

REPORT ON LONG TERM INVESTING OF LARGE PENSION FUNDS AND PUBLIC PENSION RESERVE FUNDS 2023

Annual Survey of Large Pension Funds and Public Pension Reserve Funds



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This is the tenth edition of the OECD survey of large pension funds and public pension reserve funds that collects long-term investment data since it was first published in 2011. The scope of this report covers 87 public and private pension funds from 34 countries. This survey is based on a qualitative questionnaire sent directly to large pension funds and public pension reserve funds. It covers the infrastructure investments made by large pension funds and public pension reserve funds, but also their approach to environmental, social, and governance (ESG) factors. It provides detailed investment information and insights which complement the aggregated data on portfolio investments gathered by the OECD at a national level through the Global Pension Statistics and Global Insurance Statistics projects.

Table of contents

Executive summary	4
1 About the report	5
2 Large pension fund and public pension reserve fund investment portfolios	7
LARGE PENSION FUND AND PUBLIC PENSION'S RESERVE FUND'S ASSET ALLOCATION	10
GEOGRAPHICAL COVERAGE AND FOREIGN INVESTMENTS OF LPFs AND PPRFs	12
3 Infrastructure investments	20
INFRASTRUCTURE INVESTMENTS IN UNLISTED EQUITY	20
INFRASTRUCTURE INVESTMENTS IN LISTED EQUITY	25
4 ESG Investing	27
GREEN INVESTMENTS	27
SOCIAL INVESTMENTS	28
ESG INFRASTRUCTURE ASPECTS	29
References	31
Annex A.	32

Executive summary

2022 has been marked by an overall decrease in the amount of assets in funded and private pension plans in OECD countries. The sharp decline in assets under management (AuM) in 2022 is mainly driven by inflation and rising interest rates, which have both had a serious impact on public equity valuation and the value of bonds in the portfolios of pension plan providers.

Both large pension funds' (LPFs) and public pension reserve funds' (PPRFs) aggregate asset allocation show an increasing appetite by certain investors for real assets and non-publicly traded assets, such as private equity and unlisted infrastructure investments, for diversification and hedging against inflation and highly volatile public markets. LPFs aggregate asset allocation also shows an increase in cash and deposit.

Within OECD countries' funds, fixed income and private equity allocation is larger for PPRFs than LPFs; LPFs have a larger allocation to listed equity, loans, unlisted infrastructure investments, land and buildings. LPFs in non-OECD countries tend to invest more in traditional asset classes (namely fixed income and listed equity) and less in alternative asset classes compared to LPFs in OECD countries.

Most LPFs' and PPRFs' foreign investments are directed towards countries in North America, Europe, and Asia Pacific. For Europe, intra-region flows constitute the majority of foreign investments. Intra-region flows also account for a large share of total foreign inflows in North America.

Allocation to infrastructure investments continues the gentle positive trend seen in the past years, showing increasing appetite of institutional investors for these asset classes. Unlisted equity remains the preferred asset class through which institutional investors invest in infrastructures. Transport, energy (generation and transmission/distribution), IT and communication infrastructures are the preferred sectors for infrastructure investments as are brownfield investments.

1 About the report

Traditionally, institutional investors have been seen as sources of long-term capital with investment portfolios built around two main asset classes (bonds and equities) and an investment horizon tied to the often long-term nature of their liabilities. Institutional investors have progressively diversified portfolios by adding allocations to alternative investments such as private equity, real estate, infrastructure and hedge funds.¹ However, despite the increasing interest in alternative investments, official data on pension fund investment in alternatives – and in particular, infrastructure – is scarce. National statistical agencies do not currently collect separate data on these investments and the different forms available to investors to gain exposure to these asset classes means that information is often buried under different headings, such as private equity or alternative investments.² There is also the challenge of different reporting regimes which can make the classification of assets inconsistent between different jurisdictions which is addressed through applying the asset classes used in other OECD statistical surveys as well as using the most common classification from responses in previous years.

This report is based on a survey that collects data from individual pension funds that are amongst the largest in their respective economies, and comparatively, amongst the largest in the world.³ The data complement insights and detailed administrative data gathered at the national level. The scope of this report covers funds from OECD countries, G20 member countries, APEC economies, as well as other economies, based on data gathered for the year ending 2022.⁴

The results highlight the diversity of approaches by institutional investors, highlighting the importance of long-term capital and the role that pension savings can play in an economy. While the data covers the general state of long-term investment, it can also be used to inform regulators and other policy makers to help them better understand the operation of institutional investors in different countries. By analysing pools of long-term savings in domestic markets, and also in foreign markets where funds may invest a

¹ As noted in the IOPS 'Good Practices in the Risk Management of Alternative Investments by Pension Funds', there is no precise definition of alternative investments. The nature of alternative investments is dynamic and ever-evolving, and closely linked to the development of financial markets. While there is no official definition of alternative assets, the term is usually applied to instruments other than listed equities, bonds, and cash. For the purposes of this survey, "alternative" investments comprise the following types of investments: hedge funds, private equity, real estate, infrastructure, commodities and "other" (other includes: timber and currency/interest rate overlays).

² For example, infrastructure investment may not occupy a separate allocation, appearing instead as part of private equity or real estate allocations. Pension fund investment in listed infrastructure vehicles is reported by national statistics agencies as national or foreign equities and infrastructure lending is reported as fixed income, while direct investment or participation in private equity vehicles is sometimes reported within the category "other".

³ The survey does not utilise a strict definition of a large pension fund, but seeks to capture trends by looking at the largest investors in the world, compared on an absolute basis, followed by the largest investors within specific countries.

⁴ The survey is not intended to provide a comprehensive dataset on institutional investors' asset allocation, but an indicative representation of their allocations.

large portion of assets outside of their home country, policy makers can gain insights into the drivers behind asset allocation decisions and the conditions needed to attract long-term savings.

The report reviews the trends in assets and asset allocation of 87 large pension funds (LPFs) and public pension reserve funds (PPRFs)⁵, which had USD 9.8 trillion in total investments in 2022. 73 LPFs and 14 PPRFs or Sovereign Wealth Funds (SWFs) with a pension focus completed the survey. The LPFs covered in the survey together encompassed asset under management (AuM)⁶ of USD 3.4 trillion and PPRFs USD 6.4 trillion. Altogether, data was compiled from funds representing 34 countries around the world, including non-OECD countries, such as Brazil, India, Nigeria, and South Africa.

The OECD Pension Statistics, which show administrative pension fund data gathered on a national level, in its 2023 report showed an amount of USD 53.1 trillion pension fund assets in 67 reporting jurisdictions at the end of 2022 (OECD, 2023^[1]). This survey covers USD 9.8 trillion AuM of pension fund assets, which represents 18.5% of the global amount.

The report includes a summary of key trends observed in the investment portfolios of LPFs and PPRFs, an analysis of infrastructure investment by LPFs and PPRFs, an analysis of ESG investment by LPFs and PPRFs and an analysis of sustainable and ESG considerations in infrastructure investment by LPFs and PPRFs.

⁵ PPRFs are reserves/buffers to support otherwise PAYG financed public pension systems as opposed to pension funds which support funded pension plans in both public and private sectors. The survey included some SWFs such as Norway's Government Pension Fund – Global that have at least a partial pension objective.

⁶ For the purpose of this report, total investments are used as a proxy for AuM.

2 Large pension fund and public pension reserve fund investment portfolios

The total amount of assets under management (AuM) for the large pension funds (LPFs) and public pension reserve funds (PPRFs) covered by the survey was approximately USD 9.8 trillion at the end of 2022.⁷ Table 1 shows the split of total AuM by jurisdiction (OECD and non-OECD countries) and by type of fund (LPFs and PPRFs). Within the countries for which the OECD received data, the Netherlands has two of the largest funds: ABP at USD 524.6 billion and PFZW at USD 232.1 billion. The second largest fund is CalSTRS, based in the United States, which marked USD 302.1 billion. Australia's AustralianSuper at USD 185.7 billion, South Africa's GEPF at USD 135.0 billion and Hong Kong's MPFA at USD 134.6 billion also ranked high in the list. As for PPRFs, the largest reserve was held by the US Social Security Trust Fund at USD 2.8 trillion, followed by Japan's Government Pension Investment Fund at USD 1.5 trillion. Norway Government Pension Fund (Global) and Canada Pension Plan Investment Board also accumulated large reserves, at USD 1.4 trillion and USD 0.4 trillion respectively (Annex A, Table 3).

Table 1. Breakdown of total AuM by type of fund and jurisdiction

USD billion

Jurisdiction	Fund		Total
	LPF	PPRF	
Total OECD	2,762.6	6,423.4	9,186.0
Total Non-OECD	635.5	2.0	637.6
Total	3,398.2	6,425.4	9,823.5

Note: Table reflects data from 73 LPFs and 14 PPRFs

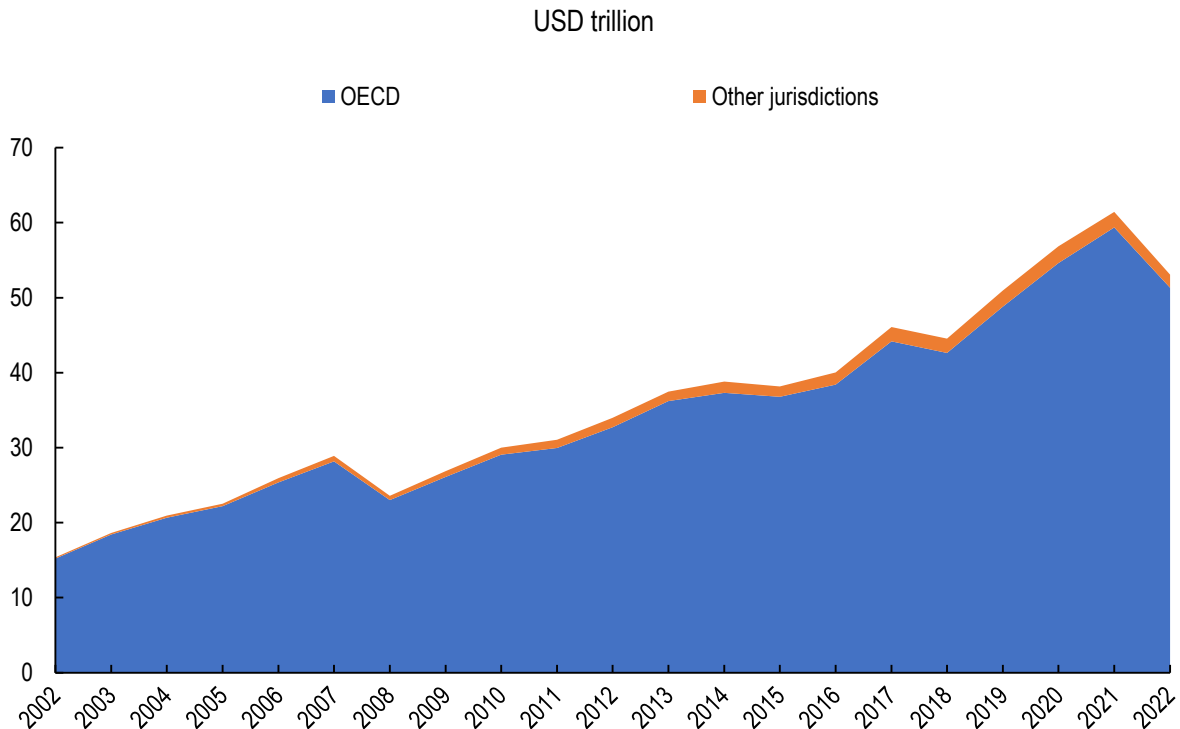
Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports.

