



2023 ANNUAL REPORT

*“State-Owned Investors
in a Multipolar World ”*

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Diego López, Founder and
MD of Global SWF

I am delighted to present our 2023 Annual Report, launched on January 1 with absolutely no data reporting lag. At Global SWF, our mission is to produce the most insightful, independent, and timely research and analysis of the activities of the world's major sovereign investors. We are proud to be at the heart of the industry, having rapidly become the data provider of choice since our establishment in 2018.

Covering sovereign wealth funds and public pension funds is equally fascinating in both rising and falling markets. The industry is increasingly sophisticated and complex, requiring continuous dialogue, analyses, and updates. Our annual report is a unique compilation of all those efforts, as well as of the events and developments of the industry in the past 12 months. The document warrants a tremendous amount of work during a holiday period, but we are fully committed to our mandate and will continue to publish it annually on January 1.

2022 was an extremely interesting and challenging year for market players, given geopolitics, high inflation, rising interest rates, and significantly negative returns in both stocks and bonds. Global economic growth is slowing down sharply, and sovereign investors must now operate cautiously in a **Multi-Polar World**. The silver lining for our industry is that half of the world's sovereign wealth funds continue to be fueled by oil revenues, and we are expecting to see an increasing activity and role of Gulf SWFs in the global markets.

The year also marked the return of **global traveling and workshops**, after two lockdown-hit years. We had in-person private sessions with funds in New York, Panama, Istanbul, Abu Dhabi, Dubai, Doha, Riyadh, Luanda, Singapore, and Kuala Lumpur, and co-organized our first sovereign investment **conference** in New York. 2023 is looking even busier, and we are already planning trips to Canada, the UK, the Middle East, and Asia. We do hope the travel restrictions are finally lifted in China, so that we can also schedule sessions there.

One of the initiatives of which I am proudest is the establishment of the **SWF Academy**. After testing the concept with some of our clients, we conducted a long process to choose our academic partner among top universities in the US, Europe and Asia. After months of conversations, we closed the deal with **London Business School (LBS)** and put together the best minds of academics and practitioners for the benefit of SWFs. We will host our first two cohorts in 2023 in February (LBS Dubai campus) and May (LBS London campus).

In addition to consulting projects, workshops, conferences, and academic programs, the team worked extremely hard to keep our **data platform** updated and relevant. We have written original and insightful articles every weekday of the year and have kept our promise of sending a newsletter to our clients every first day of the month, with interviews with funds' C-suite and data-driven insight. Our main tool is subscribed to by the world's largest asset owners, asset managers, and service providers; we have over **8,000 followers** on our social media channels; and we have been mentioned more than **200 times** by the international media.

Apart from relevance and independence, we strive to be as responsive as possible, which has ensured a minimal churn rate among our subscribers and clients. We also try to be as analytical and visual as possible, as shown by the **50 charts and 26 tables** of this report. We believe in plain English and clearly presented data.

On that note, I would like to thank all team members and partners, who have worked tirelessly to serve our clients, as well as our esteemed advisory council, which has kept us on track. We firmly believe in the global aspect of our business and have now team members, advisors, and partners in all continents.

Please enjoy our annual report and we look forward to continuing our dialogue in the year ahead.

Happy 2023!

