

ASFA Research Paper

Super and the Net Zero Challenge

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Executive Summary

Climate change represents a global systemic risk to the Earth's natural systems and to human society. In the absence of deep, rapid cuts to global emissions, the likelihood of increasingly severe and irreversible impacts on natural systems will only rise. To keep global warming to no more than 1.5°C, reductions in global emissions need to be front-loaded – in particular, the current consensus is that global net human-caused emissions need to be cut by around 45 per cent from 2010 levels by 2030, and reach net zero by 2050.

APRA-regulated superannuation funds are universal asset owners – that is, through their diversified portfolios funds hold a (fairly) representative slice of the Australian economy. While exposure to, and impacts of, climate-related risk can vary markedly across different entities within an economy, for superannuation funds the exposure is more systemic in nature. Ultimately, this means that for funds (and to a greater extent than other forms of business entities), progress to net zero is intertwined with economy-wide decarbonisation.

Thus, not only does institutional superannuation have a crucial leadership role to play in the collective challenge of transitioning the Australian economy to net zero, the decarbonisation of fund portfolios – and the actions undertaken to that end – are fundamentally consistent with the statutory requirement on funds to act in members' best financial interests.

For individual funds, the transition to net zero portfolio emissions is a highly-complex task that involves integrating decarbonisation into established frameworks for long-term value creation and risk management. This will alter all aspects of how a fund carries out its core business of delivering sustainable, long-term retirement outcomes for members, including fund governance, framing and communicating investment beliefs, portfolio construction and management, risk accounting and management, engagement with investee entities, and disclosure to members.

Australia's transition to net zero will require a fundamental shift in the structure of the Australian economy – unprecedented in terms of scale and complexity. Institutional superannuation will be a key source of funding for new fixed capital investment (in the real economy) for this required structural shift.

For Australia, as is the case globally, the structural shift will require a sustained rise in the level of total fixed capital investment, and front-loaded – in average terms, in the order of 5 per cent higher than 'business-as-usual' levels. Stating the obvious, the composition of this higher spending will need to be re-oriented towards low-emission assets – that is, physical assets that contribute negligible emissions to the production process in which they are embedded – and, in particular, the deployment of new low-emissions physical assets, and the decarbonisation of existing high-emission assets.

From a macroeconomic perspective, the required higher trajectory for physical asset investment will necessarily involve a higher trajectory for national saving (than otherwise would be the case). The fact that global investment needs are expected to rise to a (more or less) equivalent degree means that Australia will not be able to rely on foreign capital to close the investment-saving gap. On balance, it is likely that (the resulting) rise in general rates of household saving will be reflected in superannuation savings, and thus in the total quantum of funds under management in the superannuation system.

This re-enforces the key role that APRA-regulated superannuation funds will play in the collective challenge to transition the Australian economy to net zero emissions.

The section below points to the critical role for government. This includes setting the conditions for the required shift in the structure of the Australian economy (consistent with net zero), and the associated scale, distribution and timing of fixed capital investment to give effect to that shift. In essence, this will entail a

combination of reforms and initiatives that, in broad terms, will help private-sector financial capital flow to where it will be required.

- Develop the frameworks to improve the scope and quality of disclosed data by entities – that relate to climate-related risks and opportunities, and to projections for emissions – across the economy, in order to better inform decision-making and the allocation of financial capital.
- Reduce barriers (particularly related to regulation and planning) to the required allocation of financial capital, including for new renewable energy infrastructure.
- Provide targeted incentives for certain investments that, while necessary for an orderly transition, may not be attractive for private financial capital on a risk-return basis (for example, incentives for early-stage investment in nascent technologies, such as ‘green’ hydrogen).
- Enable critical infrastructure investment that, for the private sector, may not be attractive on a risk-return basis (for example, electricity transmission networks, which can be subject to elevated timing risk). This could include risk-sharing arrangements between government and the private sector.

In this regard, ASFA acknowledges the Australian Government’s broad-ranging work program (as reflected in its Sustainable Finance Strategy). For superannuation funds, vital elements include the development of transition plans for key sectors of the real economy; development of a taxonomy for investments consistent with the net zero transition; and development of internationally-aligned standards for the disclosure of climate-related risks and opportunities (for more details, see forthcoming ASFA submission on the Government’s consultation paper for its sustainable finance strategy).

ASFA encourages the Government to continue to consult widely on its work program to develop an integrated framework that can best support Australia’s net zero transition.

1. Introduction

Climate change represents a global systemic risk to the Earth's natural systems and to human society. Human activity, principally through emissions of greenhouse gases (GHGs), has already led to changes to key natural systems. In the absence of deep, rapid cuts to global emissions, the likelihood of increasingly severe and irreversible impacts on natural systems will only rise.

The pace and extent of emissions reduction will have a significant bearing on the ultimate flow-on impacts on economies, communities and human livelihoods – where projected adverse impacts escalate with every increment of global warming.¹

Avoiding the worst impacts of climate change will require fundamental changes to the shape of economies across the globe. In essence, economies will need to become minimally reliant on fossil fuels, less energy intensive and more energy efficient. The required transition dictates not only a sustained rise in the level of new fixed capital investment across the globe,² but a fundamental shift in the composition of that higher investment spending towards 'low-emission' assets – that is, physical assets that contribute negligible emissions to the production process in which they are embedded.

APRA-regulated superannuation funds – collectively institutional superannuation – will play an important role in the shared challenge to transition the Australian economy to net zero emissions.

- The institutional superannuation ecosystem comprises individual funds from the four key sub-sectors – corporate, industry, public sector and retail – as well as a host of entities that provide services to funds, such as out-sourced administration and investment management.

Institutional superannuation is part of the broader financial sector that intermediates the savings of households with the funding needs of the real economy.³ Total financial investments of institutional superannuation – which stands at \$2.3 trillion – is projected to reach around \$10 trillion by 2050.⁴

Currently, just under half of the assets held by institutional superannuation are domestic.⁵ While the superannuation sector holds assets across the globe, its relatively high exposure to, and holdings of, Australian assets means that – as a sector – institutional superannuation will have a far greater role in the Australian economy's transition to net zero compared with other economies.

¹ IPCC 2023, *Climate Change 2023: Synthesis Report – Summary for Policymakers*.

² In very broad terms, fixed capital investment within an economy is the production (or import) of assets that are used repeatedly or continuously in processes of production. This largely comprises physical assets (including biological assets), but also intellectual-property assets (research and development expenditure, mineral and petroleum exploration, computer software, and production of original artistic works).

³ Superannuation fund members gain exposure to certain assets that, in the absence of superannuation, would be unavailable or too expensive. Likewise, investments made by institutional superannuation are a source of funding for the real economy that may be cheaper than otherwise would be the case, and may not be available from alternative sources.

⁴ APRA, *Quarterly Superannuation Performance Statistics*. ASFA calculations based on projections in the 2023 Intergenerational Report (Australian Government 2023, *Intergenerational Report 2023: Australia's future to 2063*).

⁵ NAB 2023, *NAB Super Insights: Report 2023*.

2. Climate change and the global transition to net zero

In order to avert the worst impacts of climate change on natural systems and humankind, the scientific consensus is that the rise in (average) global surface temperature needs to be held to well below 2.0°C above pre-industrial levels (taken as the period 1850-1900), and preferably limited to 1.5°C.