2022 has been marked by an overall decrease in the amount of assets in funded and private pension plans in OECD countries. The 2023 report by the OECD Pension Statistics, compiled with administrative pension fund data gathered on a national level, shows a sharp decrease in the total amount of assets held by OECD pension funds and reserves at the end of 2022. The amount of these assets was approximately USD 51.3 trillion at the end of 2022, compared to USD 59.4 trillion at the end of 2021, marking a 13% decrease, the steepest drop in the last two decades, after 2008 (Figure 1). The sharp decline in AuM in

⁷ See Annex A for a list of all LPFs and PPRFs that have contributed to this report.

2022 is mainly driven by inflation and rising interest rates, which have both had a serious impact on public equity valuation and the value of bonds in the portfolios of pension plans providers (OECD, 2023^[1]).

Figure 1. Evolution of the amount of assets in funded and private pension plans in the OECD and in other jurisdictions over the last two decades



Note: The chart shows the amount of assets in funded and private pension plans at the end of each year, from end-2002 to end-2022, based on annual data. Therefore, it smooths out fluctuations happening over a year. The total amounts of assets at the end of a given year are calculated on all the jurisdictions for which a value is available. The number of jurisdictions that the totals include may therefore vary over the years. Totals are expressed in current prices.

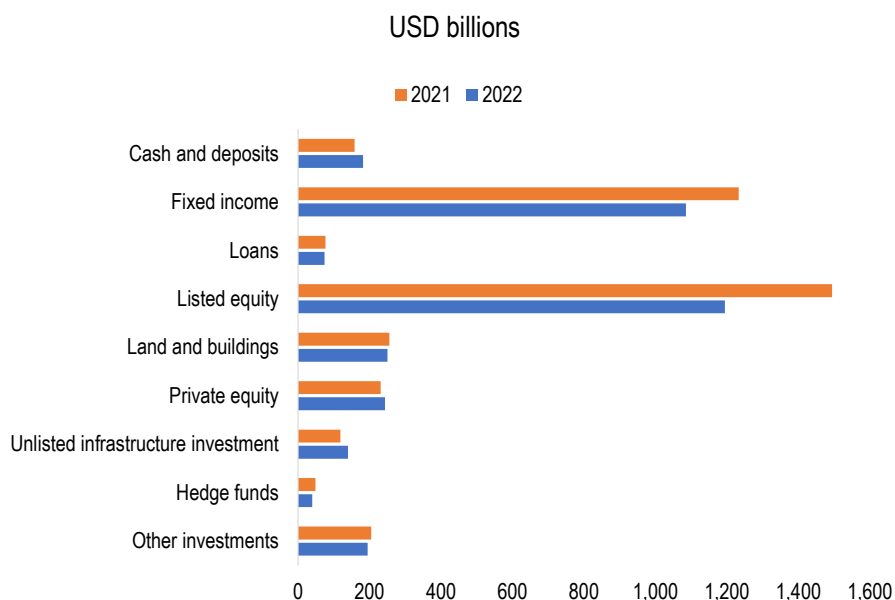
Source: OECD Global Pension Statistics.

Survey data reflects the aforementioned trend. After years of constant increase, total assets under management, measured in local currency, decreased by approximately 5.2% for LPFs (weighted average) and remained almost unchanged (+0.2%) for PPRFs (weighted average). 45 LPFs and 8 PPRFs showed decreasing AuM in 2022. Funds in many countries posted sharp declines, particularly in the Netherlands, Denmark, Sweden, Italy US, Hong Kong – China, Switzerland, and others. Some examples are Netherlands' ABP and PFW, respectively -17.7% and -21.6%, and Denmark's PFA Pension and Danika Pension, respectively -13.0% and -15.7%. Some Australian funds (such as AustralianSuper +3.9%, Unisuper + 0.9%, Hostplus + 13.7%), UK's USS (+10.5%), and funds from emerging economies seem to represent a positive exception in the overall trend. As for PPRFs, the declines are less acute. The sharpest percentage declines are Chile's Pensions Reserve Fund (-12.4%), Sweden's AP2 (-6.7%), New Zealand's Superannuation Fund (-4.1%). Among the biggest PPRFs, the US social Security Trust Fund decreased by 0.8%, while Canada Pension Plan Investment Board and Australia's Future Fund declined respectively by 2.6% and 3.7%. On the opposite, Japan Government Pension Fund and Norway Government Pension Fund (Global) increased their AuM by respectively 1.3% and 2.7% (Annex A, Table 3).

Figures 2 and 3 show the main drivers of declining AuM being listed equity and fixed income. Both LPFs and PPRFs aggregate asset allocation show an increasing appetite of certain institutional investors for real

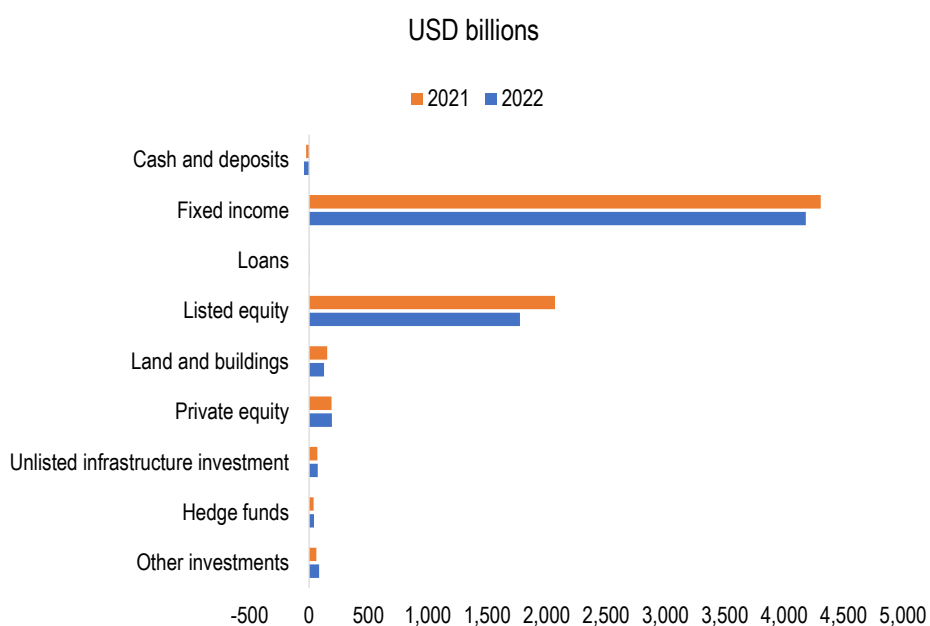
assets and non-publicly traded assets, such as private equity and unlisted infrastructure investment, for diversification and hedging against inflation and highly volatile public markets (Cerulli Associates, 2023^[2]) (Rajan, 2022^[2]). LPFs aggregate asset allocation also shows an important increase in cash and deposit.

Figure 2. Aggregate asset allocations of LPFs, 2021 and 2022



Note: Other Investments include Commodities and Other Investments. Negative cash and deposits possibly due to debt issuance and repos. Chart reflects data from 73 LPFs. 2021 does not include data from Australian Retirement Fund. Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 3. Aggregate asset allocations of PPRFs, 2021 and 2022



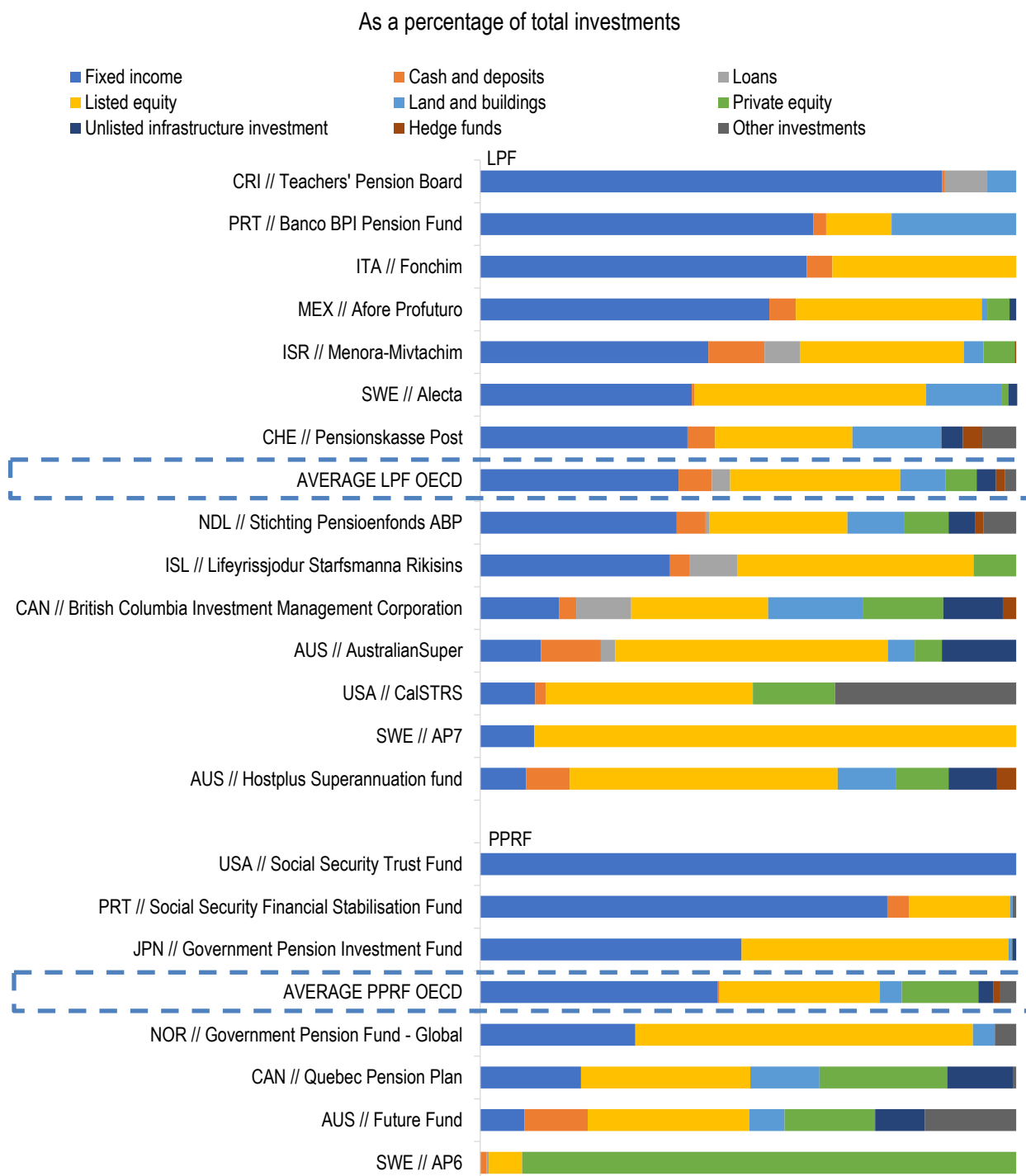
Note: Other Investments include Commodities and Other Investments. Negative cash and deposits possibly due to debt issuance and repos. Chart reflects data from 14 PPRFs. Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

LARGE PENSION FUND AND PUBLIC PENSION'S RESERVE FUND'S ASSET ALLOCATION

Figure 4 shows asset allocation of selected LPFs and PPRFs from OECD countries. Figure 5 shows asset allocation of selected LPFs from non-OECD countries. The average portfolio for the LPFs (PPRFs) in the OECD area shows that 37.0% (44.2%) of total assets were invested in fixed income, 31.7% (29.9%) in listed equity, 8.4% (4.1%) in land and buildings, 6.2% (0.4%) in cash and deposits, 5.8% (14.3%) in private equity, 3.6% (2.8%) in unlisted infrastructure investments, 3.4% (0.1%) in loans and 1.6% (1.2%) in hedge funds in 2022. There is an important difference in average investments in fixed income, which is preferred by PPRFs rather than LPFs.

