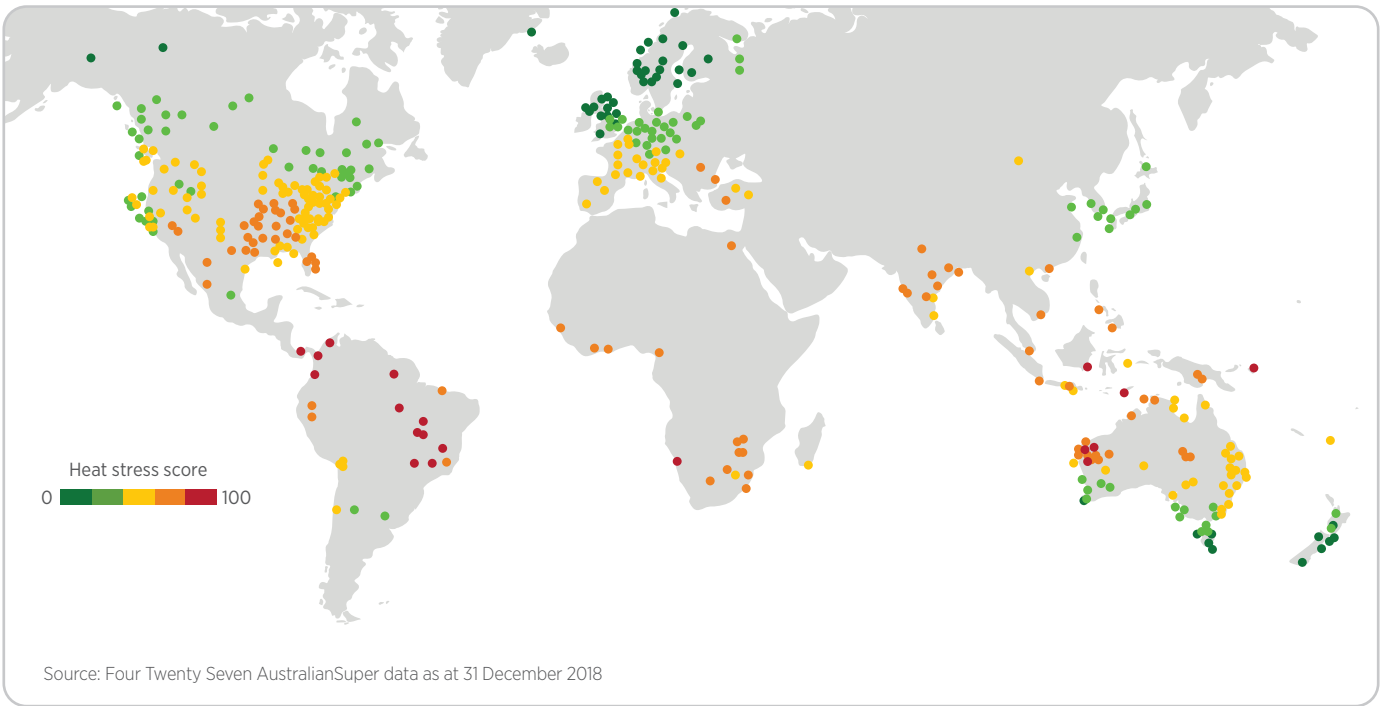
Heat stress exposure

Company operations exposed to heat stress are mainly concentrated in Australia, with the most exposed companies making up less than 1% of AustralianSuper's Australian equity portfolio. Energy and mining companies are particularly sensitive to heat stress due to their high energy use, reliance on heavy equipment that can overheat and their dependence on outdoor labour. Manufacturing, data centres and other facilities with high energy demands and cooling needs are also particularly sensitive to potential increases in operating costs or disruptions during extreme weather events.

The following diagram shows the heat stress exposure of construction, manufacturing, and mining facilities of companies in the AustralianSuper Australian equity portfolio. Red dots represent the most highly exposed facilities and dark green dots represent those facilities with the least exposure.

AustralianSuper Australian equity portfolio

Exposure of construction, manufacturing and mining facilities to heat stress



Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

International equity portfolio

The physical risk assessment found that AustralianSuper's international equity portfolio:

› is exposed to a medium-high level of water stress and heat stress

› has moderate risk for hurricanes/typhoons and floods

› companies with facilities in East Asia and the Pacific region tend to have high exposure to water stress, hurricanes/typhoons and floods

› exposure to water stress is prevalent across the western United States, southern Europe, northern China, India and eastern Australia

› companies that have the highest risk exposure overall tend to be companies with smaller weights in the portfolio. Many of these companies are small companies based in Asia that are highly exposed to typhoons