This goal is articulated in the Paris Agreement on Climate Change (the Paris Agreement).⁶ However, the most recent analysis published by the Intergovernmental Panel on Climate Change (IPCC) shows that for the period 2011 to 2020, global surface temperature reached 1.1°C above pre-industrial levels (principally due to human-induced emissions of GHGs).⁷

Globally, climate change has already resulted in adverse, uneven impacts on the natural environment. Past human activity – principally via GHG emissions – has already led to changes to the Earth’s main natural systems: the atmosphere, hydrosphere (ocean system), cryosphere (frozen water system) and biosphere (where life exists). There is growing evidence that observed changes in weather extremes – including heatwaves, heavy precipitation, droughts and tropical cyclones – is attributable to human activity. The IPCC estimates that around 40 per cent of globe’s current population lives in locations and contexts that are highly vulnerable to climate change.⁸

Across the globe’s economies and communities, adverse impacts are most apparent in the more climate-exposed sectors – such as agriculture, forestry, fisheries, and tourism. In susceptible urban areas, both extreme and slow-onset weather events have damaged infrastructure – transportation, water, sanitation and energy systems – and the broader built environment. Particularly within the group of Least Developed Countries,⁹ communities are experiencing reduced water and food security.

The projected adverse impacts on economies and communities escalate with every increment of global warming above the 1.5°C threshold. With further warming, every region of the globe is projected to experience concurrent, compounding climatic impacts. Adverse economic impacts will broaden across all sectors of economies – more severe in climate-exposed locations and sectors, and most acutely felt by people in economically and socially marginalised communities.

To keep global warming to no more than 1.5°C, reductions in global emissions need to be front-loaded. In particular, the current consensus is that global net human-caused emissions need to be cut by around 45 per cent from 2010 levels by 2030, and reach net zero by around 2050 (that is, gross human caused emissions need to be reduced to the point where they can be completely reabsorbed by natural systems).¹⁰

The task to transition economies to net zero emissions

The global transition to net zero emissions is one of the greatest collective challenges humankind has faced.

For Australia (and globally), the transition to net zero will involve a transformation of humankind’s relationship with the natural world, and all within a timeframe of little more than a single generation. Entire systems for humanity’s use of land, raw materials and energy resources that have evolved since the Industrial Revolution will need to be reshaped in order to lower human-induced emissions.

⁶ See: <https://unfccc.int/process-and-meetings/the-paris-agreement>.

⁷ IPCC 2023, *Climate Change 2023: Synthesis Report – Summary for Policymakers*.

⁸ *ibid*.

⁹ The majority of which are located in the sub-Saharan region.

¹⁰ IPCC 2018, *Global Warming of 1.5°C*.

This will require broad, structural shifts in human practices that have been established for decades – which have provided significant, albeit vastly uneven, benefits across the globe’s population. In particular, reducing emissions will require fundamental changes to the types of goods and services that humans consume, how those goods and services are produced, and how goods and people are transported.

Crucially, the burden of transformation – and the unwinding of benefits of the prevailing paradigm – will need to be fairly distributed. This reflects the fact that while the benefits of fossil-fuel led growth have been unevenly distributed across the globe, the impact of that growth on the climate and the associated costs has been, and will continue to be far more evenly spread.

To state the obvious, this transformation will require broad-based buy-in and coordination across the globe. Required emissions reduction can only be achieved by the combined impact of synchronised government policy, (potentially unforeseen) technological advancement, and shifts in the composition of consumer demand. While governments will play the central role to frame required decision-making across the global economy, responsibility for coordinated action extends to all of society – including the broad business community, financial institutions, non-government organisations, and local community-based organisations.

To date, global progress on commitments to reduce emissions, and associated action, falls short of what is required to meet the Paris Agreement goal. The aggregated trajectory for projected emissions – derived from current national commitments and implemented policies – tracks higher than the trajectory implied by the Paris goal, and make it likely that global warming will exceed 1.5°C. This is not surprising: while the costs of a protracted, incomplete transition will be borne by future generations, the costs of adjustment will be largely borne by current generations.

This highlights the need for broad-based leadership – and not just confined to governments.

Across business ecosystems, decisions around the allocation of financial capital to new fixed capital investment (largely physical assets) will be a key determinant of progress to net zero.¹¹ Fixed capital investment that is consistent with the required pathway for decarbonisation will entail spending on new low-emission physical assets, but also upgrades to, and repurposing of, existing high-emission physical assets to reduce their emissions footprint (in effect, to transition from high-to-low emission assets). Fixed capital investment will be required for the maintenance of certain high-emissions assets, including as part of their orderly phase-out.

Institutional superannuation, as a major source of funding within the Australian economy now and in the future, will play a key role in the allocation financial capital within the economy, the quantum and composition of new fixed capital investment, and whether that investment is consistent with Australia’s orderly transition to net zero (ultimately, as discussed in Section 5, government policy settings will be the crucial determinant as to whether private-sector financial capital will flow to where it will be required).

Conversely, the more orderly the transition to net zero (by Australia and globally), the better able superannuation funds will be to protect and preserve the value of investments on behalf of their members.¹²

¹¹ In very broad terms, fixed capital investment within an economy is the production (or import) of assets that are used repeatedly or continuously in processes of production. This largely comprises physical assets (including biological assets), but also intellectual-property assets (research and development expenditure, mineral and petroleum exploration, computer software, and production of original artistic works).

¹² The Investor Group on Climate Change 2023, *Decarbonisation Investment Solutions for Sectors: A Discussion Paper on Sector Transition Plans and their Importance to Investors*.

Climate change risks and opportunities

The complexity of the transition task is reflected in the required balancing of climate-related risks, where these risks; are difficult to quantify, can conflict, and impact over different time frames.

Climate-related risks refer to the potential negative (direct and indirect) effects of climate change – whether on businesses, government, communities and individuals. Risks relate to the consequences of both inaction and action on emissions reduction, and risk exposure can vary markedly across the economy depending on factors such as location and industry sector. Broadly speaking, climate-related risks fall into two categories.

- Physical risks: Risks resulting from climate change that are event-driven or due to longer-term shifts in climatic patterns. This includes damage to infrastructure and buildings, but also disruptions to the supply chains and operations of business and government.
- Transition risks: Risks arising from efforts to reduce emissions. For a business entity; regulatory change may raise operating costs or lead to asset impairment; shifts in consumer preferences may adversely affect financial performance; development and deployment of new (competing) technologies may render current technologies/approaches obsolete.¹³

There are complex interdependencies between the two forms of risk. For example, changes to government policy to transition the economy today may raise short-term costs for entities, but would help mitigate broader exposure to physical risks (and costs) over the longer-term.

The transition to net zero will also create climate change opportunities. These refer to where efforts to mitigate and adapt to climate change produce flow-on benefits: efficiencies and cost savings; development of new products and services; access to new markets; greater resilience within supply chains.

There are complex interplays between climate-related risk and opportunity. For example, industries that are exposed to relatively high policy (transition) risk, such as power generation, also may be exposed to significant opportunities from technological breakthrough.

APRA-regulated superannuation funds are universal asset owners – that is, through their diversified portfolios superannuation funds hold a (fairly) representative segment of the economy. While exposure to, and the impacts of, climate-related risk can vary markedly across different entities within an economy, for superannuation funds the exposure is more systemic in nature.

3. Institutional superannuation: as investor in the Australian economy

Total (financial) investments of institutional superannuation will increase markedly over the next few decades. Currently, total superannuation fund investments stand at \$2.3 trillion.¹⁴ By 2050, total investments are projected to reach around \$10 trillion (future dollars), which will entail a far faster average growth rate than is expected for Australian GDP.¹⁵ As discussed later in this paper, globally, the transition to net zero will require higher rates of national saving (than might otherwise be the case), which in Australia's case would be reflected a higher trajectory for superannuation savings.

Currently, just under half of the investments held by institutional superannuation are domestic.¹⁶

¹³ IFRS 2023, *Sustainability Disclosure Standards: S2 Climate-related Disclosures*.

¹⁴ APRA, *Quarterly Superannuation Performance Statistics*.

¹⁵ That is, nominal GDP. ASFA calculations based on projections in the 2023 Intergenerational Report (Australian Government 2023, *Intergenerational Report 2023: Australia's future to 2063*).