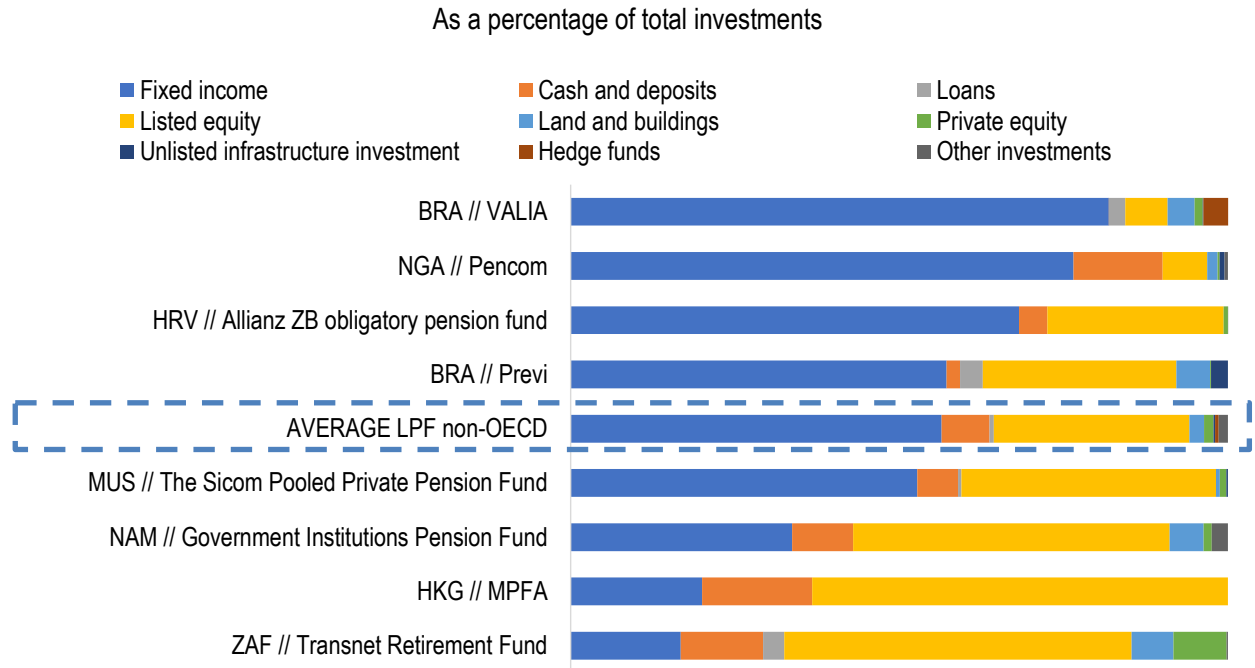
Average portfolio for the LPFs from non-OECD countries at the end of 2022 was invested as follow: 56.4% in fixed income, 29.8% in listed equity, 7.3% in cash and deposits, 2.2% in land and buildings, 1.4% in private equity, 0.6% in loans as well as in hedge funds, 0.2% in unlisted infrastructure investments. LPFs in non-OECD countries tend to invest more in traditional asset classes (namely fixed income and listed equity) and less in alternative asset classes compared to LPFs in OECD countries.

Figure 4. Asset allocation of selected LPFs and PPRFs based in OECD countries, 2022



Note: Other Investments include Commodities and Other Investments. Negative cash and deposits possibly due to debt issuance and repos. Criteria to select funds: selection based on convergence or divergence from the group average to show differences in allocation strategy and selection to allow for diversity in terms of geography and development stage of funds' origin country. Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 5. Asset allocation of selected LPFs based in non-OECD countries, 2022

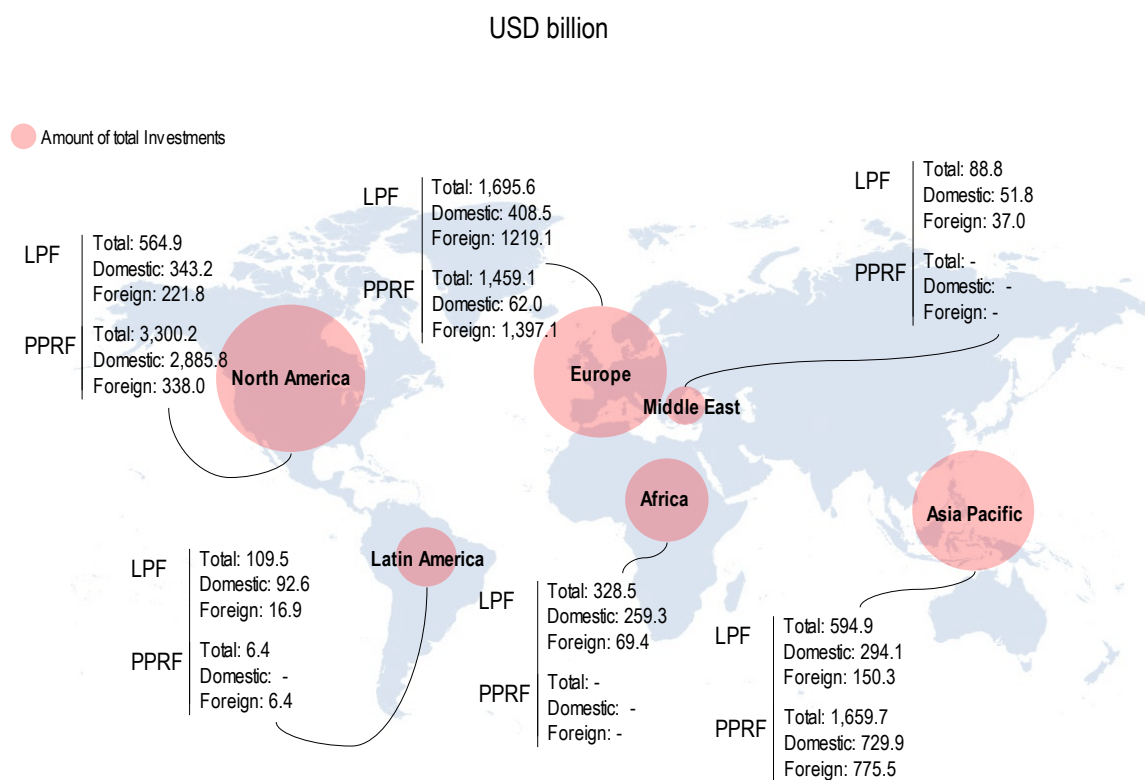


Note: Other investments include commodities and other Investments. Negative cash and deposits possibly due to debt issuance and repos. Criteria to select funds: selection based on convergence or divergence from the group average to show differences in allocation strategy and selection to allow for diversity in terms of geography and development stage of funds' origin country. Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

GEOGRAPHICAL COVERAGE AND FOREIGN INVESTMENTS OF LPFs AND PPRFs

Figure 6 shows the geographical coverage of the survey in terms of total investments. The breakdown between domestic and foreign total investments of the LPFs and PPRFs in each region is also provided. Foreign investments of LPFs totalled approximately USD 1.7 trillion while PPRF total foreign investments totalled USD 2.5 trillion.

Figure 6. Geographical coverage of the survey, 2022

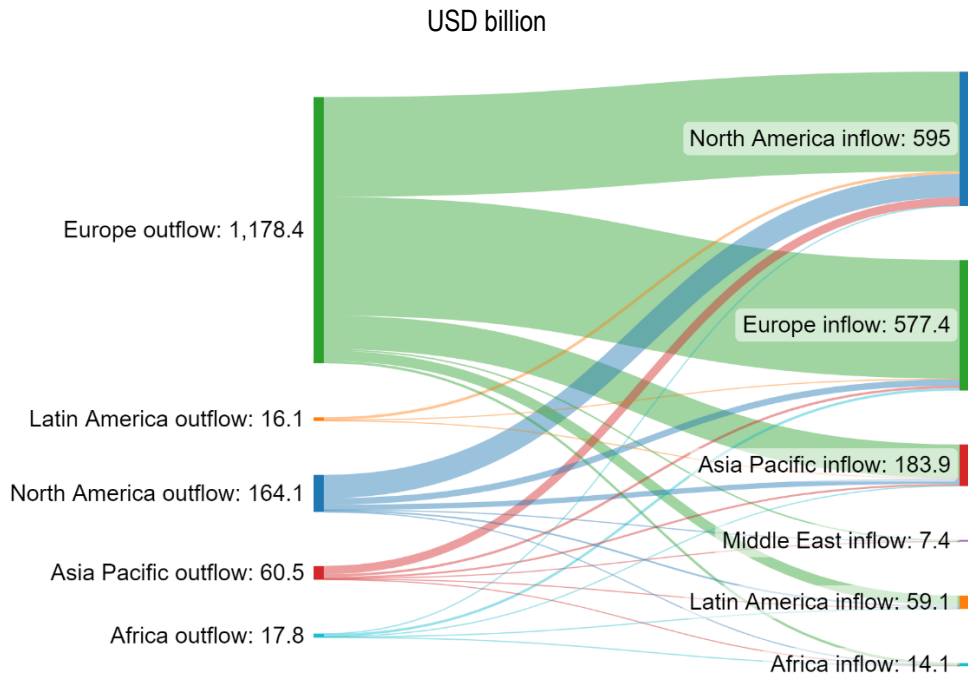


Note: Foreign investments in the figure are outflows, meaning the total amount of assets that funds from that region have invested abroad. Mismatch between domestic + foreign investments and total investments due to funds not disclosing to OECD the geographical breakdown of their investments.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