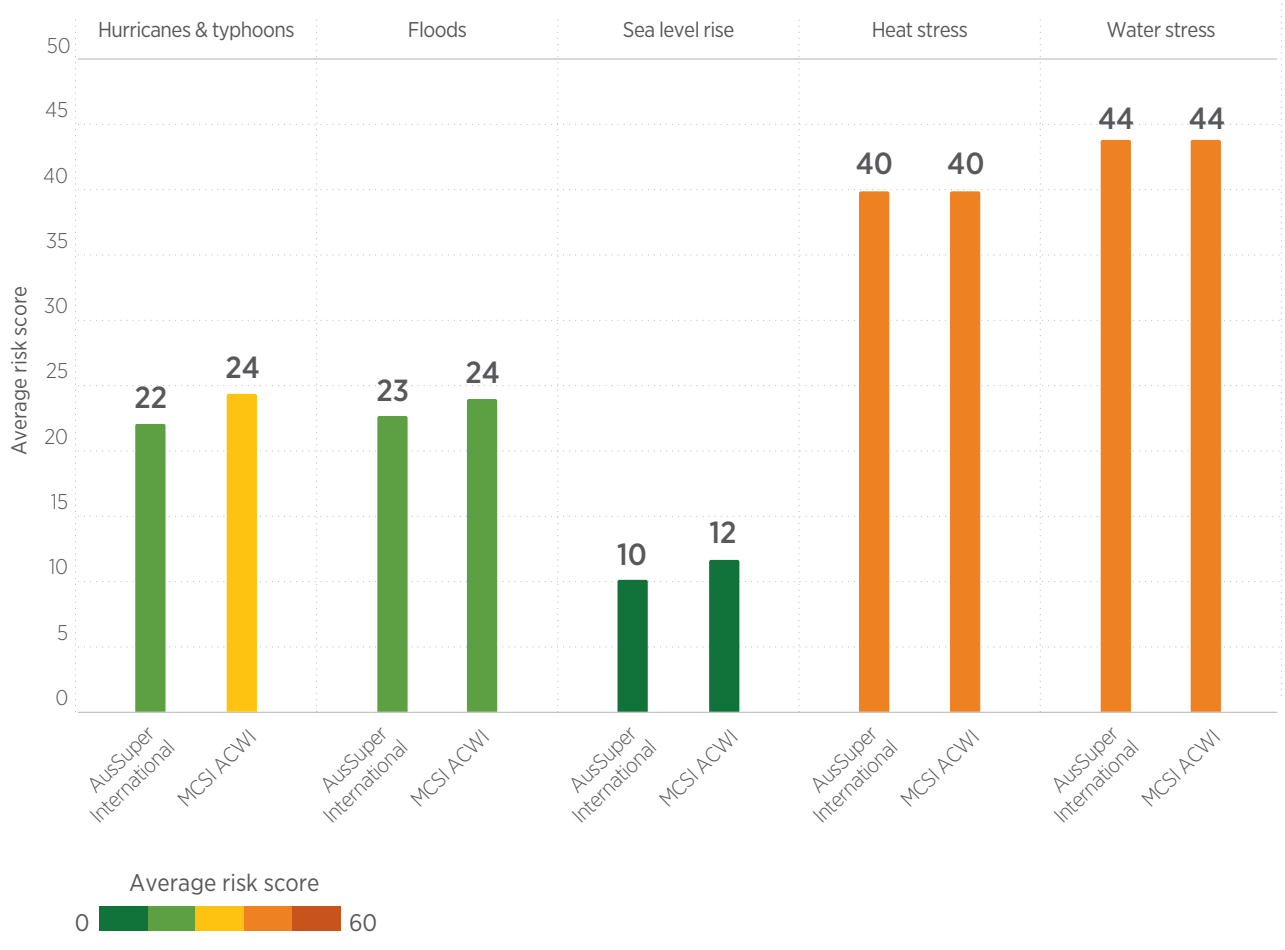
› most exposed sectors are real estate, utilities and information technology.

AustralianSuper's international equity portfolio has a similar risk exposure overall to the benchmark, with the highest average scores for water stress and heat stress.

This graph shows the average risk scores of AustralianSuper's international equity portfolio alongside those of the benchmark, MSCI ACWI for each climate hazard. Red represents the highest risk exposure and dark green represents the lowest.

Average risk scores

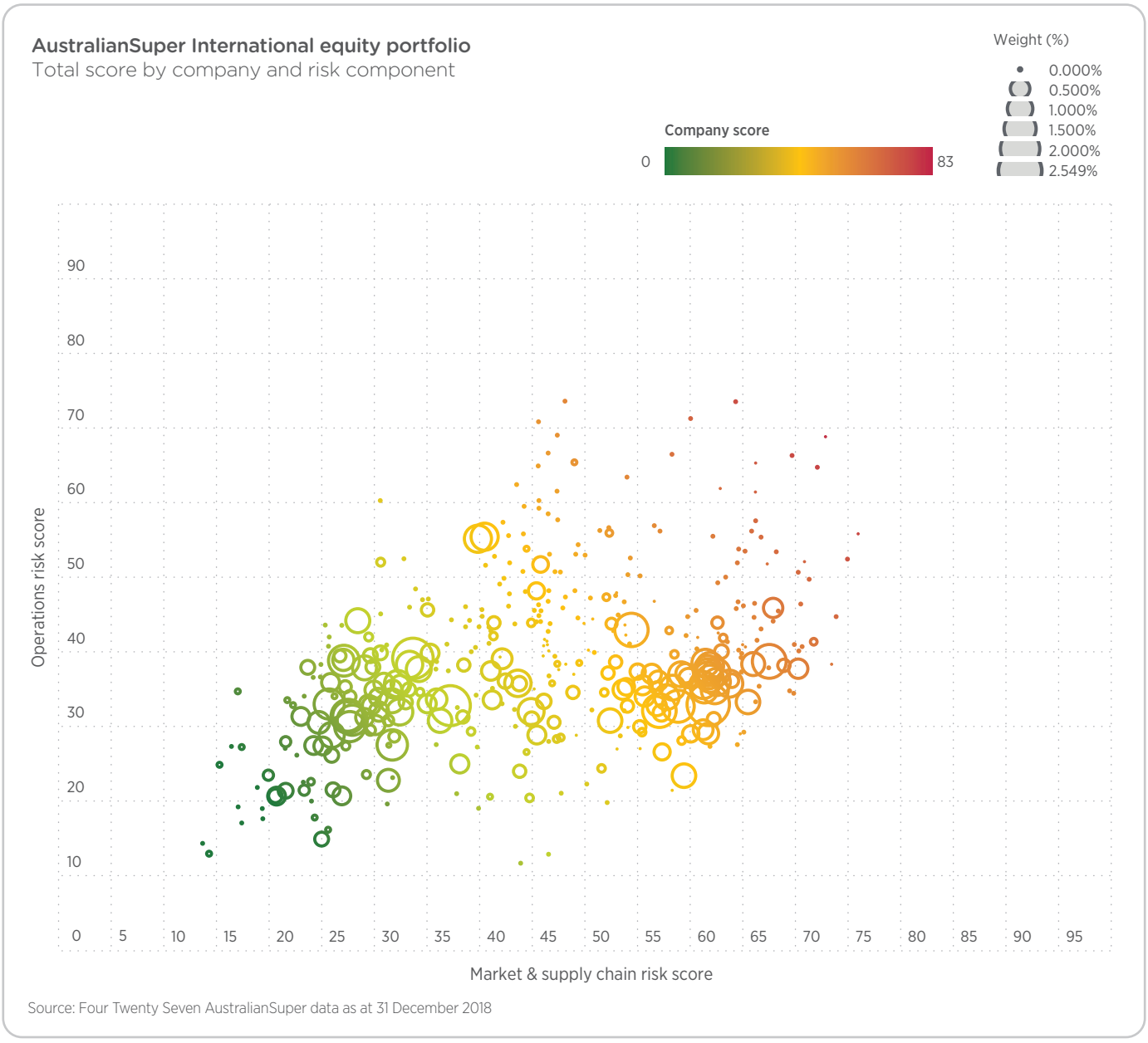
AustralianSuper international equity portfolio vs MSCI AC Index



Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

Operations risk of international equity portfolio

This diagram shows the operations risk, and the market and supply chain risk of the companies held in AustralianSuper's international equity portfolio. Red circles represent the most highly exposed companies, while dark green represent the least exposed. The size of the circles indicates a company's weight in the portfolio, with the larger circles representing larger weights.



Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

Operations risk of international equity portfolio by sector

Real estate, utilities and information technology stand out as the most exposed sectors in the international equity portfolio.

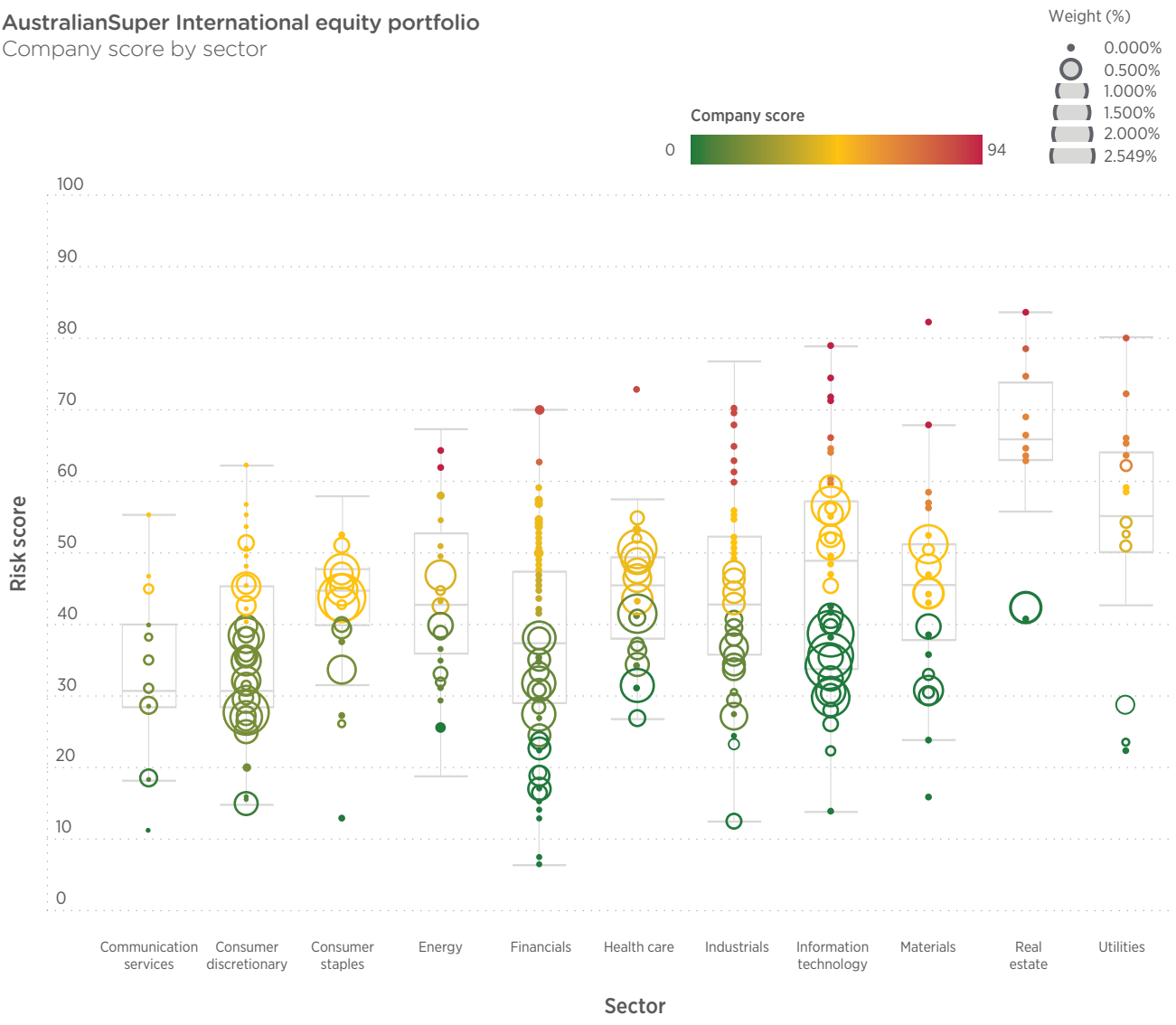
› Utilities are highly sensitive to equipment damage and operations disruptions during hurricanes and typhoons and extreme rainfall. Utilities can also experience disruptions due to extreme heat events and water stress that reduce cooling ability and threaten capacity.

› Information technology companies often rely on long supply chains which can include component manufacturers based in areas of Asia that are highly exposed to climate hazards. Their inventory and equipment can also be costly to repair or replace after damage from inundation.

› Real estate can be vulnerable to reduced property values in areas exposed to sea level rise and floods and increased utility costs in areas exposed to extreme heat and water stress.

This chart shows companies in AustralianSuper's international equity portfolio, by sector, with average risk score on the y-axis. Red circles represent the most highly exposed companies, while dark green represent the least exposed. The size of the circles indicates a company's weight in the portfolio, with the larger dots representing larger weights.

AustralianSuper International equity portfolio
Company score by sector



Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

Unlisted assets

For unlisted assets, Four Twenty Seven assesses the risk of an asset being affected by key climate-related hazards such as future floods, sea level rise, heat stress, water stress, hurricanes and typhoons out to 2040 using an above-average business as usual warming scenario[12]. Consideration is given to the type of asset, and when relevant, the asset value. Four Twenty Seven provides scores on these areas and highlights red flags for assets which score above the 95th percentile for risk exposure to these risks compared to Four Twenty Seven's database of more than 1.1 million sites.