¹⁶ NAB 2023, *NAB Super Insights: Report 2023*.

For institutional superannuation (in aggregate), current investments for each major asset class are set out in Table 1. With respect to holdings of Australian assets, the figures are a combination of official APRA estimates, and ASFA-derived estimates utilising a number of sources (note, it is not possible to derive robust estimates for the asset-class values/proportions for 2050).

Table 1: Key asset classes held by institutional superannuation

	Total		Australian	
	\$ billion	% of total	\$ billion	% of Aust.
Cash	199	9	130	11
Fixed income	474	20	273	22
Listed equity	1,128	48	511	42
Unlisted equity	118	5	70	6
Listed property	56	2	30	2
Unlisted property	113	5	70	6
Listed infrastructure	33	1	20	2
Unlisted infrastructure	162	7	87	7
Other	52	2	30	2

Source: APRA and ASFA calculations.

In terms of Australian assets, the key exposures for each asset class are described below.

- Cash: On-demand and term deposits at Australian Banks, but also short-term, highly-liquid securities that are readily convertible to cash (largely issued by Australian banks).
- Fixed income: Largely fixed-income securities issued by Commonwealth and state government entities, and by Australian banks and other financial institutions. To a lesser degree, bonds issued by, and loans provided to Australian companies.
- Listed equities: Shares of companies listed on the ASX.
- Unlisted equities: private equity/venture capital investments in Australian companies.
- Listed property and infrastructure: Listed investment vehicles that have stakes in a set of commercial property/infrastructure assets.
- Unlisted property and infrastructure: Direct stakes in commercial property/infrastructure assets, or indirect stakes via unlisted investment vehicles (that may have direct stakes).

It is worth noting that, in broad terms, progress on determining/disclosing exposure to physical and transition risk differs across the asset classes (discussed in more detail in Section 5).¹⁷ A case in point is Commonwealth Government Securities (CGS). In aggregate, CGS comprise around 2.5 per cent of the investments of APRA-regulated superannuation funds – or \$60 billion. The Commonwealth is yet to publish a comprehensive assessment of climate risk applicable to CGS, although the recent Treasury Consultation Paper on the Government’s Sustainable Finance Strategy notes the Government’s commitment to introduce climate disclosure requirements for Commonwealth entities consistent with requirements for the private-sector, and

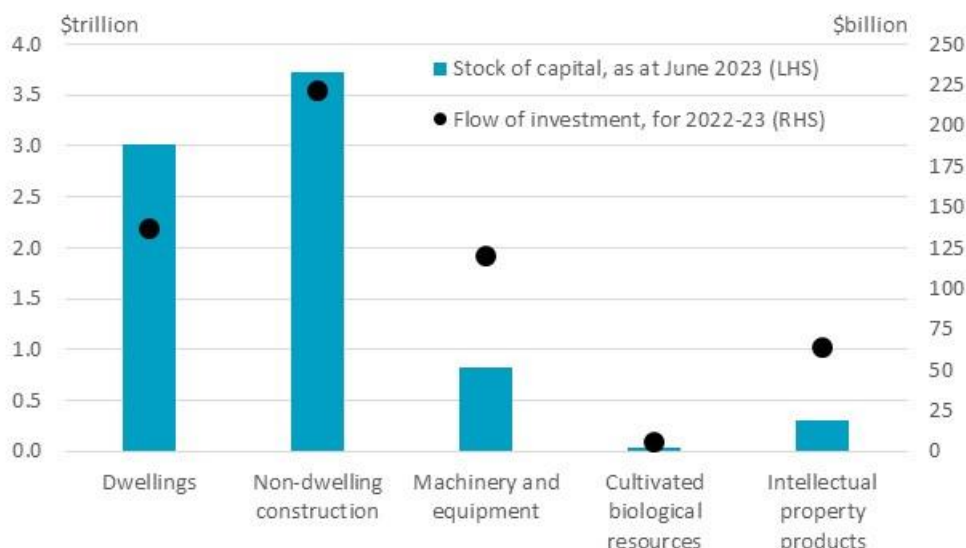
¹⁷ The degree of progress can differ depending on whether an asset class is public or private markets (for example, listed equities or private equity), whether an asset is directly or indirectly held (for example, an unlisted infrastructure asset directly held by a fund, or via a third-party pooled vehicle), and whether an asset is managed internally or externally.

the Government’s 2023 Intergenerational Report includes an assessment of the impact of climate risks on the Commonwealth Budget.¹⁸

Differentiated progress between asset classes is not necessarily, by itself, a rationale for adjusting portfolio allocation. It does however provide a marker for engagement by institutional investors more broadly with the underlying entities for more and better information and data regarding projected emissions trajectories and risk exposures (see Section 5).

Funds’ holdings of Australian assets represent claims on Australia’s stock of productive capital, from which domestic economic activity is generated on an ongoing basis, and where today’s capital stock reflects the accumulation of past fixed capital investment (less depreciation).¹⁹ For the whole Australian economy, Chart 1 shows the total stock of productive capital as of June 2023, as well as the total (flow of) new fixed capital investment for FY2022-23 (note: non-dwelling construction comprises all non-dwelling buildings and all structures – from office blocks to toll-roads).

Chart 1: Australia’s total capital stock and total new fixed capital investment, by major type²⁰
Private and public sectors combined



Source: ABS and ASFA calculations.

The current holdings of superannuation funds can be translated into an ultimate ownership of real assets. Looking at Chart 1, while it is not possible to derive corresponding, robust estimates for only institutional superannuation, it is reasonable to conclude that compared with the capital stock for whole economy, the ultimate ownership of real assets by superannuation funds is more concentrated in non-dwelling construction and machinery and equipment (where the latter depreciates at a far faster rate than the former).²¹

¹⁸ The Australian Government the Treasury 2023, *Sustainable Finance Strategy: Consultation Paper*.

¹⁹ A simplification to be sure. For example, holdings of Commonwealth Government debt represent indirect claims on future Australian taxpayers.

²⁰ Intellectual property products comprise expenditure on; research and development, mineral and petroleum exploration, computer software, and production of original artistic works.

²¹ Institutional superannuation has little direct exposure to the stock dwellings, though indirect claims via funding for Australian banks.

A key distinction between different types of holdings is the financial instrument and/or structure by which ownership is intermediated (as indicated in the list above). Of particular relevance to asset stewardship (Section 5) is the location of holdings on the spectrum of indirect to direct claims on real assets. Consider examples of two the extremes: funding for Australian banks that underpins lending to Australian companies for buying new plant and equipment, and direct ownership of an Australian wind farm.

In aggregate, taking account of the spectrum of indirect to direct claims, superannuation funds' holdings of Australian assets equates to around a 20 per cent ownership of Australia's current (measured) productive capital stock (up from around 15 per cent two decades ago).²²

Looking ahead to 2050, on balance, this proportion is likely to rise – though not by a great degree. Growth in total system assets will continue to outpace GDP over the period (though the differential is expected to diminish). On the other hand, the proportion of new financial capital allocated to offshore assets is rising (currently around 60 cent in every new dollar is invested offshore).²³

Of course, from a broader perspective, Australian households are the ultimate beneficiaries of superannuation, as well as ultimate beneficiaries of other investment vehicles (including managed funds other than superannuation and SMSFs). From this point of view, institutional superannuation is but one of the mechanisms by which households have ultimate claims on Australia's productive capital and future economic activity.

Both the replacement of capital stock (due to depreciation), and additions to the capital stock require new fixed capital investment. Institutional superannuation is a major source of funding for new fixed capital investment in the Australian economy – via a variety of different instruments/structures.

4. Institutional superannuation: deployment of capital for new real-economy investment

For the Australian economy (as is the case globally), decarbonisation will require not only a sustained rise in the level of new fixed capital investment, but a fundamental shift in the composition of that higher investment spending towards physical assets whose deployment is consistent with the economy-wide transition to net zero.