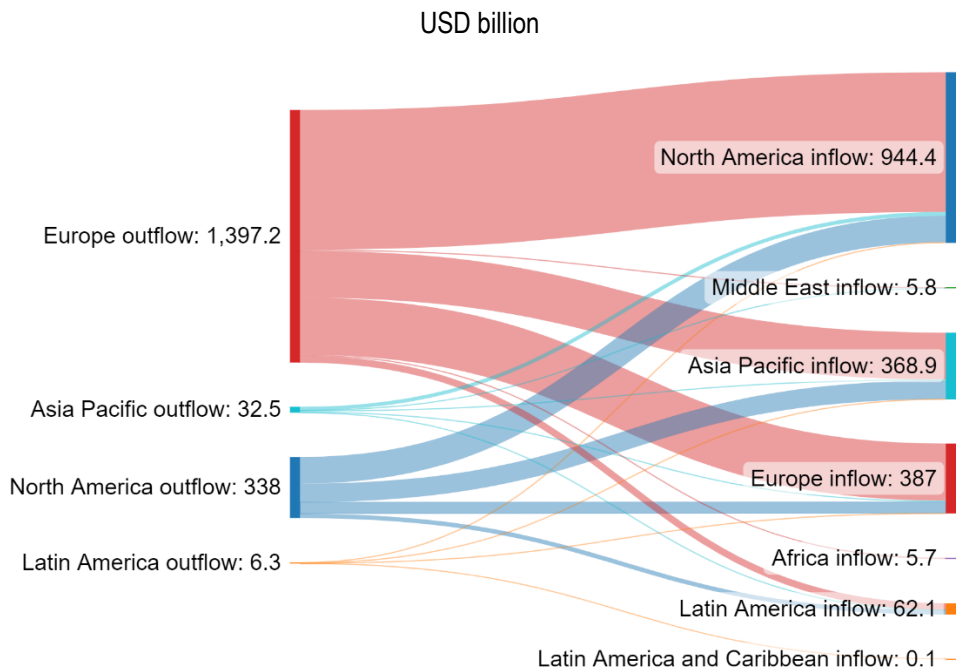
Figures 7 and 8 show the flows of foreign investments from the region of origin to the region of destination. Most LPFs and PPRFs foreign investments are directed towards countries in North America, Europe, and Asia Pacific. For Europe, intra-region flows constitute the majority of foreign investments. Intra-region flows also account for a large share of total foreign inflows in North America.

Figure 7. Flows of LPFs foreign investments, 2022



Note: Chart reflects data from 49 LPFs. Mismatch between total outflows in figure 7 and total foreign investments in figure 6 due to funds not disclosing to OECD the geographical breakdown of their investments. Latin America includes Caribbeans.
 Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

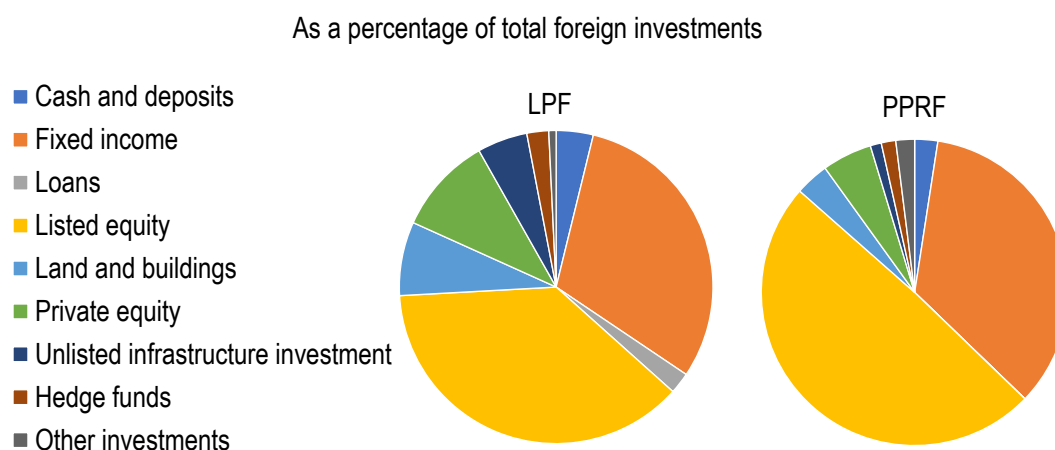
Figure 8. Flows of PPRFs foreign investments, 2022



Note: Chart reflects data from 8 PPRFs. Mismatch between total outflows in figure 8 and total foreign investments in figure 6 due to funds not disclosing to OECD the geographical breakdown of their investments. Latin America Includes Caribbeans.
 Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 9 shows asset allocation of foreign investments for LPFs and PPRFs. The aggregate portfolio of foreign investments of LPFs (PPRFs) shows that the largest asset classes are listed equity and fixed income, which account respectively for 37.5% (51.8%) and 30.6% (36.6%) of total foreign investments, followed by private equity and land and buildings, respectively with 10.1% (5.5%) and 7.6% (3.7%).

Figure 9. Aggregate asset allocations for LPFs and PPRFs foreign investments, 2022



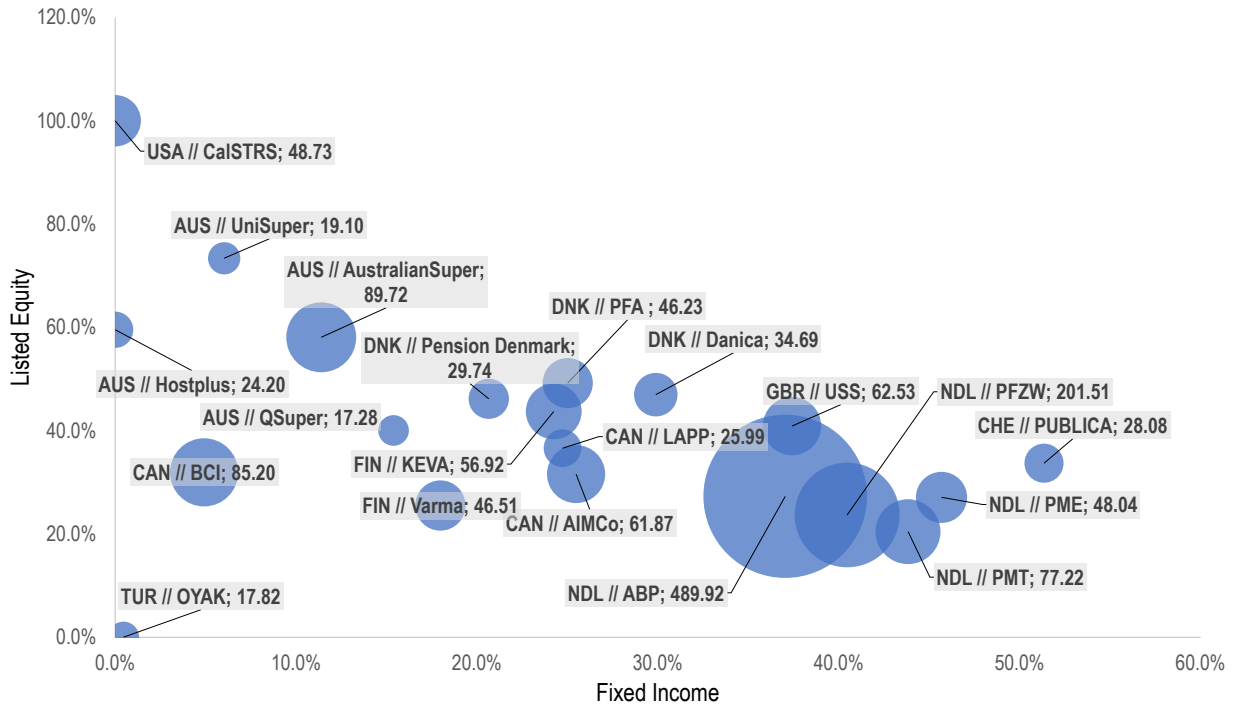
Note: Other investments include commodities and other Investments. Negative cash and deposits possibly due to debt issuance and repos. Chart reflects data from 57 LPFs and 8 PPRFs.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figures 10 and 11 show both the total amount of foreign investments and the allocation to foreign listed equity and foreign fixed income (the two largest asset classes within foreign investments) for selected LPFs and PPRFs. Both types of funds show a great variance in their foreign investment allocation strategy. The two LPFs with the largest amounts of foreign investments in absolute value are the Netherland's ABP and PFZW, followed by AustralianSuper, with respectively USD 489.9 billion, USD 201.5 billion, and USD 89.7 billion. For PPRFs, by far the largest investor is Norway's Global Government Pension Fund, followed by Japan's Government Pension Investment Fund and Canada's CPPIB, with respectively USD 1.4 trillion, USD 742.9 billion, and USD 338.0 billion.

Figure 10. Total foreign investments and allocation to fixed income and listed equity of selected LPFs, 2022

Top 20 LPFs for total foreign investments, figures in the labels in USD billion

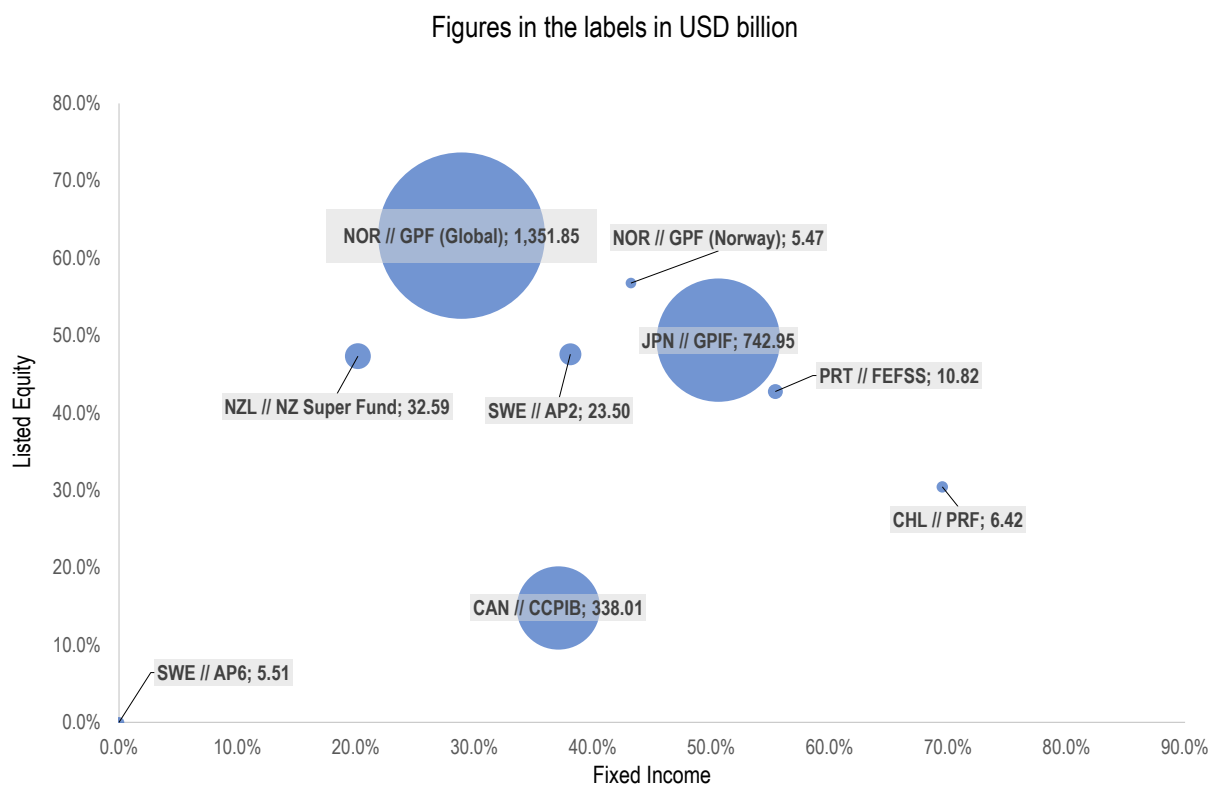


Note: Size of the circle denotes the amount of total foreign investment of the fund. The number in the label is the total amount of foreign investments of the fund.