Property portfolio

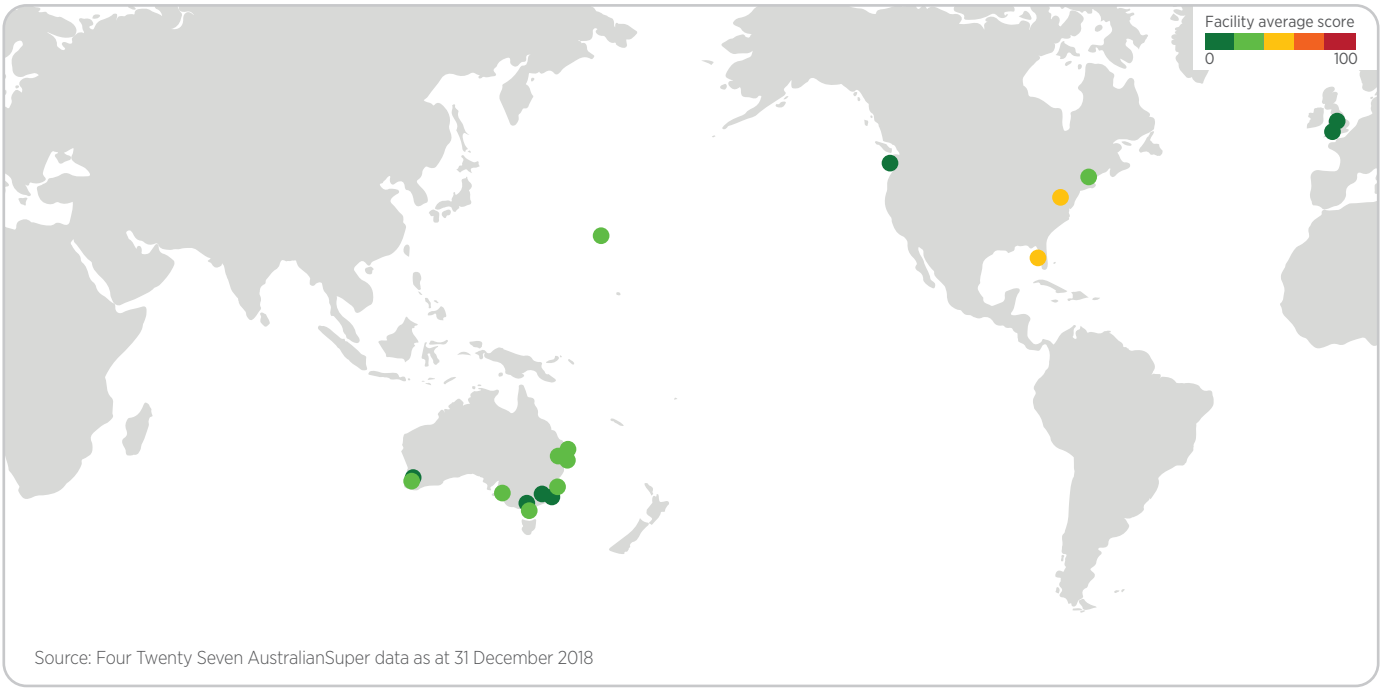
Four Twenty Seven assessed 117 of AustralianSuper's property assets, and found:

- Two red flags across 94 assets, in both cases for flood risk. Both assets are located in Melbourne, Australia.
- Relatively low risk to heat stress in the portfolio.
- Low exposure to sea level rise, with none of the assets projected to be directly affected by 2040. Six assets are coastal and located below 10 metres of elevation which could increase flooding risk.
- Water stress risk concentrated in the South of Australia with the most exposed properties being industrial and typically relying on water-intensive manufacturing activities.
- Relatively low risk to hurricane/typhoons – maximum 28% of the portfolio has some exposure to hurricane/typhoon risk (these assets are located in Queensland and Western Australia).

The diagram below shows the hotspot analysis for AustralianSuper's property portfolio.

AustralianSuper property portfolio

Hotspot analysis – facility average scores



Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

12 Representative concentration pathway – RCP 8.5. **https://www.ipcc-data.org/guidelines/pages/glossary/glossary_r.html**

Infrastructure portfolio

Four Twenty Seven assessed 320 infrastructure sites across 46 assets and found that:

› Within the directly held domestic portfolio of 50 sites, Four Twenty Seven identified 11 red flags (22% of portfolio) with nine for flood risk and two for sea level risk.

› Within the externally managed global portfolio of 270 sites, there were 123 (or 46%) red flags, with flood risk most prevalent followed by sea level risk.

› The risk of floods and sea level rise are prevalent. Australian assets were primarily concentrated in coastal New South Wales. Global assets with some of the most exposed sites are located in the south eastern United States and Europe, and others in Southeast Asia, Africa, and Latin America.

› In Australia, energy infrastructure and highways are the most exposed types among the directly held infrastructure, at least partly due to their large spatial extent.

› Global assets are geographically dispersed and include transport infrastructure like highways, airports and maritime ports, which are exposed to floods and heat stress

› Water and energy infrastructure, such as pipelines and petroleum terminals, are highly exposed to floods, water stress and heat stress and sea level rise.

The following diagram shows a hotspot analysis of AustralianSuper's infrastructure portfolio.

Directly held and managed infrastructure asset sites

Hotspot analysis – facility category scores for floods

Source: Four Twenty Seven AustralianSuper data as at 31 December 2018

A note on this research

A key limitation to this physical risk analysis is that it assesses the level of risk as a result of the asset's geographical location rather than overlaying this risk with an assessment of bespoke mitigation measures put in place at each asset, which is a key focus of our integration and stewardship activities.

CASE STUDY

Transurban Queensland

AustralianSuper is one of the world's largest investors in infrastructure assets. The Fund currently has around $17 billion invested in infrastructure assets such as airports, sea ports, roads and energy distributors on behalf of members.[13] AustralianSuper members own 25% of Transurban Queensland, which operates a network of tolled roads, bridges and tunnels throughout greater Brisbane.