Institutional superannuation will be a key source of funding for new fixed capital investment in the real economy that will support and help progress Australia's decarbonisation.

Just as is the case currently, much of the funding from institutional superannuation for new fixed capital investment in the Australian economy will be indirect in nature, to established entities. Key groups of recipients of funding from institutional superannuation for new fixed capital investment will include:

- Listed non-financial corporations: largely via new equity issuance but also new corporate bond issuance.
- Banks and other financial institutions: where funding for banks backs lending to business for new fixed capital investment.
- Commonwealth and state governments: largely via issuance of new debt securities, but also proceeds from sales of physical assets (infrastructure in particular) to superannuation funds that are a source of funding for government for new projects (that is, asset recycling).

²² ASFA calculations.

²³ NAB 2023, *NAB Super Insights: Report 2023*.

- Private developers of commercial real estate and infrastructure projects: via a variety project financing mechanisms.

With respect to the set of potential recipients, a key variable is the extent to which the proceeds of particular capital raisings will be allocated to specific projects, and to the degree to which providers of funding – including superannuation funds – will have visibility of the ultimate use. For example, contrast the cases of an infrastructure developer (where financing is arranged project-to-project) and the Commonwealth Government (where debt is issued to manage the Commonwealth’s consolidated cash flows).

For superannuation funds, this highlights the importance of a broad approach to asset stewardship that extends to all types of entities, and extends beyond the act of capital deployment (Section 5).

Where capital needs to be deployed

Over the next three decades, new fixed capital investment will entail spending on new low-emissions assets – that is, physical assets that contribute negligible emissions to the production process in which they are embedded – but also upgrades to, and repurposing of, existing high-emission assets to transition these to low-emission assets (with low-to-high transition investments front loaded).

Fixed capital investment also will be required for the maintenance of certain high-emissions assets, including as part of their orderly phase-out. In essence, such investment relates to economic activities that are emissions-intensive, may not have a low- or zero-emission substitute that is viable (although technological break-through may change this), but are still important for socio-economic development.²⁴

In aggregate, McKinsey estimates that globally, around three-quarters of the required investment in physical assets will be for new low-emissions assets and to transition existing high-emission assets. The remainder will be required to maintain high-emission assets, including as part of their orderly phase-out.²⁵ For Australia, in broad terms, a similar allocation would be expected.

Additional spending will be required for adaptation – that is, to build the resilience of Australia’s existing capital stock to some of the physical impacts of climate change. Given the prolonged time lag between the emission of GHGs and their climatic impact, some of the worsening impacts of climate change on economies are now unavoidable. Even if global emissions are reduced in line with the Paris Agreement, the ultimate impacts of past emissions on the earth’s natural systems and global temperatures are yet to be fully realised.²⁶

For Australia, as is the case for advanced economies generally, an orderly transition to net zero dictates that investment requirements will be concentrated among a set of key sectors.

Energy sector decarbonisation is central to Australia’s transition to net zero. New fixed capital investment will involve scaling up low-emissions assets to meet both the demands of a larger population and to replace existing high-emissions capacity with low/zero-emissions capacity.

Australia’s electricity generation capacity will need to expand significantly. Recent estimates published by the Australian Industry Energy Transitions Initiative suggest that by 2050, Australia’s total electricity generation capacity (for domestic use) will need to be more than twice the current level, with the proportion

²⁴ OECD 2022, *Guidance on Transition Finance: Ensuring Credibility of Corporate Climate Transition Plans*.

²⁵ McKinsey and Company 2022, *Financing the Net-zero Transition: From Planning to Practice*. Note that the McKinsey estimates are based on a simulation of a hypothetical, relatively orderly transition path for the global economy to net zero by 2050.

²⁶ McKinsey and Company 2022, *The net zero transition: What it could cost, what it could bring*.

of renewable-based capacity rising from around one quarter today to near 100 per cent by 2035 – that is, renewable-based capacity will need to increase approximately four-fold from current levels.²⁷

Complementary investments will be needed to upgrade and expand enabling infrastructure, including electricity transmission and distribution networks (to connect generators to end-users), as well as energy storage facilities to accommodate the larger role of renewables in generation. Electrification infrastructure will need to be expanded across Australian industry and transportation networks. Gas-based generation will be required to support the orderly phase-out of coal, and then, while itself largely-phased out, will be required as weather-independent back-up for renewables (with carbon capture and storage).²⁸

Electricity is not a suitable energy source for some end-user applications, particularly much of heavy industry (like steel and cement-making) where fossil fuels are currently used as a direct power source. Decarbonisation of industry will require development and expansion of alternative low-emissions fuel production, storage and transport – most notably hydrogen, but also biofuels.

In this regard, global decarbonisation provides an opportunity for Australia to maintain its place as one of the globe's major exporters of energy. This would involve the transition of the composition of Australia's energy exports from fossil fuels (coal and LNG) to hydrogen.

However, the scale of investment required to develop a globally-significant hydrogen export industry would dwarf that needed for domestic use – both in terms of production capacity and the (renewable) electricity required to power that larger production capacity. While it is difficult to predict the required scale of a 'globally-significant' hydrogen export industry, one reference point is where Australia (broadly) holds its position in the share of global energy exports into the future. Under this scenario, Australia's total electricity generation capacity would need to be in the order of five times the current level (and near 100 per cent renewable-based).²⁹

Heavy industry processes (such as mining and manufacturing) account for almost 20 per cent of Australia's total energy consumption. Decarbonisation of Australian industry will require broad-based investments in electrification, energy efficiency, but also in new energy technologies.

With respect to the latter, and as noted above, electricity is not a suitable energy source for much of heavy industry. Decarbonisation will require investment (across Australia's entire heavy-industry base) in direct power generation that largely replaces fossil fuels with alternative low-emissions fuel (such as hydrogen). Significant manufacturing export opportunities include clean minerals processing that utilises hydrogen.³⁰

Transportation fleets will need to switch from fossil fuel-powered vehicles to battery-electric vehicles or (hydrogen) fuel-cell electric vehicles. Complementary (largely existing) transportation infrastructure will need to be upgraded – in particular, to accommodate low-emissions vehicles, transportation networks will need electrification. For the export of hydrogen, seaports and related storage infrastructure would need to be built.

Buildings across the country, including commercial and residential buildings, will require retrofitting or replacing. This will involve improvements to energy efficiency (largely via better insulation) and replacing gas-based heating/cooling/cooking systems with low-emission alternatives (chiefly clean electricity, but a possible role for bio-gas).

²⁷ Australian Industry Energy Transitions Initiative 2023, *Pathways to Industrial Decarbonisation, Phase 3 Report*.

²⁸ Net Zero Australia 2023, *How to Make Net Zero Happen: Mobilisation Report*.

²⁹ Australian Industry Energy Transitions Initiative 2023, *Pathways to Industrial Decarbonisation, Phase 3 Report*.

³⁰ Net Zero Australia 2023, *How to Make Net Zero Happen: Mobilisation Report*.

The quantum of required capital deployment

In the aggregate, achieving decarbonisation will require higher, sustained levels of new fixed capital investment than otherwise would be the case, and thus a higher level of aggregate funding for the Australian economy than otherwise. There is a significant degree of uncertainty regarding the required uplift in aggregate investment – for example, while investment in low-emissions assets will need to rise markedly, much of this will supplant investment in high-emissions assets that otherwise would occur. A reasonable estimate is that (on average) levels of new fixed capital investment will need to be in the order of 5 per cent higher than ‘business-as-usual’ over the next few decades (and front-loaded).³¹

New fixed capital investment will be concentrated in the energy and heavy industry sectors – where combined investment in physical assets will need to increase by roughly 50 per cent on current levels by the latter part of this decade.³² The profile for required new investment is front loaded particular for energy – new renewable capacity will provide the basis for new, compatible investments across the broader economy. Development of a globally-significant hydrogen export industry would require vastly higher levels of investment.