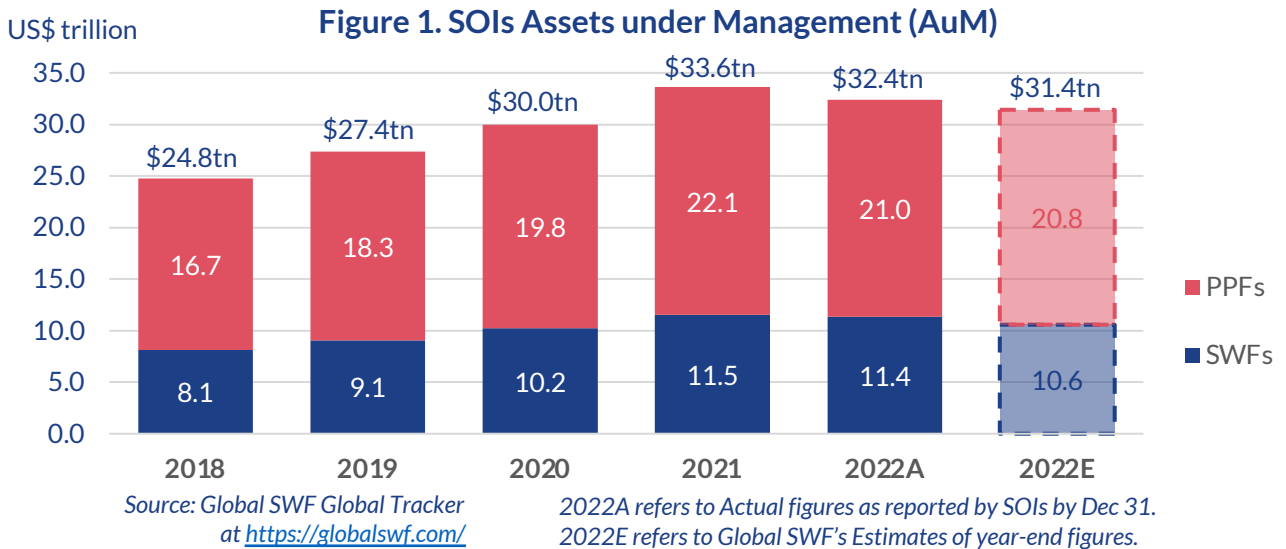


1. Executive Summary



2022 was one of the most difficult years for State-Owned Investors (SOIs) in recent history. It started with Russia's military invasion of Ukraine, which boosted oil prices and drove inflation rates to levels not seen in 40 years. In response, interest rates were hiked, with central banks trying to cool down inflationary pressures. The year finished with what some may call the burst of the cryptocurrency frenzy. It represented the end of bull markets, which had rebounded quickly from Covid19, and most analysts agree that a recession is likely in 2023.

In fact, 2022 was the first year ever that Sovereign Wealth Funds (SWFs) shrank in value. The scale of the drop is debatable as most SWFs report with significant delays, if at all – but **Global SWF** estimates the impact totaled US\$ 1 trillion. Similarly, Public Pension Funds (PPFs) have reduced their assets by US\$ 1.3 trillion, with the subsequent worsening of funding ratios. These are paper losses and some of the funds will not see them realized in their role as long-term investors, but it is quite telling of the moment we are living.



The major challenge of 2022 was the simultaneous and significant (>10%) correction of bonds and stocks, which had not happened in 50 years. This was not a US-isolated event but was seen worldwide: of major indices, only FTSE100 managed to close the year in green. The global listed benchmarks for private markets also dropped significantly, with infrastructure and private credit being the most popular refuge. Lastly, hedge funds managed to avoid huge losses and gained some momentum as an asset class among sovereign investors.