FAST FACTS

52% by 2030

Transurban Queensland's science based GHG emissions reduction target.

80% renewable energy

Transurban Queensland will use 80% renewable energy to power its operations.

Leading Infrastructure Sustainability rating

Logan Enhancement Project: first Queensland project to achieve a Leading ISCA rating.

13. As at 31 March 2020.

Infrastructure assets often have an investment horizon of decades, rather than years. This makes them attractive for long-term investors like AustralianSuper, as they can provide stable and predictable cash flows and long-term growth to fund the retirement incomes of members who can have an investment horizon of up to 60 years.

AustralianSuper members are part-owners of Transurban Queensland and also have a stake in WestConnex in Sydney, investing alongside the Transurban Group who is the majority shareholder and exclusive operator of the roads. Transurban Queensland's network includes the AirportLinkM7, Clem7, the Gateway Motorway, Go Between Bridge, Legacy Way Tunnel and the Logan Motorway.

With more than 500,000 trips taken each workday across Brisbane's toll roads, Transurban Queensland directly employs around 330 people and hundreds more indirectly. Transurban Queensland's roads are surrounded by local communities, ecologically significant forests, wildlife and cultural heritage sites.

An asset's geographic location can make it susceptible to physical changes in the environment.

Road infrastructure assets need to be designed and built to withstand future environmental changes. For example, Transurban Queensland designs bridges for a 100 year lifespan and factors in different climate change scenarios in the planning process. Changing weather events could impact road access and usage, and also put the safety and wellbeing of workers and road users at risk.

Transurban Queensland conducts climate change risk assessments and develops adaptation measures for its major projects to address these risks.

At AustralianSuper, we also look at how the asset is preparing for the transition to a low carbon economy. Transurban Queensland is working to reduce its own greenhouse gas (GHG) emissions in its operational activities, and also looking at ways to reduce emissions from customers' vehicles travelling on its roads.

One of the way it's doing this is by installing new technologies called intelligent transport systems (ITS) into its road network. ITS helps to ensure the roads operate as efficiently as possible, which in turn leads to more free-flowing traffic and fewer GHG emissions. In FY19, customers saved an average of 30 per cent of their fuel and GHG emissions by taking Transurban Queensland roads instead of the alternative more congested routes.

Transurban Queensland is also preparing for the inevitable shift to zero emission vehicles (ZEVs). The number of ZEVs on Australia's roads is projected to reach 13.6 million by 2050, and account for over 60% of new vehicle sales. Transurban is considering how ZEVs might impact the way it designs, builds and manages its roads, such as the way traffic incidents are detected and responded to.

AustralianSuper assesses how companies report on climate change risks, their management strategies and progress towards goals. A key measure is a commitment to publicly reporting progress towards the Taskforce on Climate-related Financial Disclosures (TCFD) recommendations, which Transurban Queensland will be releasing as part of its 2020 corporate reporting suite.

Transurban Queensland has set a science-based GHG reduction target to reduce emissions by 52% by 2030 compared to 2016, and reduce energy use by 10% by 2023 compared to 2013. Transurban Queensland recognises the importance of not only reducing the operational GHG emissions generated over the life of an infrastructure asset, but also the need to reduce emissions associated with the use of carbon-intensive materials such as concrete, steel and asphalt during construction.

Today, all of Transurban Queensland's major construction projects use the Infrastructure Sustainability Council of Australia's (ISCA) Infrastructure Sustainability rating tool to monitor performance and set sustainability targets. The recently completed $512 million Logan Enhancement Project is the first project in Queensland to achieve a Leading ISCA Infrastructure Sustainability rating (awarded for the As-Built category). The project achieved this outcome through the use of 220,000 tonnes of a more sustainable and environmentally friendly road asphalt; by investing $20 million in new fauna bridges and other infrastructure to help wildlife move safely throughout the corridor; and delivering a 30% reduction in energy use for lighting.

Transurban Queensland is reducing its energy consumption and reliance on coal generated power. It recently entered into a Power Purchase Agreement (PPA) with a wind farm in Queensland, which will start providing renewable energy to its Brisbane roads in 2022. Transurban Queensland will use 80% renewable energy to power its operations including Airportlink M7, Clem7, Gateway Motorway, Go Between Bridge, Legacy Way Tunnel and Logan Motorway. The amount of energy to be procured through the PPA in Queensland is equivalent to the annual electricity use from 10,000 Australian homes, and will save 35,000 tonnes of GHG emissions each year.

How effectively are we managing climate risk?

We utilise external responsible investment surveys to help us assess the effectiveness of our climate change approach. We report to the UN's Principles for Responsible Investment (PRI) and the Responsible Investment Association (RIAA) each year as part of our membership of these organisations. In addition, we report to the Asset Owner Disclosure Project (AODP), which is a climate change specific survey of asset owner practices.

A+

Our ESG and Stewardship program is globally recognised and we have been awarded an A+ rating for our Overarching Approach to Responsible Investment in the (PRI) Global Assessment Report 2019.

Top 20

AustralianSuper participates in the Asset Owners Disclosure Project. This annual global survey considers how well asset owners manage the issue of climate change across their portfolios and each funds' disclosure regarding climate change management. AustralianSuper ranked 18 out of the 100 largest global pension funds in the 2018 index.

Leading Responsible Investor

AustralianSuper is one of 14 super funds to be awarded a Leading Responsible Investment Rating in the RIAA 2019 Responsible Investment Super Study. The leading funds comprise the top 25% of the 57 funds in the universe, who have achieved the highest rating for consistently articulating and demonstrating comprehensive responsible investment approaches.

Aligning to a 2 degree or lower world

The energy sector plays a critical role in the low carbon transition and achieving a net zero economy by 2050.

Scenario analysis

Energy transition in equity portfolios

Scenario analysis provides a way for investors to understand the risks they could potentially face as a result of climate change. Specifically, the analysis aims to identify the current portfolio exposure to the low carbon economic transition and future portfolio alignment to Paris-aligned scenarios.