Funds' abbreviations compared to Table 3, Annex A: AUS // Hostplus (Hostplus Superannuation fund); AUS // UniSuper (UniSuper Management Pty Ltd); CAN // BCI (British Columbia Investment Management Corporation); CAN // LAPP (Local Authorities Pension Plan); CHE // PUBLICA (Pensionskasse des Bundes PUBLICA); DNK // Danica (Danica Pension); DNK // PFA (PFA Pension); FIN // Varma (Varma Mutual Pension Insurance Company); NDL // ABP (Stichting Pensioenfonds ABP); NDL // PME (Stichting Pensioenfonds van de Metalektro).

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 11. Total foreign investments and allocation to fixed income and listed equity of selected PPRFs, 2022



Note: Size of the circle denotes the amount of total foreign investment of the fund. The number in the label is the total amount of foreign investments of the fund. The 9 PPRFs represented in the chart are the only ones that have, or have reported having, foreign investment, according to the data OECD received.

Funds' abbreviations compared to Table 3, Annex A: CAN // CCPIB (Canada Pension Plan Investment Board); CHL // PRF (Pension Reserve Fund); JPN // GPIF (Government Pension Investment Fund); NOR // GPF Global and Norway (Government Pension Fund – Global and Norway); NZL // NZ Super Fund (New Zealand Superannuation Fund); PRT // FEFSS (Social Security Financial Stabilisation Fund).

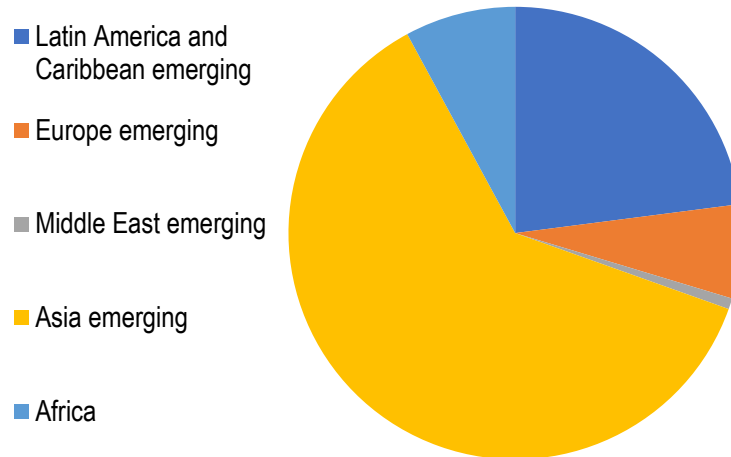
Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

At the end of 2022, LPFs and PPRFs had a total of USD 251.8 billion⁸ invested in emerging foreign markets. Figure 12 shows the regional breakdown of the investments in emerging foreign markets. The LPFs with the biggest amount in absolute value of foreign investment in emerging markets are Netherlands' ABP and PFZW, Canada's British Columbia Investment Management Corporation, UK's USS, Turkey's OYAK with respectively USD 61.8 billion, USD 34.8 billion, USD 11.6 billion, USD 10.1 billion, USD 10.0 billion. For PPRFs, the three top investors in foreign emerging markets are Norway's Government Pension Fund (Global), Sweden's AP2 and New Zealand's Superannuation Fund with respectively USD 77.6 billion, USD 3.1 billion, USD 1.0 billion.

⁸ Conservative figure due to many funds not disclosing their emerging market exposure to OECD, mainly because of different accounting standards in terms of geographical reporting.

Figure 12. Geographic allocation of LPFs and PRRFs foreign investment in emerging markets

As percentage of total foreign investment in emerging markets



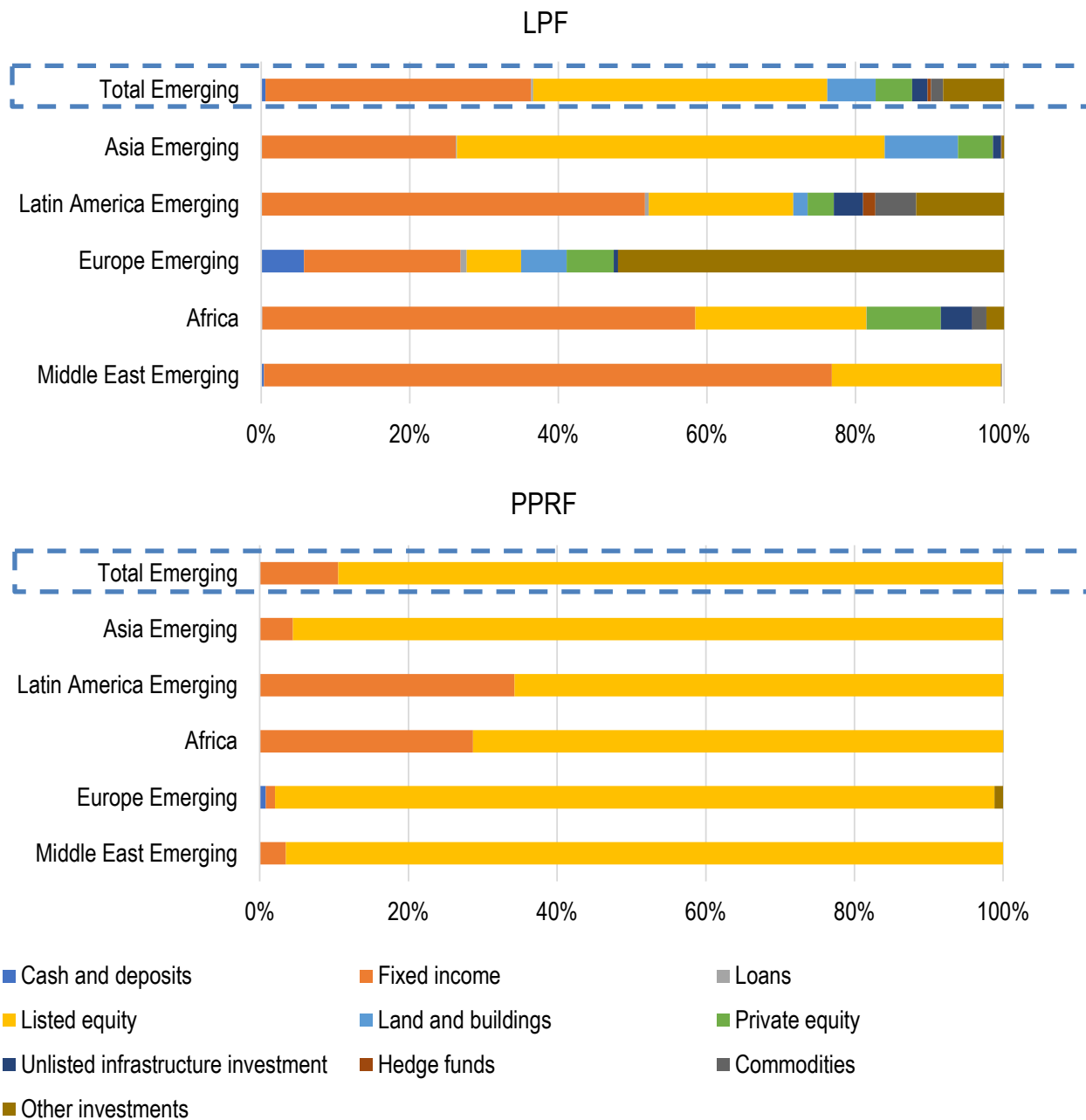
Note: Chart reflects data from 40 LPFs and 5 PPRFs.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 13 shows the asset allocation of LPFs and PPRFs investments in emerging foreign market. The most common products remain linked to public markets (namely listed equity and fixed income), especially for PPRFs.

Figure 13. Asset allocations for LPFs and PPRFs foreign investments in emerging markets by geographical area

As percentage of total foreign inflow investments in the region



Note: Chart reflects data from 40 LPFs and 5 PPRFs.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

3 Infrastructure investments

Overall investment in infrastructure in 2022 was limited relative to the total assets under management of funds from which data was received (i.e. 87 funds for USD 9.8 trillion). Infrastructure allocation has increased, both in absolute value and as percentage of total investments, compared to end 2021, continuing the positive trend observed in the previous years. Infrastructure investment in the form of unlisted equity, listed equity and debt was USD 302.6 billion (against USD 211.8 billion at the end of 2021), representing approximately 3% of the total assets under management of the entire survey population (at the end of 2021 it was approximately 2%). Of the 87 funds that participated in the survey, 62 indicated investments in infrastructure assets, 54 LPFs and 8 PPRFs.

Table 2 shows investments in infrastructure⁹ for LPFs and PPRFs for each infrastructure asset category (namely unlisted equity, listed equity and debt), in absolute value, as percentage of total infrastructure assets, and as percentage of total assets.