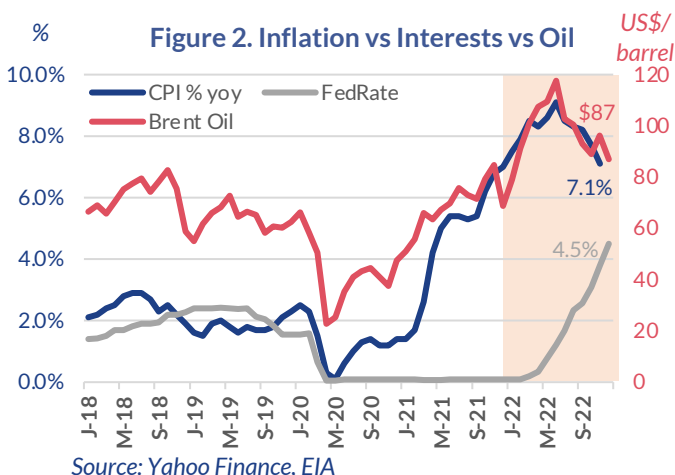
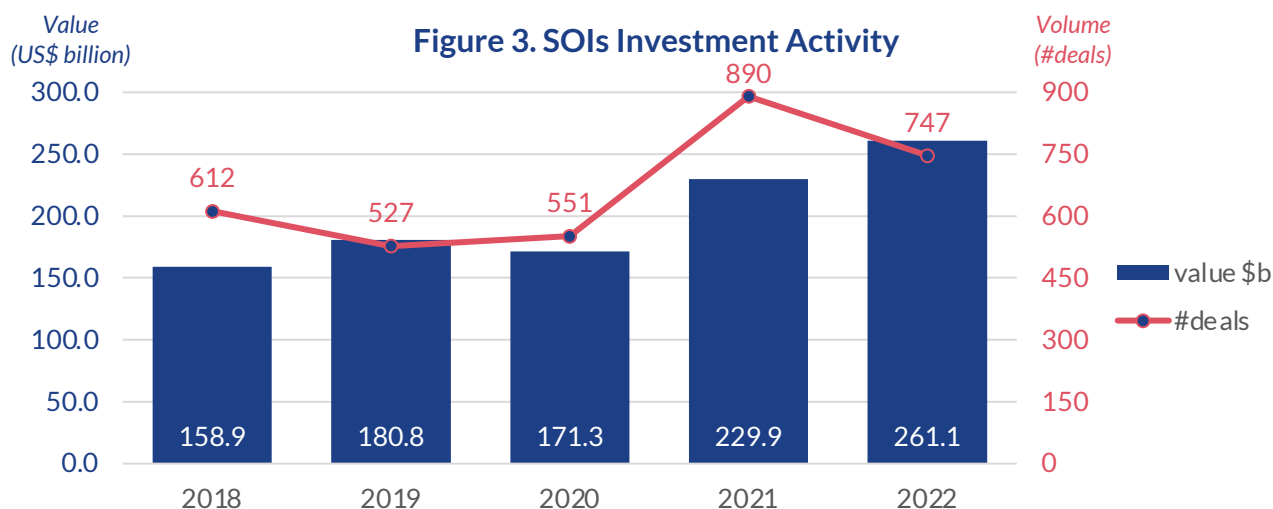


Table 1. Return of asset classes in 2021 vs 2022			
Asset Class	2021	2022	Benchmark
Fixed Income	-0.8%	-14.8%	S&P500B
Public Equities	+19.3%	-18.7%	S&PGL1200
Real Estate	+42.5%	-28.4%	S&P500RE
Infrastructure	+8.4%	-3.7%	S&PGLInfra
Private Equity	+37.8%	-31.7%	S&PLPE
Hedge Funds	+9.6%	-3.6%	EH HFI

Source: S&P, EurekaHedge



In 2022, state-owned investors deployed more capital in fewer deals than in 2021. In fact, the reduction in Venture Capital and the increase of mega-deals meant that the average ticket of the year was US\$ 0.35 billion, which had not been recorded in over five years. Compared to 2021, SWFs invested 38% more, with **US\$ 152.5 billion** in 427 transactions; while PPFs invested 9% less, with **US\$ 108.6 billion** in 320 deals.



Source: Global SWF Data Platform. Figures include private market transactions and sizeable and long-term equity deals, and exclude domestic developments and Government transfers

GIC was once again the lead investor with US\$ 40.3 billion deployed in 2022, 17% more than in 2021. The Singaporean SWF is often seen in some of the world's largest deals, usually in conjunction with other SOIs and private equity firms, and with a slight bias towards European and North American businesses. Behind **GIC**, five Gulf funds confirmed their role as major global dealmakers: the three Abu Dhabi SWFs, plus **PIF** and **QIA**. The third major region for outbound capital was Canada, despite lower activity than in recent years.

The regional preferences of the Top 10 investors keep adapting to the new financial environment and geopolitics. Five of the funds invested more in North America, three focused on Europe, and only **ADQ** continued betting on emerging markets. Overall, only 20% of the capital went into developing economies.

In terms of industries, the activities of SOIs were a perfect reflection of the economic changes. Funds lost interest in healthcare, consumer, and technology (i.e., in venture capital), and grew their appetite for infrastructure (mostly transportation), energy, industrials and financials. Real estate remained constant.