As part of our most recent portfolio carbon footprinting, Trucost (part of S&P Global) analysed the financial exposures to energy generation and energy revenue of AustralianSuper's equity portfolios. This was compared to each portfolio's respective benchmark, and the low carbon economic transition pathway prescribed by the International Energy Agency (IEA).

Trucost reports: "Investors are increasingly asking how they can align their portfolio with globally agreed forward-looking targets to mitigate climate change – so called two degree targets. Historically, portfolios have been measured against traditional financial benchmarks which generally reflect the economy today rather than the low carbon economy – as suggested by the International Energy Agency (IEA) – we need for tomorrow. This over-represents traditional fossil fuel energy sectors and under-represents greener energy providers. To overcome this issue, Trucost compares the current energy mix of a portfolio to the IEA's two degree scenarios, showing investors how to work toward an energy transition goal. This allows them to redirect capital to have the highest 'transition' impact and help to finance the low carbon economy."

Financial exposure to energy generation activities

The energy sector plays a critical role in the economic transition to low carbon and achieving two degree or lower emissions targets. Energy generating companies can be considered climate-aggrevators (fossil fuels) or climate-mitigators (renewable energy) and are classified into three types:

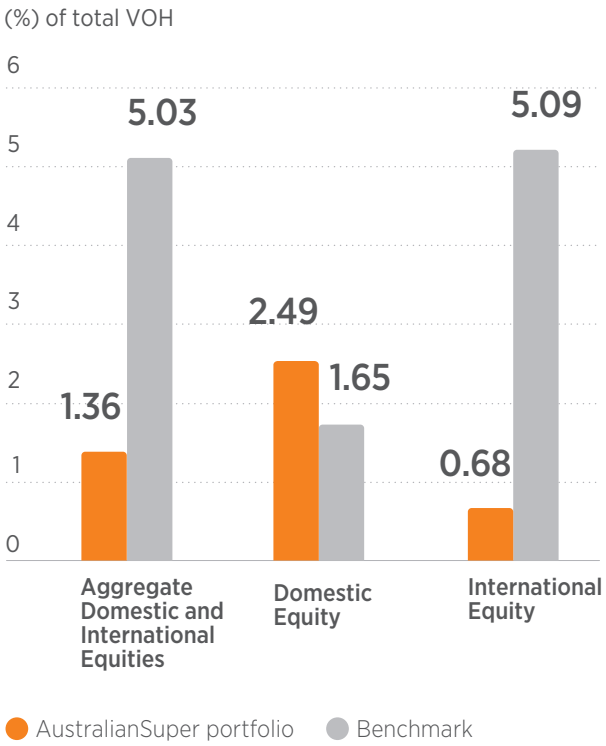
› Fossil fuels: coal, petroleum, natural gas

› Renewables: solar, wind, wave & tidal, geothermal, hydroelectric, biomass

› Other: nuclear, landfill gas, other unclassified power generation.

The chart to the right compares the value of AustralianSuper's equity holdings (VOH) invested in companies which derive any revenue (>0%) from energy generating activities. It compares this to the benchmark as at 30 September 2019.

VOH exposure to energy generation activities



Source: S&P Global/Trucost ESG Analysis. Portfolio data at 30 September 2019

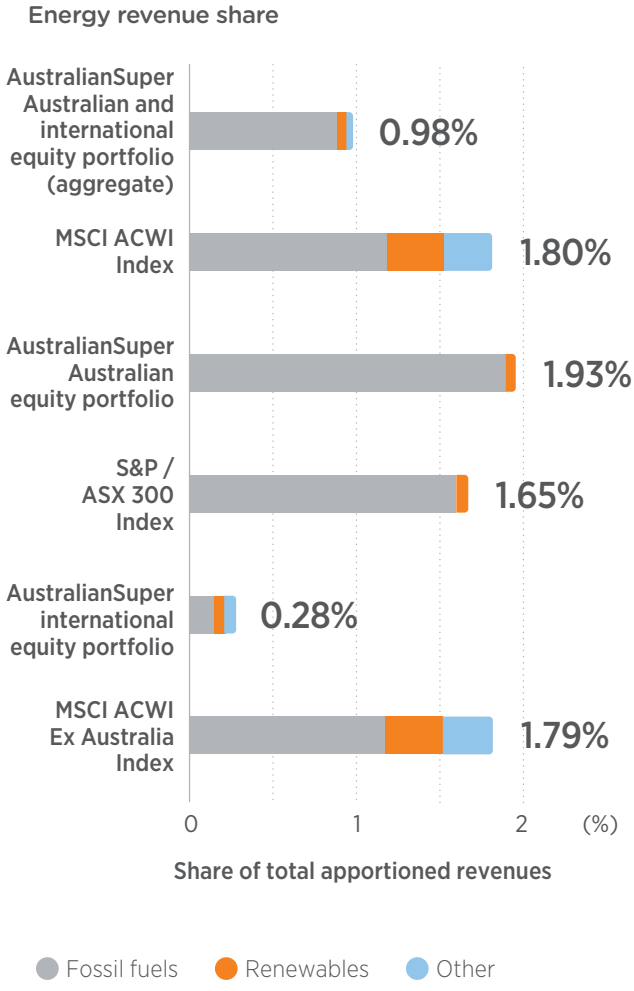
Energy revenue breakdown

This analysis illustrates the revenue dependency of the portfolio to energy generation activities. The apportioned energy revenue associated with AustralianSuper's aggregate, Australian and international equity portfolios are shown relative to the benchmark as at 30 September 2019. AustralianSuper's aggregate equity portfolio is less exposed to energy transition activities than the index. The international equity portfolio is substantially less exposed than the market index, while the Australian equity portfolio has a slightly higher exposure than the market index.

A note on this research

AustralianSuper understands there are various limitations of scenario analysis in its current form. It generates a limited 'point in time' estimate of the relative alignment of the Fund's current equities portfolio against the scenarios; it doesn't account for changes in the portfolio composition; the dynamic nature and variability of the economic and commercial variables over time; its forward-looking nature is subject to risks and uncertainties and doesn't consider all sectors or securities within a portfolio.