Macroeconomic implications

From a macroeconomic perspective, Australia’s higher trajectory for new fixed capital investment would necessarily involve a combination of higher national saving and higher net foreign borrowing. However, given that fixed capital investment will need to rise across the globe to a degree that is (at least) equivalent to Australia’s requirements means that Australia will not be able to rely fully on foreign capital to close the investment-saving gap.

Ultimately, increased demand for financial capital across the globe, and the requirement for higher saving levels, implies upward pressure on the global long-term equilibrium interest rate. Given that Australia is a small open economy, and that the frictions that impede the global movement of financial capital are relatively weak over longer time horizons, the equivalent domestic Australian rate will be anchored by the global rate.

That said, the degree of the uplift on (sustained) long-term rates is an open question. There are numerous potential channels through which the physical impacts of climate change and the global transition to net zero may affect the long-term equilibrium interest rate (the ultimate effects of which are not well understood), as well as host of other unrelated structural factors such as population ageing.

In terms of physical impacts of climate change, the increased frequency and severity of natural disasters will likely increase the volatility of economic output. As such, investors would require greater compensation for their investments. For firms, this implies higher financing costs and an overall reduction in the demand for financial capital – putting downward pressure on the long-term equilibrium interest rate. In terms of the net zero transition, if accelerated low-emission technologies are more productive, this would raise the marginal productivity of capital and incentivise fixed capital investment – raising the long-term rate.³³

³¹ ASFA calculations based on projections from other sources (McKinsey and Company 2022, *Financing the Net-zero Transition: From Planning to Practice*; and Australian Industry Energy Transitions Initiative 2023, *Pathways to Industrial Decarbonisation, Phase 3 Report*).

³² Australian Industry Energy Transitions Initiative 2023, *Pathways to Industrial Decarbonisation, Phase 3 Report*.

³³ Bank of England 2022, *Climate Change: Possible Macroeconomic Implications*, Quarterly Bulletin, Q4.

The net impact of these (and other) factors, and their relative importance over different time horizons, is unclear. The complexity compounds when extending to the trend rates of return on the broad set of financial asset classes.

However, what is less ambiguous is that Australia, within the context of a global net zero transition and associated competition for funding, will likely experience upward pressure on the trajectory for national saving to meet higher national investment requirements (long-term rates equilibrate required saving and investment).

In turn, this suggests a higher trajectory for saving for the household sector.³⁴ For institutional superannuation, and given the current policy settings, this will likely mean a higher trajectory for total funds under management than otherwise would be the case.

5. Institutional superannuation's approach to achieve net zero

At a system level, the transition of institution superannuation to net zero portfolio emissions is fundamentally intertwined with economy-wide transition both in Australia and globally. APRA-regulated superannuation funds are universal asset owners. While exposure to, and the impacts of, climate-related risk can vary markedly across different entities within an economy, for superannuation funds exposure is more systemic in nature – and to an even greater degree at the system level.

Conversely, with respect to the Australian economy at least, the superannuation system will play a key role in the required economy-wide transition. In particular, the superannuation system (as a major source of funding for the Australian economy), can support a transition that avoids the worst impacts of climate change while limiting disorderly economic or financial adjustments – and thus support wellbeing of Australians.

Two key points follow.

- Firstly, institutional superannuation has a crucial leadership role to play in the collective challenge of transitioning the Australian economy to net zero.
- Secondly, decarbonisation of fund portfolios that is consistent with an orderly transition to net zero can be considered as consistent with the statutory requirement on funds to act in members' best financial interests.

The task for superannuation funds involves integrating climate change into the established frameworks for long-term and risk management and value creation.

For funds, climate change is a source of risk to investment portfolios – where invested assets are impacted by the physical impacts of climate change and the transition to net zero – as well as investment opportunities arising from the transition to net zero. A prudent management of climate change risks (noting, of course, their systemic nature), while taking advantage of investment opportunities will increase the probability of funds meeting their investment objectives for members.

Integrating climate change alters all aspects of how a fund carries out its core business of delivering sustainable, long-term retirement outcomes for members, including: fund governance; framing and communicating investment beliefs; portfolio construction and management; risk accounting and management; engagement with investee entities; and disclosure to members.

³⁴ Under the reasonable assumption that the impact on saving rates for each of the major sectors (corporates, government and households) will be proportionate at least, and the prospect of deteriorating fiscal positions of governments (see Intergenerational Report 2023).

The section below is not intended to provide an exhaustive description of what needs to be incorporated in a typical fund's strategy/approach for achieving net zero emissions, but rather an overview of some of the key challenges particularly from a system-level perspective.

It focuses on the Australian economy. While the institutional superannuation sector holds assets across the globe, its relative exposure to, and holdings of, Australian assets is much higher. As noted above, superannuation funds' holdings of Australian assets equates to around a 20 per cent ownership of Australia's current (measured) productive capital stock. This compares to less than 1 per cent of global (ex. Australia) capital stock. The capacity for institutional superannuation to support economy-wide transition in Australia is far greater than in other countries.

The section below points to the critical role for government. This includes setting the conditions for the required shift in the structure of the Australian economy (consistent with net zero), and the associated scale, distribution and timing of fixed capital investment to give effect to that shift. In essence, this will entail a combination of reforms and initiatives that, in broad terms, will help private-sector financial capital flow to where it will be required.

- Develop the frameworks to improve the scope and quality of disclosed data by entities – that relate to climate-related risks and opportunities, and to projections for emission – across the economy, in order to better inform decision-making and the allocation of financial capital.
- Reduce barriers (particularly related to regulation and planning) to the required allocation of financial capital.
- Provide targeted incentives for certain investments that, while necessary for an orderly transition, may not be attractive for private financial capital on a risk-return basis (for example, incentives for fixed capital investment in nascent technologies).
- Enable critical infrastructure investment that, for the private sector, may not be attractive on a risk-return basis (for example, electricity transmission networks, which can be subject to elevated timing risk). This could include risk-sharing arrangements between government and the private sector.

Net zero target for transition

For institutional superannuation funds, the transition to net zero portfolio emissions requires targets for decarbonisation at specific points in time over a long-term projection period – that is, transition targets. Transition targets provide the reference for funds to manage physical and transition climate change risks and to take advantage of transition opportunities.

Government policy will play a crucial role. Coherent and stable policy settings will provide all entities in the economy – including superannuation funds – with a framework to anchor and guide their transition targets. Clearly, policy settings need to provide an ambitious, but achievable timeframe for net zero emissions and the required trajectory – which itself should be consistent with global norms. Of course, as discussed other sections, supportive policy also includes guidance on governance and disclosure to facilitate a uniform approach across the economy.

An appropriate point of reference for superannuation funds (and Australian entities more generally), is the United Nations Framework Convention on Climate Change (UNFCCC), and the corresponding commitments made by the Australian Government under its Nationally Determined Contribution (NDC), and by Australia's state governments. The Australian Government's NDC commits Australia to net zero emissions by 2050, and a 2030 target of 43 per cent below 2005 levels. Each Australian state has stated or made a commitment to reach net zero by 2050, or earlier, and has set an interim target for 2030 (Tasmania has already achieved net zero).

For superannuation funds, credible transition targets need to account for the fact that, as universal assets owners, funds will not be able to achieve net zero without equivalent, synchronised progress across the Australian economy – claims on which are embedded in the domestic assets in which funds invest – and indeed across the global economy. By extension, credible transition targets need to account for the fact that decarbonisation will not be uniform across the real economy. Under an orderly economy-wide transition, carbon intensity across different sectors – which differs markedly at present – will necessarily reduce at varying rates.