The major story of the year is the re-emergence of mega-deals, defined as investments of US\$ 1.0 billion or more. The average ticket size for SWFs increased to levels not seen since 2016, and there were a total of 60 mega-deals in 2022. **Temasek's** Element Materials and **GIC's** Store Capital are now #2 and #3 of all time.

State-Owned Investors also sustained significant divestment activity, especially in the UAE. **DP World** sold a third of Jebel Ali to international investors, **Mubadala** transferred 25% of OMV and Borealis to ADNOC, and **ADQ** sold 8.6% of TAQA to Multiply and **ADPF**. IPOs were also a great conduit for sales, as Middle East bourses gained in volume and transparency. Canadian funds also sold several high value assets.

Lastly, we saw different strategies when it came to public equities. Most sovereign investors sat on the significant losses and reduced their activity in the US markets. This was not the case of **PIF**, who demonstrated once again its bold strategy and bought US\$ 7.6 billion worth of new shares in major corporations during Q2. **NBIM**, **GIC** and **Temasek** increased their portfolio in Indian equities; however, the activity and value of Chinese A shares denominated in RMB owned by sovereign investors decreased significantly during 2022.



Once again, the report looks forward by listing the major events of 2023, trying to predict what the year may look like for sovereign investors – as explained by **Global SWF** senior advisor Andrew Rozanov. In addition, we look at three major trends that may as well continue in 2023:

- The re-emergence of Gulf SWFs, as important financiers of Western assets, using **QIA** as a case study
- The balance between domestic and international investments for SOIs, using **Temasek's** example
- The increasing activity of SOIs in renewable energy, using the case study of Abu Dhabi's **Masdar**

As in previous years, we thought long and hard about the “**2022 Fund of the Year**” and decided that **CDPQ** was a worthy recipient of the award. A truly global investor, the Québécois manager invests on behalf of several retirement schemes, insurance systems, and a SWF sourced from water royalties. We were delighted to present the award to its Chief Executive Officer, Charles Emond and to discuss with him the impact of the fund in the province's development, its significant investment activity globally during 2022, and its future ambitions.

The “**Asset Class of the Year**” was not obvious this year, given the losses suffered by most portfolios. However, we saw an uptick in the interest and allocation of sovereign investors into hedge funds due to the simultaneous fall of both stocks and bonds and the needs to find diversification and uncorrelated strategies. Both SWFs and PPFs increased their allocation, and we estimate they hold US\$ 0.5 trillion in hedge funds, i.e., a 25% of the total industry size. We study the case of **ADIA**, the world's largest allocator to hedge funds.

For the “**Region of the Year**”, we look at countries or regions with increasing appeal as investment destinations for sovereign investors. After China & India (2020) and Australia (2021), this year we decided to go with Indonesia, which has seen an increasing flow of investors due to the country's ongoing transformation and strong prospects. The analysis is supported by an extensive case study of the **INA**, which we believe will continue as the nation's investment gatekeeper regardless of the results of the 2024 presidential elections.

The “**Industry of the Year**” was inevitably infrastructure, including energy-related assets. At a time of economic distress, heightened risk and energy transition, infrastructure assets are tangible, with long-term predictable cash flows, a residual value, and a great alignment with sovereign investors. We analyze the latest trends in transportation, energy, utilities, and other related sub-segments, and provide an overview of **CPP Investments'** US\$ 60 billion portfolio, one of the world's largest in infrastructure and energy.

SOIs are often misunderstood and mixed up – so this year we also prepared a special section titled “Sovereign Investors: A Diverse Village” that seeks to analyze the relative importance of each of the regions and sub-sets of funds. We consider a 100-normalized sample, and look at various criteria including region, country, source of wealth, mission, wealth bracket, and age since establishment.