We will continue to evolve our scenario testing and endeavour to broaden the analysis to other asset classes as appropriate tools are developed. Some of our unlisted assets are using these tools to assess the transition risk for their businesses in alignment with TCFD. We monitor these findings and integrate them into our integration and stewardship activities.



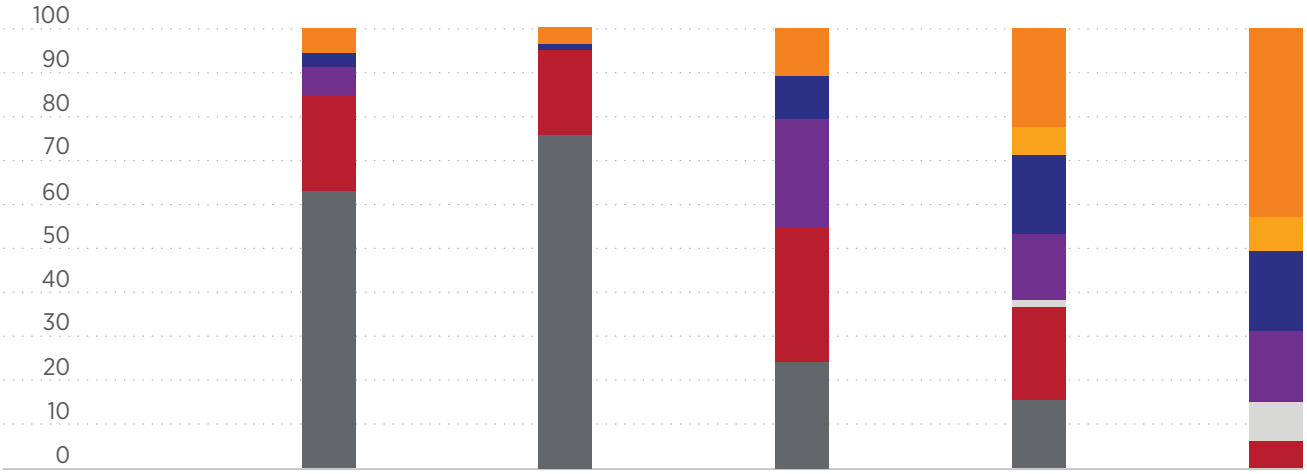
Source: S&P Global/Trucost ESG Analysis. Portfolio data at 30 September 2019

Energy generation mix

This analysis compares the physical units of power (GWh) generated by companies in a portfolio to understand the energy mix based on a portfolio's current composition. It then compares this to forward looking benchmarks, as prescribed by the International Energy Agency, to show how the portfolio aligns to low carbon economy scenarios in 2030 and 2050. In this way, it illustrates the future portfolio composition required to align to a low carbon economy consistent with the Paris Agreement.

By tracking this over time, we can monitor how the portfolio is transitioning over time. For example, you can see how the international equity portfolio is closely tracking towards a 2 degree alignment in the 2030 scenario below.

AustralianSuper equities portfolio



	AustralianSuper Australian and international equity portfolio (aggregate)	AustralianSuper Australian equity portfolio	AustralianSuper international equity portfolio	IEA (World)* 2030	IEA (World)* 2050
Other renewables	5.50%	3.71%	10.69%	22.31%	42.52%
Biomass	0.09%	0.08%	0.12%	5.92%	7.91%
Hydroelectric	3.24%	1.08%	9.54%	18.16%	17.91%
Other sources	0.05%	0.06%	0.01%	0.00%	0.00%
Nuclear	6.26%	0.00%	24.49%	15.06%	16.29%
Fossil fuel with CCS	0.00%	0.00%	0.00%	1.62%	8.98%
Natural gas	21.77%	19.11%	29.49%	21.04%	6.04%
Petroleum	0.33%	0.00%	1.29%	0.96%	0.27%
Coal	62.77%	75.96%	24.36%	14.94%	0.08%

*The content within the table above was prepared by S&P Trucost Limited, with data derived from the 2 Degree Scenarios developed by the International Energy Agency. ©OECD IEA 2017. The content within the table above does not necessarily reflect the views of the International Energy Agency.

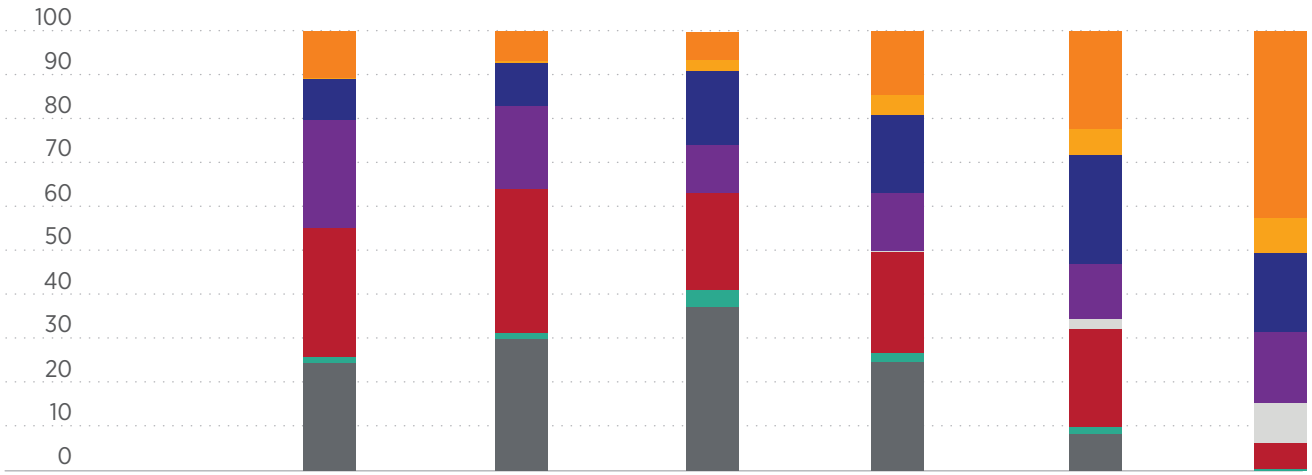
Source: S&P Global/Trucost ESG Analysis. Portfolio data at 30 September 2019.