Australia’s prudential framework does not mandate that funds set transition targets, although APRA does suggest that best practice would involve alignment with the Paris Agreement targets.³⁵

A recent NAB survey of superannuation funds shows that around half have committed to zero emissions in their investment portfolios, with a further quarter currently considering doing so. Of the remainder, the key reasons cited for not doing so include that funds; are in merger discussions; are completing operational changes; or yet to allocate resources required resources.³⁶

- Current fund disclosures with respect their net zero strategy include comprehensive documents that set-out the strategy (and associated implementation timelines), and so include internal governance arrangements, mechanisms for effective engagement with investee entities, and high-level methodology for incorporating emissions-reduction/climate risks into investment decision-making.
- Funds also publish documents that identify and qualify/quantify climate-related risks (and opportunities) to their investment portfolios. This form of disclosure will become mandatory under the Australian Government’s climate-risk disclosure regime – where FY2024-25 will be the first (transitional) reporting year.

Portfolio transition to net zero

An integrated approach to transition to net zero portfolio emissions encompasses not only investment decisions to de-risk and decarbonise portfolios, but also active engagement – as asset owners – with the entities in which funds invest (the latter discussed later in this section).

De-risking investment portfolios – to take account of the physical/transition risks of climate change but also the opportunities from transition – is a task of immense complexity. From a technical perspective, global best practices are not yet established, and a multitude of different approaches are evolving quickly. In this regard, internationally within the population of asset owners, there is a great deal of cooperation and coordination to develop and operationalise frameworks.³⁷

A funds’ overarching approach to de-risking guides the allocation of financial capital to fund new fixed capital investment in the real economy, and provides the framework for the more technical aspects of portfolio adjustment that are well beyond the scope of this paper.³⁸

³⁵ APRA 2021, *Prudential Practice Guide CPG 229: Climate Change Financial Risks – Response Paper*.

³⁶ NAB 2023, *NAB Super Insights: Report 2023*.

³⁷ For examples of the multitude of evolving approaches see: Glasgow Financial Alliance for Net Zero 2022, *Measuring Portfolio Alignment: Enhancement, Convergence and Adoption*.

<https://assets.bbhub.io/company/sites/63/2022/07/GFANZ-Portfolio-Alignment-Measurement-August2022.pdf>

³⁸ That is the process of establishing projections for emissions budgets for portfolios (which, in the aggregate, will be diminishing over time), translating those budgets into emissions benchmarks for different asset classes (and sub-components), and constructing portfolios to align with benchmarks.

This section summarises a number of key challenges for funds in their transition to net zero portfolio emissions, and the role for government in supporting superannuation funds and other institutional investors.

Framing Australia's economic transition to net zero

The required transition of the Australian economy is unprecedented in terms of scale and complexity. Perhaps the only analogue for Australia is the period during World War 2 where domestic industrial production was reorientated, by government mandate, for the general war effort (although the economic transformation was, in many respects, temporary).

Within the context of the Australian Government's commitment to reduce aggregate national emissions to net zero by 2050, the Government will need to develop corresponding transition plans for the key sectors of the Australian economy. As the Investor Group on Climate Change (IGCC) has noted, (government-developed) sectoral transition plans will provide a credible, common understanding among participants in the economy (governments, business, community) of what actions will be required to transition to net zero.³⁹

In this regard, ASFA supports the Australian Government's work program to develop 'national sectoral emissions reduction pathways'.⁴⁰ Of fundamental importance is that separate transition plans take account of the independence between sectors, and that transition plans are in aggregate consistent with Australia's transitional emissions budget – and so support the efficient allocation of financial capital.

The core role for government in Australia's transition planning reflects, in part, that a range regulatory and planning constraints otherwise would impede the required allocation of financial capital, and that incentives to encourage private sector investment in certain assets is likely to be required (for example, see next section on energy sector investment).

As noted in Section 4, in aggregate, Australia's required economic transition dictates not only a sustained rise in the level of new fixed capital investment, but a fundamental shift in the composition of that higher investment spending. Across various sectors of the Australian economy the anticipated scale, complexity and timing of required fixed capital investment will differ, as will the relative reliance on mature and emerging technologies.

For superannuation funds, as a key source of financial capital, sectoral transition plans will help superannuation funds better understand the climate-related risks and opportunities embedded in their portfolios, and better understand the quantum, timing and allocation of financial capital across the economy. In this regard, it is crucial that government consults widely – including with institutional superannuation.

Net zero taxonomy

In the context of the transition of investment portfolios to net zero emissions, superannuation funds (and institutional investors more generally) will require a comprehensive and consistent criteria by which to determine whether funding decisions (to the real economy) align with Australia's (and the global) net zero transition. This also applies to the broader set of sustainably objectives beyond the transition to net zero – that is, clear and consistent definitions of what is classified as a sustainable activity, or consistent with sustainability objectives.

³⁹ The Investor Group on Climate Change 2023, *Decarbonisation Investment Solutions for Sectors: A Discussion Paper on Sector Transition Plans and their Importance to Investors*.

⁴⁰ <https://www.dcceew.gov.au/climate-change/emissions-reduction/net-zero>

Globally, myriad frameworks are evolving to evaluate whether economic activities are aligned with, or contribute to the net zero transition, and sustainability objectives more broadly.⁴¹ For investors, a taxonomy landscape comprising inconsistent or even conflicting information will create distortions and increase costs – and so impede the allocation of financial capital. In the context of Australia’s net zero transition, this suggests a lower quantum of funding from superannuation than otherwise would be the case, as well as a less efficient allocation of that funding (in respect of net zero outcomes).

The Australian Government has committed to supporting development (with industry) of a sustainable finance taxonomy, within which the Government has prioritised criteria for climate objectives (while establishing a foundation to expand to other sustainability objectives).⁴² As set out in the Government’s recent consultation paper Sustainable Finance Strategy, development of a sustainable finance taxonomy will benefit from ongoing, broad consultation with the institutional investor industry.

Of particular importance is a taxonomy framework that acknowledges the role of ‘transitional’ activities and finance in the broader net zero transition – and that the framework does not, in and of itself, impede transitional finance. That is, a credible taxonomy regime needs to recognise that certain economic activities will be necessary to support the transition to net zero in the short to medium term, even if they are not consistent with net zero or other goals in the long term.⁴³

Recent work undertaken by the Australian Sustainable Finance Institute revealed broad in-principle support for the inclusion of a transitional category in the taxonomy. However, there is less agreement on the appropriate methodology for how a transitional category could be integrated into the taxonomy.⁴⁴ This highlights the core challenge: the balance between the need to direct financial capital toward sectors/entities in transition, while also maintaining the credibility of the taxonomy.

Additional information regarding ASFA’s response to the Government’s work on a sustainable finance taxonomy can be found in the forthcoming ASFA submission to the Government’s consultation paper.

Net zero transition data

An overarching challenge for investors globally is the lack of coherent, complete information on which to base decisions around the allocation of financial capital to facilitate the transition to net zero.

This reflects road blocks throughout the data value chain. At the entity level, estimates of and projections for Scope 1, Scope 2 and particularly Scope 3 emissions (where quantified), and the impact of physical and transition risks on business activities, are subject to significant uncertainty (given path dependency). There is substantial variability in the availability of quantitative data across the population of entities – including the variable use of proxies – and different approaches across jurisdictions. In addition, there are constraints within the broader business ecosystem for meaningful assurance, due to prevailing data quality and availability, and system capacity.

Superannuation funds rely (and will increasingly rely) on information produced by entities from across the economy on anticipated emissions trajectories, and their exposure to climate-related risks (and opportunities). In the absence of robust, consistent approaches around the development and disclosure of

⁴¹ The Investor Group on Climate Change 2023, *Decarbonisation Investment Solutions for Sectors: A Discussion Paper on Sector Transition Plans and their Importance to Investors*.