The document also explores **organizational matters**, including the following concepts:

- The establishment of new funds: in 2022, we saw four new SWFs being set up, and significant progress with 10 others that could join the club soon.
- The opening of new offices overseas: in 2022, sovereign investors opened 10 more offices overseas in four continents, and we could see at least six more been established during 2023; and
- The appointment of new CEOs: just like in 2021, we saw 21 CEOs been replaced or added to new funds. The developments in Kazakhstan and Kuwait are worrisome in terms of governance and stability.

Finally, we offer a revised set of projections for **State-Owned Investors 2030**, considering the bump in the road encountered by the industry this year. It is never easy to predict eight years down the road for an ever-changing industry like this, but we expect global AuM to reach US\$ 37.2 trillion by 2025, and US\$ 50.5 trillion by the end of the decade. **PIF** of Saudi Arabia may lead the ranking in 2030, with US\$ 2 trillion of AuM.

The report finishes with some very rich appendices, including the latest ranking table for the Top 100 SWFs and the Top 100 PPF in terms of AuM and GSR scores; a summary of all the monthly newsletters issued this year to our clients and asset owners; and the series of “Top 50 Sovereign Investors” in all asset classes.

** Note: all case studies have been prepared based on publicly available information and/or Global SWF estimates only.*



Figure 4. Top 15 Countries by SOIs (US\$ billion)