International equities – a portfolio in transition

This graph shows the energy generation mix for AustralianSuper's international equity portfolio specifically. In addition to the 2030 and 2050 IEA scenarios, it also compares the portfolio's energy mix to the benchmark and shorter term IEA scenarios. As the graph illustrates, the portfolio's share of energy generation based on coal power is lower than the benchmark, and comparable to the IEA 2025 scenario. The portfolio currently has a higher share of renewables than the benchmark, which will need to increase over time to align to the IEA future scenarios.

AustralianSuper International equity portfolio

Energy generation mix



	AustralianSuper Portfolio	Benchmark	IEA (World) 2016 2°Scenario	IEA (World) 2025 2°Scenario*	IEA (World) 2030 2°Scenario*	IEA (World) 2050 2°Scenario*
Other renewables	10.69%	6.77%	6.39%	14.60%	22.31%	42.52%
Biomass	0.12%	0.44%	2.63%	4.65%	5.92%	7.91%
Hydroelectric	9.54%	9.82%	16.67%	17.84%	18.16%	17.91%
Other sources (incl. landfill gas)	0.01%	0.04%	0.05%			
Nuclear	24.49%	18.87%	11.14%	12.97%	15.06%	16.29%
Fossil energy with CCS			0.04%	0.19%	1.62%	8.98%
Natural Gas	29.49%	32.77%	21.94%	23.07%	21.04%	6.04%
Petroleum	1.29%	1.32%	3.84%	2.00%	0.96%	0.27%
Coal	24.36%	29.97%	37.31%	24.68%	14.94%	0.08%

* The content within the table above was prepared by S&P Trucost Limited, with data derived from the 2 Degree Scenarios developed by the International Energy Agency. ©OECD IEA 2017. The content within the table above does not necessarily reflect the views of the International Energy Agency.

Source: S&P Global/Trucost ESG Analysis. Portfolio data at 30 September 2019.

Pathways to a low carbon portfolio

The pathways to the low carbon transition in AustralianSuper's portfolio:

› Energy transition
Transitioning the electricity grid to renewable energy sources. Emissions from electricity generation currently account for 33.6% of Australia's total emissions.[14]

› Business transition
Companies reducing their emissions from their business operations including stationary energy, transport, fugitive emissions and industrial processes and product use. Business transition emissions currently account for 55.1% of Australia's total emissions.[14]

› Investment flows into new economy sectors
As our portfolio grows, we are increasingly investing more in low emissions, new economy sectors particularly in international equities.

14 National GHG inventory – 30 September 2019.

The transition in our portfolio is underway

Over the last five years, AustralianSuper has been investing more into overseas markets and building out our internal investment management program. As the Fund invests more via our in-house team into international markets, the portfolio is moving away from higher carbon sectors into lower carbon intensive sectors. Primarily, these are companies in new economy sectors such as information technology, healthcare (pharmaceuticals and biotechnology), communications services and fintech. As a result, our international equity portfolio is now 44% less carbon intensive than the benchmark.

We are advocating for and supporting broad based business and economic transition via direct company engagement and the work we are doing with Climate Action 100+. We are seeing companies across the portfolio making commitments to Paris-aligned emissions targets and a net zero 2050 economy.

Within the energy sector, we currently have plans to invest around $1 billion in renewables via our equity and infrastructure portfolios, and expect this to grow over time. In our equity portfolio, we also hold lower emission transition fuels, such as gas. We believe gas has an interim role in the electricity grid transformation over the next 20 years, as it provides a reliable supplement to renewable energy, reduces power intermittency and is less emissions intensive than coal.

The combination of lower emissions gas generation and no emission renewables will replace high emissions coal-powered generation, with renewables playing an increasingly larger role over time. This transition pathway aligns with the goals of the Paris Agreement, which is demonstrated in the IEA energy generation mix scenarios shown on pages 42 and 43. Looking at the longer term 2050 scenario, gas becomes a smaller component of the global energy mix, and renewable sources grow to 70% of the world's energy generation.

The future portfolio

As the transition progresses, carbon emissions in AustralianSuper's portfolio are projected to continue falling as new technologies are developed and companies transition their businesses to a lower carbon economy. You can see this happening already in our carbon intensity results shown on page 22.

By managing the transition in a smooth and orderly way over time, we believe can continue to deliver the best investment outcomes for members.

Portfolio holdings disclosure

We believe it's important to be transparent with members about their investments and how we manage them. We are the first Australian superannuation fund to publish a full list of our investments, which we've been doing so since June 2016. This is a voluntarily disclosure by the Fund, and is at the forefront of investment disclosure among industry peers, in terms of its depth of detail and transparency.

You can view our investments at **australiansuper.com/WhatWeInvestIn**

Investment choice for members

We understand that members have different ethical and social values, so we offer a choice of investment options for members who want to avoid investing in companies or industries that don't align with their values.

We conduct research with members every two years to ensure we keep up to date with the issues that are most important to them. In addition to achieving good returns, our most recent research revealed the top investment concerns for members were coal and other fossil fuels, human rights, tobacco and weapons.

Socially Aware investment option

We apply exclusions to the Socially Aware option's investment universe based on members' most important concerns. This option doesn't invest in the listed shares or fixed interest securities of Australian or international companies that:

› directly own reserves of coal, oil, gas or uranium*

› produce tobacco, cluster munitions and land mines

› have single gender boards i.e. exclusively male or female boards (ASX200 companies only)

› have been flagged as having human rights, labour, environmental or governance controversies.

The Socially Aware option removes investment in companies that own fossil fuel or uranium reserves regardless of the size of their ownership. We believe this is the simplest, most transparent way of removing these investments at their source while enabling the option to meet its investment return objectives.

Member Direct investment option

AustralianSuper also offers the Member Direct option, where members can choose their own investments from S&P/ASX300 shares, a selection of exchange traded funds and term deposits.

* Reserves, in this context are thermal coal, oil, gas or uranium that can be extracted from known fields at an economical cost.

Keep up to date with our climate change progress.

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