⁴² The Australian Government the Treasury 2023, *Sustainable Finance Strategy: Consultation Paper*.

⁴³ The Australian Government the Treasury 2023, *Sustainable Finance Strategy: Consultation Paper*.

⁴⁴ ASFI 2023, *Australian Framing Paper: Designing Australia’s sustainable finance taxonomy – Final Paper*.

that information, the efficient allocation of financial capital from institutional superannuation will be impeded.

Data quality and availability will improve incrementally. Individual entities will gain a better understanding of climate change risks and opportunities (learning-by-doing), reinforced by positive feedback loops between entities (as part of common supply chains). Data sharing and transparency to foster industry-wide progress will improve, and assurance expertise and capacity will rise. But all this will take time.

At a system level, a standardised approach led by government is required. In this regard, ASFA supports the work of the Australian Government regarding the adoption, by Australia, of internationally-aligned standards for climate-related disclosure, while noting the significant challenges – from an economy-wide perspective – in operationalising a new regime, including skills shortages and assurance capacity.

ASFA has made a number of submissions to the Government’s consultation process for the development of the disclosure regime.⁴⁵ ASFA understands that the disclosure regime will come into effect for FY2024-25 for large entities.

Outside the required legislative process, the superannuation industry would benefit from greater clarity on which governing body or regulator will issue additional guidance to accompany the standards, and the expected timing of that guidance – noting that aligning the release of guidance with the standards would be ideal. The superannuation industry would also benefit from regulators working with industry on developing and rolling out education and training to support high-quality disclosure.

Beyond the proposed disclosure regime, there is arguably a role for government to centralise trusted, authoritative climate data and analysis, including scenario analysis at the level of the whole economy and the key sectors of the economy as identified for transition plans above. This would both assist entities in understanding climate-related risks, and ensure a degree of consistency across entities.

Portfolio transition: Opportunities from low-emission assets

In a broad sense, investment opportunities from the transition to net zero refer to where efforts to mitigate and adapt to climate change produce flow-on benefits. This can include; efficiencies and cost savings; development of new products and services; access to new markets; greater resilience within supply chains.

For superannuation funds, exposure to the broad range of such opportunities will be largely indirect (say, new fixed capital investment undertaken by large, listed companies). More direct exposure would, as is currently the case, include large scale infrastructure but also private equity investments to scale-up and commercialise emerging low-emission technologies.

Investments in energy assets provides a case in point.

Energy infrastructure

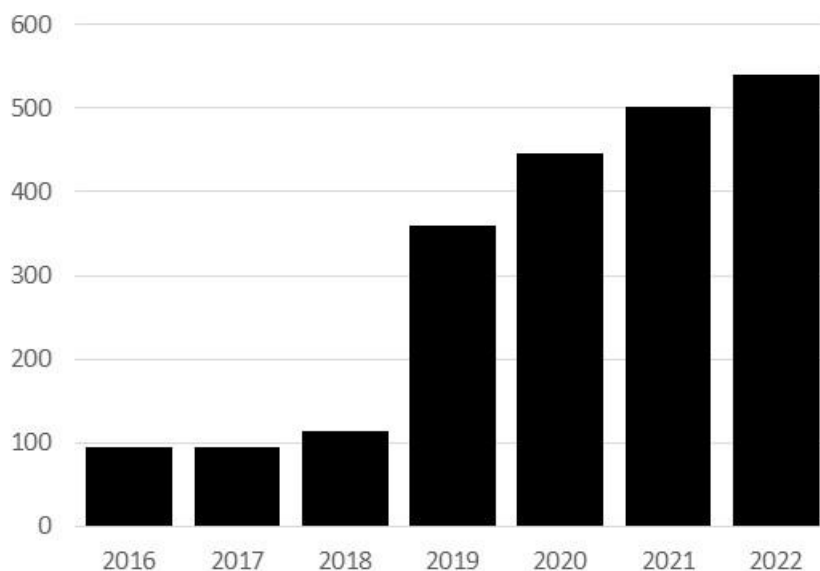
The capacity for renewable energy assets to contribute to portfolio decarbonisation and de-risking makes these particularly attractive for superannuation funds (whether held directly or indirectly via a listed/unlisted vehicle), where funds typically have purchased existing assets rather than invested in greenfield projects.

Over the last decade, super funds’ energy-related investments have shifted towards renewables, and renewable electricity generation in particular. Chart 2 shows direct super fund holdings of renewable (wind

⁴⁵ https://www.superannuation.asn.au/ArticleDocuments/1964/202303_Treasury_Climate-related%20financial%20disclosure_web%20version.pdf.aspx?Embed=Y.

and solar) electricity generation assets. In terms of their generation capacity, total direct super fund investments have risen sharply over the past few years.

Chart 2: Direct holdings of renewable generation
Funds pro-rata generation capacity (MW)



Source: ASFA calculations.

As well as direct investments, superannuation funds also have substantial exposure to renewable electricity generation (and broader energy infrastructure – transmission and storage) via specialised unlisted investment vehicles and listed markets. Direct super fund investments in large-scale renewable (wind and solar) electricity generation accounts for about 5 per cent of Australia’s renewable generation capacity (about 10 per cent if indirect holdings are included).

- Rest Super fully owns the Collgar Wind Farm near Merredin in WA’s central wheatbelt.
- The Snowtown 2 wind farm is owned by Aware Super (33 per cent), and by Palisade Investment Partners (67 per cent) on behalf of other institutional investors, including HESTA. Palisade holds a number of other renewable energy assets – a portion of which is on behalf of funds – including the Ross River Solar Farm in Queensland.
- Cbus has a significant ownership stake in the Albany Grasmere Wind Farm, the Warradarge Wind Farm and the Greenough River Solar Farm in Western Australia through Bright Energy Investments - a joint venture with Synergy, the WA government energy generator and retailer and DIF, an institutional investment partner.
- Prime Super fully-owns five wind farms in Victoria.
- AMP Capital has a 50 per cent interest in the Macarthur Wind Farm in Victoria.
- A number of funds – including Hostplus and Brighter Super – have investments via Tilt Renewables, including in the Broken Hill and Nyngan solar plants in NSW, and the Coopers Gap and Silverton wind farms in Queensland.
- Ausgrid is the largest distributor of electricity on Australia’s east coast – supplying Sydney, the Central Coast and the Hunter Valley. The consortium of Ausgrid investors include AustralianSuper and IFM Investors – the latter on behalf of institutional investors.

Energy innovation

At the other end of the investment spectrum is in energy innovation. Specifically, the development of new energy technologies that when deployed at scale will enable entities to reduce emissions quicker and/or cheaper than otherwise would be the case – and thus expedite the economy-wide shift to lower-emissions. As is generally the case for the development of new technologies, there will be uncertainty around the feasibility of, and the market for innovative low-emission energy technologies.

In Australia, institutional superannuation is a key source of funding for the Australian private sector for innovation. Of course, this can involve funding to established firms via new (largely equity) public capital raisings – where firms direct part of the proceeds to the development and commercialisation of new products and services. Alternatively, institutional superannuation provides private capital funding that is specific to innovation-related activities. Businesses that are backed by private capital are often at the forefront of innovation in sectors such as energy. In this regard, superannuation funds can invest in specialised private capital funds – to gain broad exposure to a variety of investments.⁴⁶

An example of direct projects undertaken by institutional superannuation include an Aware Super investment in North Harbour Clean Energy. This company is working to develop and operate renewable energy storage projects with a focus on two critical, and already commercial, technologies – closed-loop pumped hydroelectricity, and vanadium redox flow batteries.⁴⁷

Constraints on investment and policy responses

New additions to Australia’s large-scale renewable energy infrastructure currently lags demand from institutional investors. However, investment opportunities across generation and storage (and potentially transmission) will increase – particularly under targeted government initiatives.