Table 2. Infrastructure investments of LPFs and PPRFs, 2022

		Total Assets, in USD millions	As % of total infrastructures assets	As % of total asets for all funds
LPF	Unlisted Equity	149,880	65.3%	4.4%
	Listed Equity	7,609	3.3%	0.2%
	Debt	72,052	31.4%	2.1%
PPRF	Unlisted Equity	72,560	99.3%	1.1%
	Listed Equity	320	0.4%	0.0%
	Debt	208	0.3%	0.0%

Note: Total investments is used as a proxy for total assets. Table reflects data from 54 LPFs and 8 PPRFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

INFRASTRUCTURE INVESTMENTS IN UNLISTED EQUITY

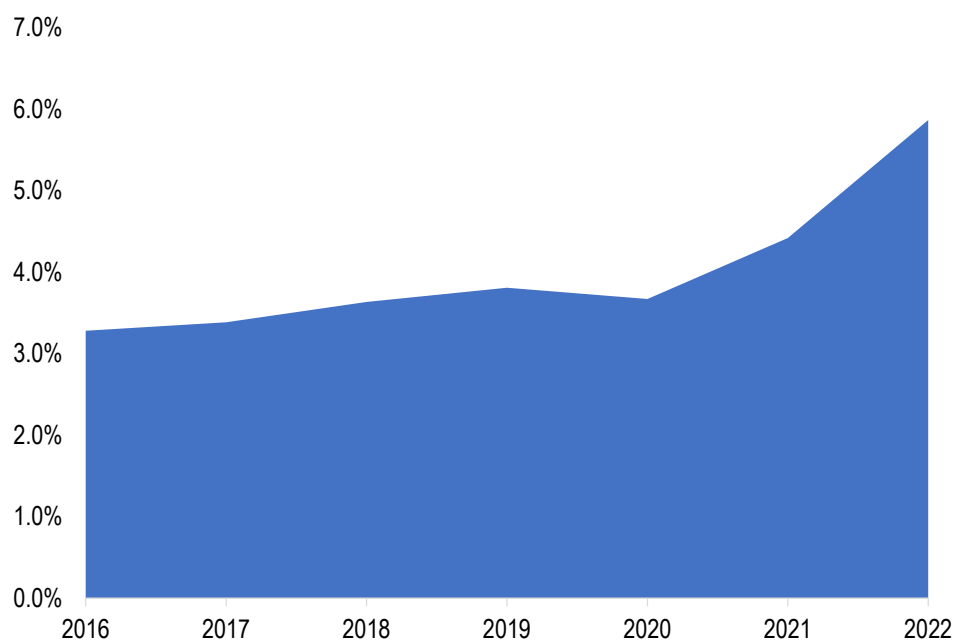
Investments in infrastructure unlisted equity (namely investments in unlisted infrastructure equity funds, direct and co-investments in unlisted infrastructure equity, or other investments in unlisted infrastructure equity) account for the largest shares of total investments in infrastructure assets both for LPFs and PPRFs, accounting respectively for 65.3% and 99.3% of total infrastructure investments.

⁹ Figure 27 in the Annex A shows on a more granular level the asset allocation of infrastructure investments and the total amount of infrastructure investments per each fund.

The biggest LPFs show increase appetite for this asset class. Although the sharp percentage increase in 2022 is partially driven by the decrease in value of publicly traded assets in the portfolios (see chapter 2), there is a clear trend of steady increase in the allocation to infrastructure unlisted equity over the past 6 years (Figure 14).

Figure 14. Unlisted infrastructure investments of top 20 LPFs, 2016-22

As percentage of total investments



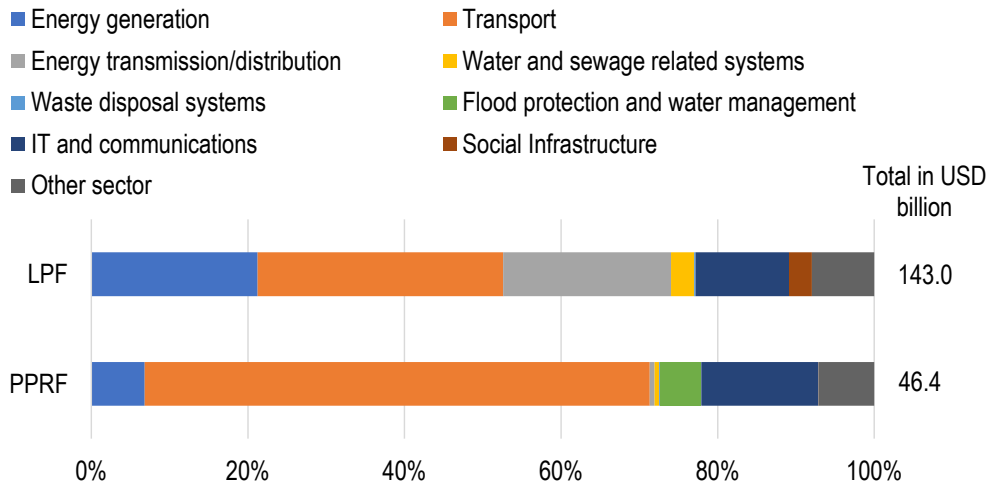
Note: Unlisted infrastructure investments of top 20 LPFs (based on total investments) with an unlisted infrastructure allocation as percentage of their total investments.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Amongst funds that reported the sector allocations of their unlisted infrastructure equity portfolios, 34 LPFs and 5 PPRFs, transport is the largest component for both categories. For LPFs, transport infrastructure are followed by energy transmission/distribution and energy generation infrastructure. For PPRFs, the second and third largest component are respectively IT and communications and energy generation. Figure 15 shows the sector allocation of infrastructure investments in unlisted equity.

Figure 15. Infrastructure sector allocations of LPFs and PPRFs in unlisted equity, 2022

As percentage of total infrastructure investments in unlisted equity of the funds that reported the sector breakdown



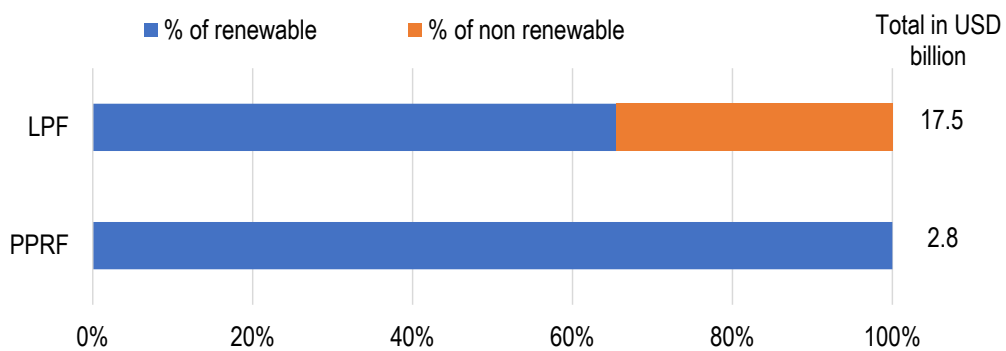
Note: Chart reflects data from 34 LPFs and 5 PPRFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Within the energy generation sector, renewable energy infrastructures are preferred compared to non-renewable ones (Figure 16). Figure 17 represents a further breakdown, showing the sub-sector allocation of the investments in renewable energy generation infrastructure investments.

Figure 16. Breakdown of investments in unlisted equity of LPFs and PPRFs in renewable and non-renewable energy generation infrastructures, 2022

As percentage of total investments in unlisted equity in energy generation infrastructures of the funds that reported the energy generation breakdown

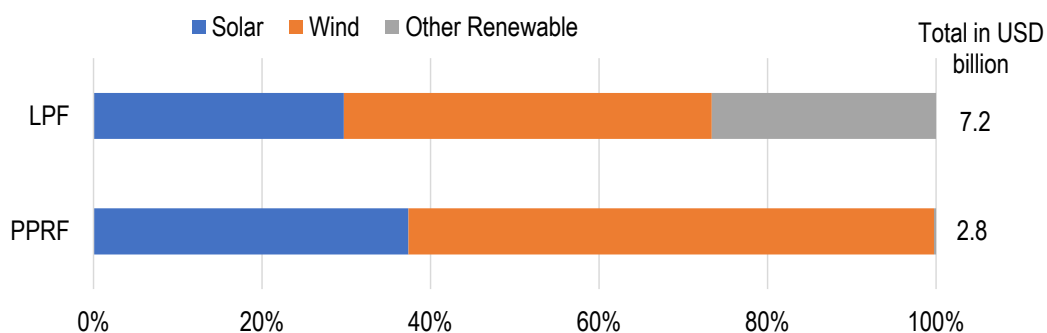


Note: Chart reflects data from 19 LPFs and 5 PPRFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 17. Breakdown of investments in unlisted equity of LPFs and PPRFs in types of renewable energy generation infrastructures, 2022

As percentage of total investments in unlisted equity in renewable energy generation infrastructures of the funds that reported the renewable energy generation breakdown



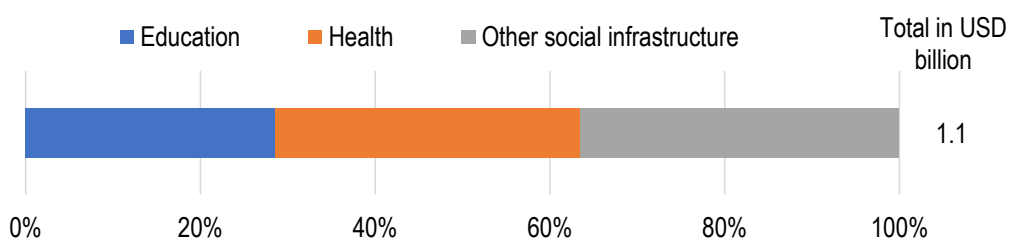
Note: Chart reflects data from 14 LPFs and 5 PPRFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 18 shows the breakdown of the investments in social infrastructures in three main categories, namely education, health, other social infrastructures. The total level of investments into social infrastructures remains limited relative to economic infrastructures.

Figure 18. Breakdown of investments in unlisted equity of LPFs in social infrastructures, 2022

As percentage of total investments in unlisted equity in social infrastructure of the funds that reported the social infrastructure breakdown



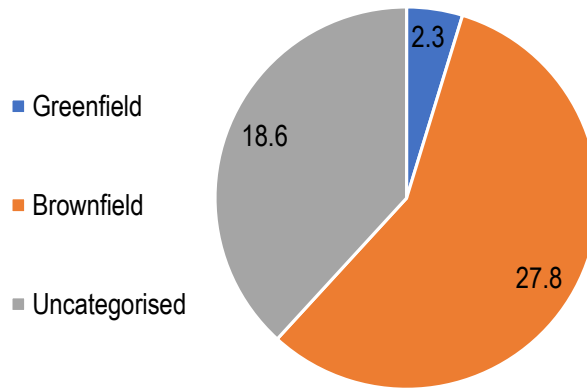
Note: Chart reflects data from 8 LPFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

In terms of development phase of infrastructure investments in unlisted equity, brownfield projects represent the largest component, while greenfield projects represent a minority (Figure 19).

Figure 19. Infrastructure allocations of investments in unlisted equity, by development phase, for LPFs and PPRFs, 2022

As percentage of total infrastructure investments in unlisted equity of the funds that reported the phase breakdown, figures in USD billion

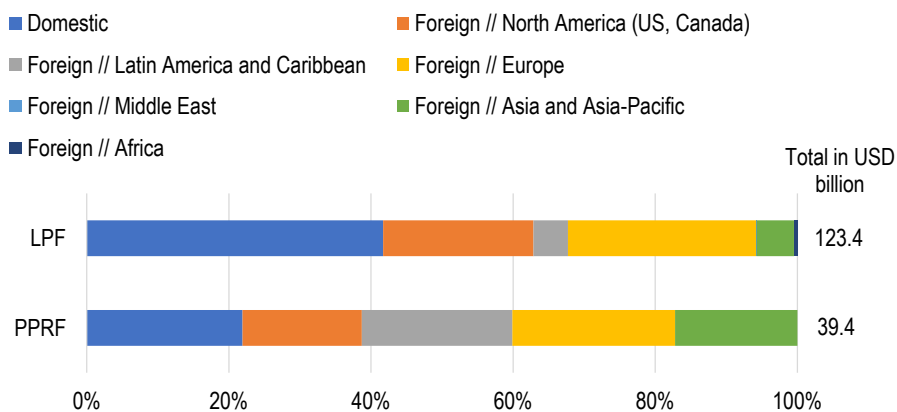


Note: Chart reflects data from 18 LPFs and 2 PPRFs
 Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 20 shows the geographical allocation of unlisted infrastructure investments in 2022. Domestic and developed regions remain the preferred ones for infrastructure investments in unlisted equity, both for LPFs and PPRFs.