In terms of annual increases, in 2022, 20 large-scale projects were completed, which added around 2.3 GW of new capacity at a cost of around \$4 billion. In 2021, 27 large-scale projects were completed, which added around 3.0 GW of new capacity at a cost of around \$5 billion. Of that new capacity, around 20 per cent is currently owned (directly or indirectly) by superannuation funds.⁴⁸ This compares with an annual quantum of new superannuation capital for deployment of around \$300 billion.⁴⁹

At the same time, competition for renewable energy assets extends to the broader universe of institutional investors, including foreign pension and sovereign wealth funds – which is intensified by growing reputational and stakeholder pressure on the global funds management industry to deploy capital in support of net zero transition. From a system perspective, the risk of asset price inflation will remain a perennial issue.

As noted above, the Australian Government has a key role in developing, and evolving the transition path for Australia’s energy sector – which the government committed to in mid-2023.⁵⁰ A credible, coherent transition pathway for the energy sector (that is also consistent with anticipated transition pathways for other key

⁴⁶ Private equity and credit (PE+C) typically relates to established businesses which are usually already generating a profit – where funds provide capital for growth, more management focus and greater strategic direction. Venture capital (VC) typically relates to the early stages of a business’s lifecycle, such as when they are developing new technologies or products. That said, the boundary between the investable universe of assets for VC and PE is not always clear cut.

⁴⁷ Aware Super – Media release: <https://aware.com.au/member/about-us/newsroom/july-2022/aware-super-backs-storage-start-up>

⁴⁸ Clean Energy Council 2023, *Clean Energy Australia Report*.

⁴⁹ APRA 2023, *Quarterly Superannuation Statistics*, and ASFA calculations.

⁵⁰ The Australian Government the Treasury 2023, *Sustainable Finance Strategy: Consultation Paper*.

sectors of the Australian economy) will help superannuation funds to better understand the type, timing, quantum and location of fixed capital investment (and thus deployment of financial capital) required for energy infrastructure.⁵¹

To date, there have been significant, well-documented constraints on the roll-out (and, by extension, the funding of) of new renewable energy projects by the private sector that need to be addressed in the context of a credible and effective transition plan. For investment in new generation capacity in particular, constraints have included; a lack of certainty around long-term commitments to purchase power from generators; lack of certainty of access to distribution networks; and uncertain closure dates of coal power plants.⁵²

With regard to the former, ASFA welcomes the recent Government announcement for the expansion of the renewable energy Capacity Investment Scheme – which will involve annual tenders for expanded renewable energy generation with associated price floors for generators (and price ceilings for consumers).⁵³

Expanding and upgrading transmission infrastructure and grid integration will need to be coordinated with increases in both the demand for, and the generation of electricity. For government, the uplift in transmission capacity will require; co-ordination between the states/Commonwealth on developments (realisation of network efficiencies will entail a significant degree of inter-state transmission capacity); and streamlining planning processes for critical projects, while securing the social license to do so. Both are elements of the Government’s Rewiring the Nation initiative – which is backed by Commonwealth funding. To attract private financial capital, potential risk-sharing arrangements could be considered, given the elevated timing risks for such projects.

With respect to innovation, a key role for government is providing support for the development of an (ultimately) commercially-viable renewable hydrogen industry – which could include; domestic power generation, the production (and thus the export) of ‘green’ metals, and exportable fuel. In all cases, this will require pre-commercial demonstration and development of nascent technologies (including for storage). Early-stage government funding initiatives for renewable energy include via the Australian Renewable Energy Agency. Over time, the purpose and quantum of such government support should be reviewed to ensure that funding remains aligned with Australia’s future energy requirements.

For superannuation funds, ultimate allocations of financial capital to renewable energy projects also might be constrained by other superannuation-specific policy settings. This includes the impact on investment decisions from the operation of the Your Future, Your Super (YFYS) performance test, and changes to the valuation regime for unlisted assets.

With respect to YFYS, potential impacts include disincentives to investment in new projects. In terms of industry composition, the YFYS benchmarks necessarily comprise current assets and thus are heavily weighted to conventional energy generation rather than alternatives (and so are ‘backward-looking’). Renewable energy assets comprise a very small component of the current benchmark allocation. Thus, being over-weight in renewables is a potential source of tracking-error risk vis-à-vis the benchmarks.

More broadly, however, is the risk that for some funds, increased sensitivity to benchmarks (as it relates to investment decisions) is driving overall strategic asset allocation towards asset classes that are readily benchmarked – listed equities for example. This relates to infrastructure, but also private equity investments.

⁵¹ The Investor Group on Climate Change 2023, *Decarbonisation Investment Solutions for Sectors: A Discussion Paper on Sector Transition Plans and their Importance to Investors*.

⁵² AEMO 2022, *Integrated System Plan*.

⁵³ Capacity Investment Scheme: <https://www.energy.gov.au/government-priorities/energy-supply/capacity-investment-scheme>

ASFA has previously put forward policy options that would help reduce the risk of ‘underinvestment’ by superannuation funds in certain asset classes due to the YFYS regime. This includes a ‘right-of-review’ process for products that fail the performance test (for more details, see the ASFA submission to Treasury on the Review of the YFYS regime).⁵⁴

Portfolio transition: Asset stewardship

An integrated approach to transition to net zero portfolio emissions encompasses not only investment decisions to de-risk and decarbonise portfolios, but also active engagement. In broad terms, stewardship and company engagement (to achieve benchmark returns) is deemed by funds to be crucial to achieving ESG targets.⁵⁵

Generally speaking, stewardship for an institutional superannuation fund relates to their responsibility – as assets owners on behalf of fund members – to optimise long-term, sustainable value. While it is typically associated with specific voting/ownership rights – such as in the case of listed equities – stewardship is applicable to all asset classes.

This broader notion is important in the context of the quest for net zero, where a substantial portion of a typical fund’s portfolio is comprised of assets without such rights. Consider, for example, the case of sovereign debt and corporate debt (which together, as noted in Section 3, accounts for around 20 per cent of total fund allocations to Australian assets), where stewardship could involve exploring and advocating for opportunities to invest in sovereign and corporate green bonds.

From the point of view of an institutional superannuation fund, stewardship in the context of net zero aims to support the fund’s emissions reduction targets and to help the fund manage its exposure to physical and transition risks. Proactive fund interactions with separate entities may seek to encourage better governance around climate change, support entities’ transition to net zero (in a manner that aligns with the fund’s targets) including by providing new funding, and seek better understanding of exposure to climate change risks and plans to mitigate that exposure.

For funds, the efficacy of engagement depends on a host of factors: the share of the stake in an entity; the form of rights; whether assets are directly or indirectly held by the fund. On the one hand, for listed major equities, there are likely many investors that have voting rights. On the other hand, in private markets such as unlisted infrastructure, real estate and private equity, individual fund holdings may well be proportionately larger, and may confer governance rights – which in combination implies a greater degree of influence.

For institutional superannuation, stewardship is likely to be most effective in reducing portfolio emissions (and thus, economy-wide emissions), where that engagement is focused on systemically-important emitters – in particular, entities with emissions that are relatively high in terms of scale and intensity, and where there is scope for significant reduction (via abatement, technology or orderly phase-out).

In terms of relevant policy reforms, funds’ asset stewardship efforts will be aided by the new climate-related disclosure regime that is scheduled to start (in a transitional sense) in 2024-25, as well as progress on the development of an industry-led code for asset stewardship – which would facilitate a consistent approach by funds in stewardship matters.

⁵⁴ ASFA 2021, Submission to Treasury, *Review of the YFYS Regime*.

⁵⁵ NAB 2023, *NAB Super Insights: Report 2023*.