Figure 20. Geographical allocation of infrastructure investments in unlisted equity of LPFs and PPRFs, 2022

As percentage of total infrastructure investments in unlisted equity of the funds that reported the geographic breakdown



Note: Chart reflects data from 38 LPFs and 4 PPRFs
 Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

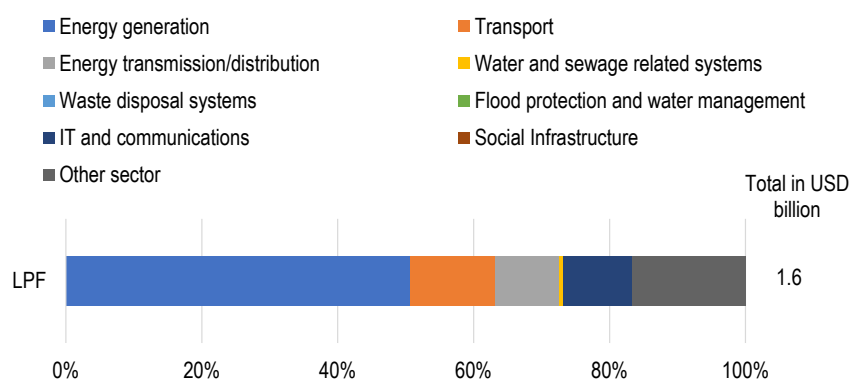
INFRASTRUCTURE INVESTMENTS IN LISTED EQUITY

11 funds (10 LPFs and 1 PPRFs) reported information on listed infrastructure equity investments, which is a relatively low number of funds compared to those with unlisted infrastructure equity. For LPFs, energy generation is the largest component, followed by other sectors and transport (figure 21). Figure 22 represents a further breakdown showing the allocation to renewable vs non-renewable energy generation infrastructures.

For PPRFs, the only fund that reported allocation to infrastructure listed equity is New Zealand’s Superannuation fund, with approximately USD 121.0 million invested in this asset class. In terms of sector allocation, the top component is transport, followed by IT and communications infrastructures. The third sector is energy generation, where the fund invests approximately USD 20.3 million, all of which in renewable energy generation infrastructures.

Figure 21. Infrastructure sector allocations of LPFs in listed equity, 2022

As percentage of total infrastructure investments in listed equity of the funds that reported the sector breakdown

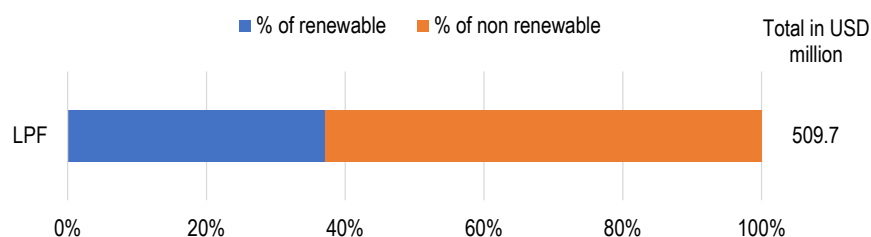


Note: Chart reflects data from 10 LPFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 22. Breakdown of investments in listed equity of LPFs in renewable and non-renewable energy generation infrastructures, 2022

As percentage of total investments in listed equity in renewable energy generation infrastructures of the funds that reported the renewable energy generation breakdown



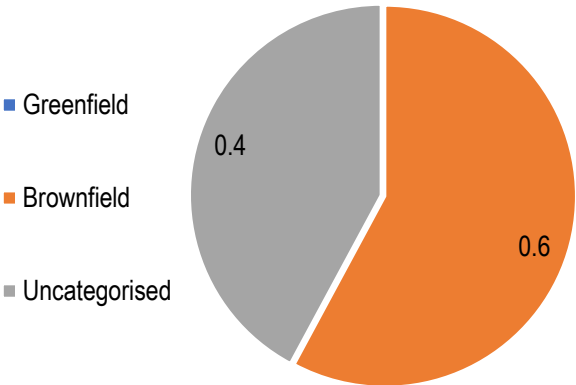
Note: Chart reflects data from 4 LPFs

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 23 shows the development phase of infrastructure investments in listed equity. Like infrastructure investments in unlisted equity, brownfield projects represent the largest component.

Figure 23. Infrastructure allocations of investments in listed equity, by development phase, for LPFs and PPRFs, 2022

As percentage of total investments in listed equity of the funds that reported the phase breakdown, figures in USD billion



Note: Chart reflects data from 6 LPFs and 1 PPRF
Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

4 ESG Investing

GREEN INVESTMENTS

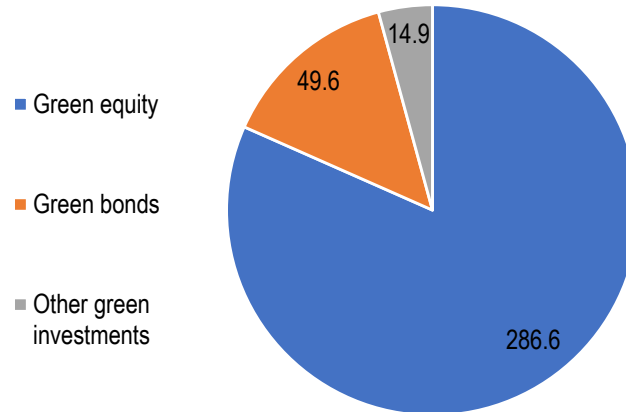
A number of funds reported allocations to green investments. Namely, 41 LPFs and 5 PPRFs reported allocations to green investments, for a total of respectively USD 194.7 billion and USD 156.3 billion. For LPFs, Sweden's Alecta is the fund with the largest allocation to green investments in absolute value, with a total of approximately USD 53.0 billion, of which 90.1% invested in green equity. Alecta is followed by Netherlands' ABP, with a total of approximately USD 27.3 billion in green investments, of which 76.9% is invested in green bonds. For PPRFs, Norway's Government Pension Fund (Global) has by far the largest allocation to green investments, with approximately USD 114.3 billion, of which 98.7% invested in green equity.

Figure 24 shows the aggregate allocation of green investments of LPFs and PPRFs per category, namely green equity, green bonds, other green investments.

Most funds indicated to not have a specific definition for green investments when inquired on the definition they applied, but indicated a general description of low carbon and climate resilient investments with a favourable impact on environment or green transitions; nor a specific target allocation for green investments.

Figure 24. Allocation of green investments for LPFs and PPRFs, 2022

As percentage of total green investments of the funds that submitted data, figures in USD billion



Note: Chart reflects data from 41 LPFs and 5 PPRF

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

SOCIAL INVESTMENTS

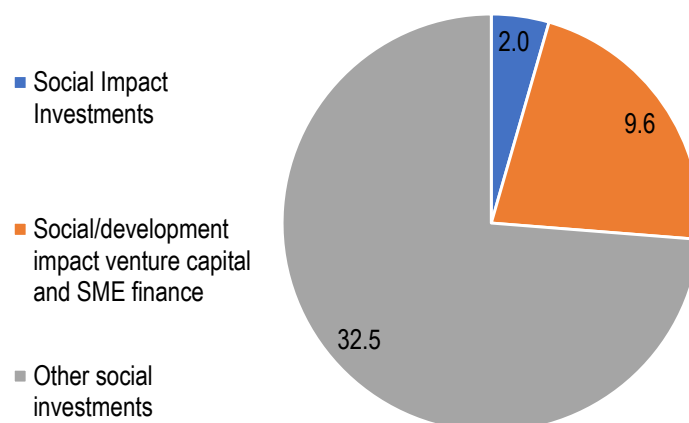
28 LPFs and 2 PPRFs reported allocations to social investments for a total of respectively USD 43.5 billion and USD 0.6 billion. Netherlands' ABP is the fund with the largest allocation to social investments, with a total of approximately USD 29.1 billion. ABP is followed by South Africa's GEPI with a total of USD 6.8 billion, all invested in social/development impact venture capital and SME finance.

Figure 25 shows the aggregate allocation of social investments of LPFs and PPRFs per category, namely social impact investments, social/development impact venture capital and SME finance, other social investments.

Similarly to green investments, most funds indicated to not have a specific definition for social investments when inquired on the definition they applied, nor a specific target allocation for social investments. Funds that did provide a definition, outlined along the lines of type of investments that aim to generate beneficial social effects in addition to financial gain.

Figure 25. Allocation of social investments for LPFs and PPRFs, 2022

As percentage of total social investments of the funds that submitted data, figures in USD billion



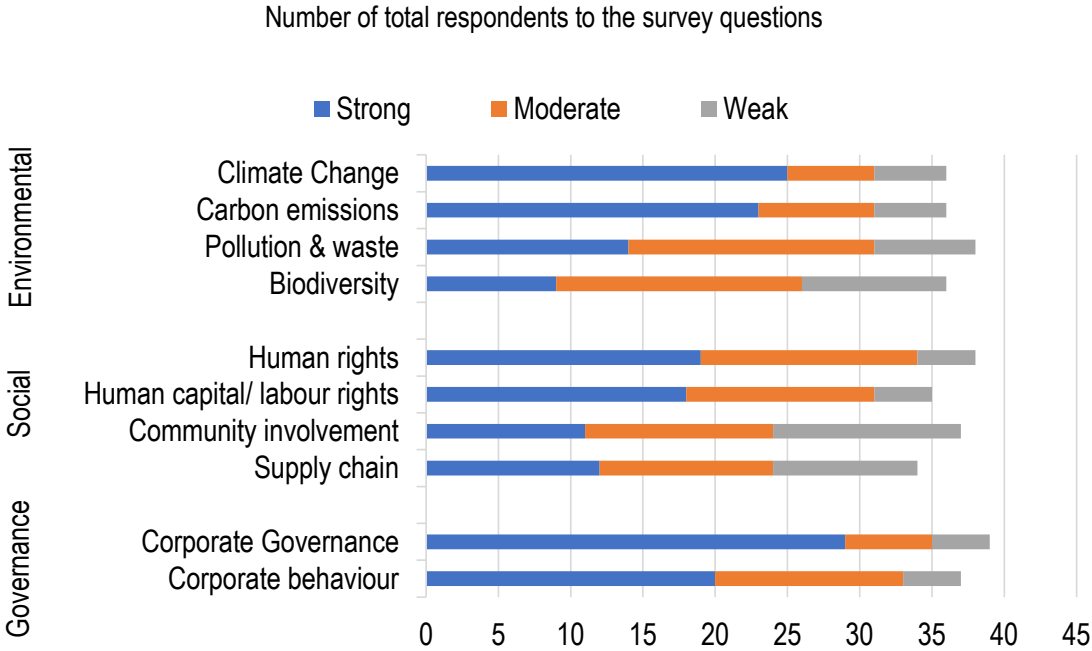
Note: Chart reflects data from 28 LPFs and 2 PPRF

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

ESG INFRASTRUCTURE ASPECTS

The survey also collected information on ESG investments of pension funds and how various ESG components are considered. Funds ranked their commitment based on a list of ESG aspects from strong to moderate and weak. Results are shown in Figure 26 indicating that most funds reported governance as strong in infrastructure investments. Among environmental considerations, impact of climate change is the aspect most taken into account in investments, with 25 funds that reported strong commitment, followed respectively by carbon emissions, pollution and waste, and biodiversity. With regard to the social component of ESG, human rights was the aspect for which most funds reported strong commitment, followed by human capital, supply chain and community involvement.

Figure 26. ESG aspects considered in infrastructure investments by LPFs and PPRFs, 2022



Note: Chart reflects data from 38 LPFs and 1 PPRF

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

References

- Cerulli Associates (2023), *Asia's Pension Funds Allocate Further to Alternatives*. [2]
- OECD (2023), *Pension Markets in Focus 2023*, OECD Publishing, [1]
<https://doi.org/10.1787/28970baf-en>.
- Rajan, A. (2022), *Pension funds: reorienting asset allocation in an inflation-fuelled world*, AMUNDI / CREATE-Research. [3]

Annex A.

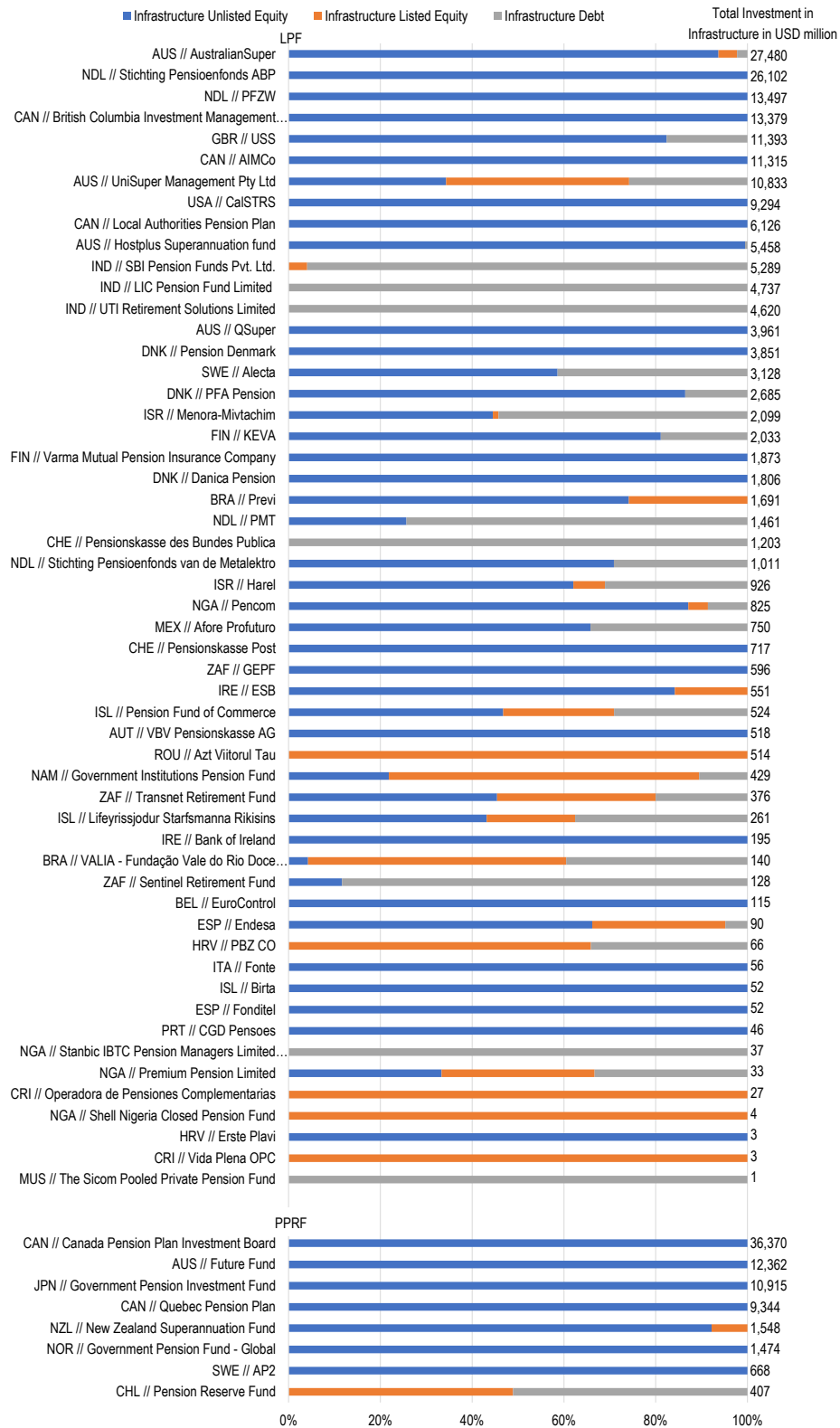
Table 3. Pension fund assets under management, 2022

Country head office	Name of the fund or institutions	Total Investments	
		2022 (USD bn)	% change in AuM YoY
LPFs			
Netherlands	Stichting Pensioenfonds ABP	524.6	-17.7%
United States	CalSTRS	302.1	-7.8%
Netherlands	PFZW	232.1	-21.6%
Australia	AustralianSuper	185.7	3.9%
South Africa	GEPF	135.0	9.6%
Hong Kong	MPFA	134.6	-11.1%
Mauritius	Rogers Pension Fund	132.8	-1.6%
Canada	British Columbia Investment Management Corporation	120.6	-1.7%
Sweden	Alecta	110.6	-6.3%
United Kingdom	USS	109.6	10.5%
Canada	AIMCo	99.3	-2.3%
Netherlands	PMT	90.8	-13.2%
Sweden	AP7	86.8	-6.4%
Denmark	PFA Pension	79.6	-13.0%
Australia	UniSuper Management Pty Ltd	69.5	0.9%
Finland	Keva	66.4	-6.9%
Denmark	Danica Pension	61.7	-15.7%
Australia	Hostplus Superannuation fund	60.1	13.7%
Finland	Varma Mutual Pension Insurance Company	59.9	-4.8%
Netherlands	Stichting Pensioenfonds van de Metalektro	57.8	-13.7%
Israel	Menora-Mivtachim	53.3	2.6%
Brazil	Previ	48.7	6.8%
Mexico	Afore Profuturo	45.9	5.0%
Canada	Local Authorities Pension Plan	43.0	-5.1%
Switzerland	Pensionskasse des Bundes Publica	42.3	-10.5%
Denmark	Pension Denmark	41.3	-6.4%
India	SBI Pension Funds Pvt. Ltd.	39.1	20.0%
Israel	Harel	35.4	2.2%
Australia	Australian Retirement Trust	33.1	NA
Nigeria	Pencom	32.6	11.6%
India	LIC Pension Fund Limited	29.2	21.5%
India	UTI Retirement Solutions Limited	27.8	19.2%
Turkey	Oyak	22.8	62.3%
Switzerland	Pensionskasse Post	17.8	-7.3%
Australia	Telstra Superannuation Scheme	15.8	-5.1%
Italy	Cometa	13.1	-9.7%
Nigeria	Stanbic IBTC Pension Managers Limited (Active & Retiree)	9.5	11.5%
Iceland	Lifeyrissjodur Starfsmanna Ríkisins	9.1	-4.0%
Namibia	Government Institutions Pension Fund	8.3	8.0%
Iceland	Pension Fund of Commerce	8.3	-2.3%

Austria	VBV Pensionskasse AG	8.2	-3.8%
Italy	FONCHIM	7.9	-10.6%
Costa Rica	Teachers' Pension Board	7.2	13.2%
Iceland	Gildi Pension fund	6.3	-0.3%
Croatia	Allianz ZB obligatory pension fund	6.3	-3.4%
Croatia	Raiffeisen Mandatory Pension Funds	5.7	1.2%
Ireland	Bank of Ireland	5.6	-27.3%
Brazil	VALIA - Fundação Vale do Rio Doce Seguridade Social	5.5	4.5%
Ireland	ESB	5.4	-8.4%
Italy	Fonte	5.0	-8.1%
Romania	Azt Viitorul Tau	4.4	6.9%
Iceland	Birta	3.9	-1.3%
Portugal	CGD Pensoes	3.5	-7.1%
South Africa	Transnet Retirement Fund	3.3	-14.4%
Spain	Fonditel	3.1	-6.1%
Croatia	PBZ CO	2.9	-5.2%
Croatia	Erste Plavi	2.9	-0.9%
South Africa	Sentinel Retirement Fund	2.6	-1.3%
Belgium	EuroControl	2.0	-11.6%
Costa Rica	Vida Plena OPC	1.9	4.6%
Spain	Endesa	1.8	-18.0%
Portugal	Banco BPI Pension Fund	1.8	-12.0%
Nigeria	Premium Pension Limited	1.7	3.1%
Nigeria	Shell Nigeria Closed Pension Fund	1.6	-2.2%
Costa Rica	Operadora de Pensiones Complementarias	0.5	-5.0%
Turkey	Isbank Pension Fund	0.3	90.8%
Mozambique	Insurance Supervisory Institute	0.2	8.1%
Mauritius	The Mauritius Commercial Bank Superannuation Fund	0.2	-0.7%
Mauritius	The Sicome Pooled Private Pension Fund	0.2	-3.8%
Mauritius	SWAN Defined Contribution Pension Scheme	0.2	9.5%
Mauritius	IBL Pension Fund	0.1	-3.2%
Romania	Raiffeisen Acumulare	<0.1	7.8%
Total LPFs		3,398.2	-5.2%
PPRFs			
United States	Social Security Trust Fund	2,829.9	-0.8%
Japan	Government Pension Investment Fund	1,489.8	1.3%
Norway	Government Pension Fund - Global	1,351.9	2.7%
Canada	Canada Pension Plan Investment Board	393.9	-2.6%
Australia	Future Fund	132.9	-3.7%
Canada	Quebec Pension Plan	76.4	0.6%
Sweden	AP2	39.3	-6.7%
New Zealand	New Zealand Superannuation Fund	37.0	-4.1%
Norway	Government Pension Fund - Norway	32.3	-4.4%
Portugal	Social Security Financial Stabilisation Fund	24.5	-0.8%
Sweden	AP6	6.9	3.6%
Chile	Pension Reserve Fund	6.4	-12.4%
Spain	Social Security Reserve Fund	2.3	0.1%
Bulgaria	State Fund for Guaranteeing the Stability of the State Pension System	2.0	4.1%
Total PPRFs		6,425.4	0.2%
Total LPFs & PPRFs		9,823.5	

Note: Total investments is used as a proxy for AuM. Stanbic IBTC Pension Managers Limited includes active and retiree funds.
Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

Figure 27. Allocation of infrastructure investments of LPFs and PPRFs, 2022



Note: IBTC Pension Managers Limited includes active and retiree funds.

Source: OECD calculations based on responses to the OECD Survey of LPFs and PPRFs and publicly available reports