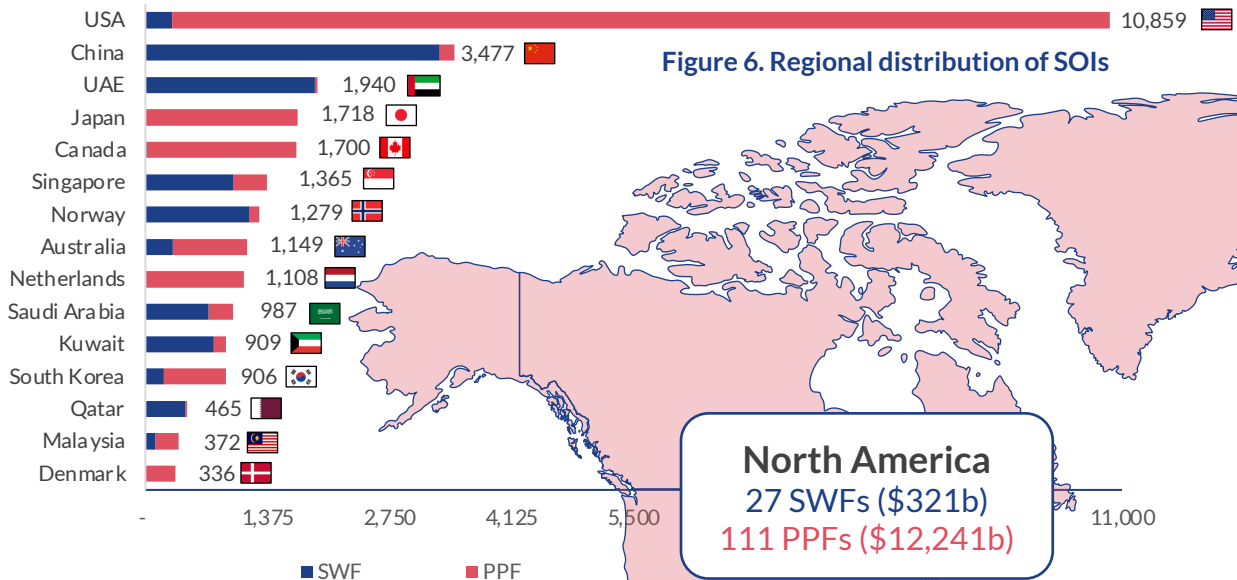
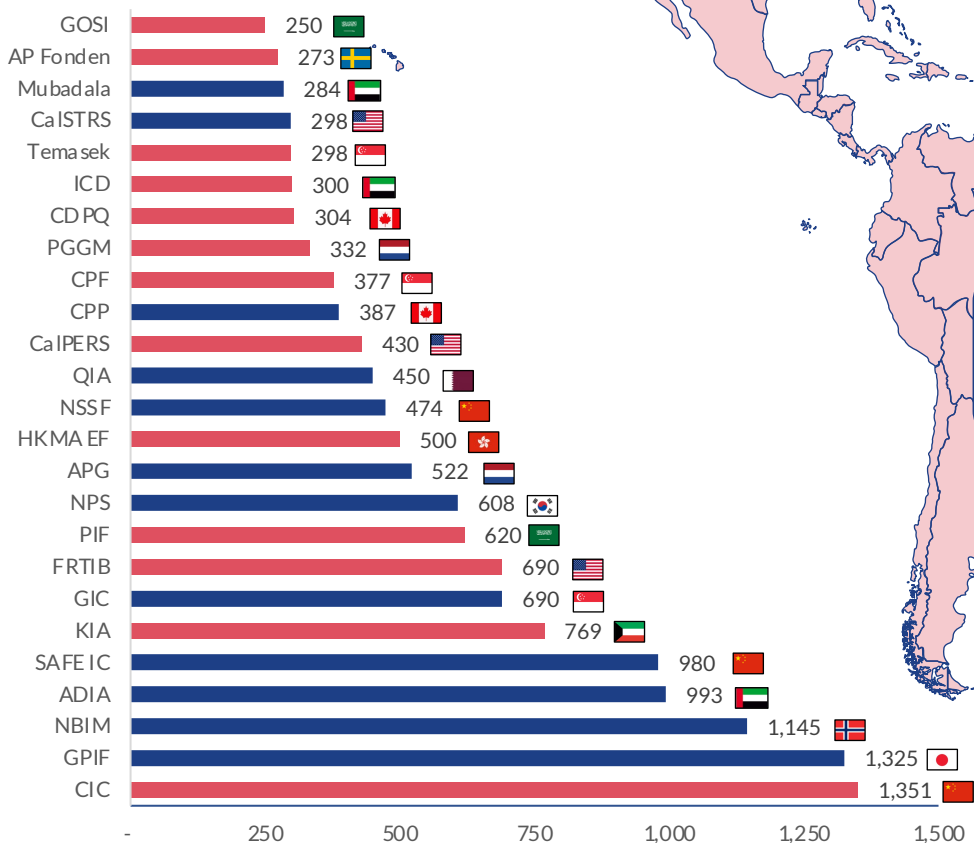
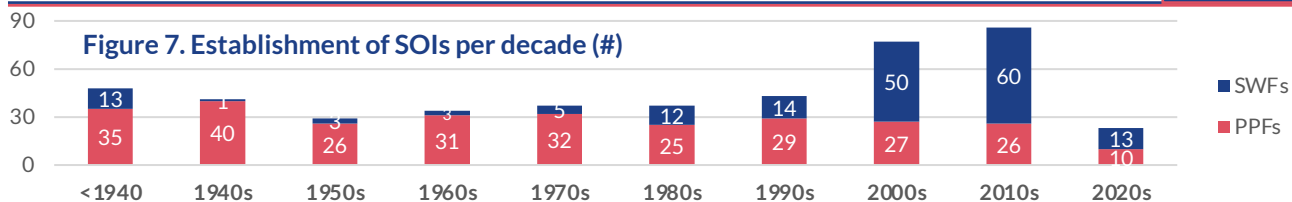


Figure 5. Top 25 SOIs (US\$ billion)



Source:
Global SWF Tracker
www.globalswf.com



Europe

22 SWFs (\$1,514b)

55 PPFs (\$2,879b)

Asia

34 SWFs (\$4,937b)

48 PPFs (\$3,974b)

MENA

27 SWFs (\$4,140b)

13 PPFs (\$680b)

SS Africa

32 SWFs (\$54b)

14 PPFs (\$244b)

Oceania

14 SWFs (\$359b)

17 PPFs (\$846b)

Fig8. Source of Wealth

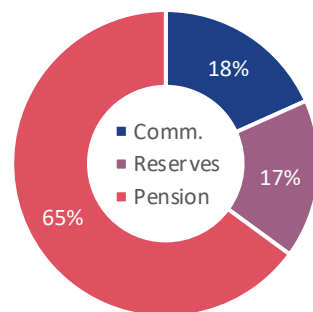
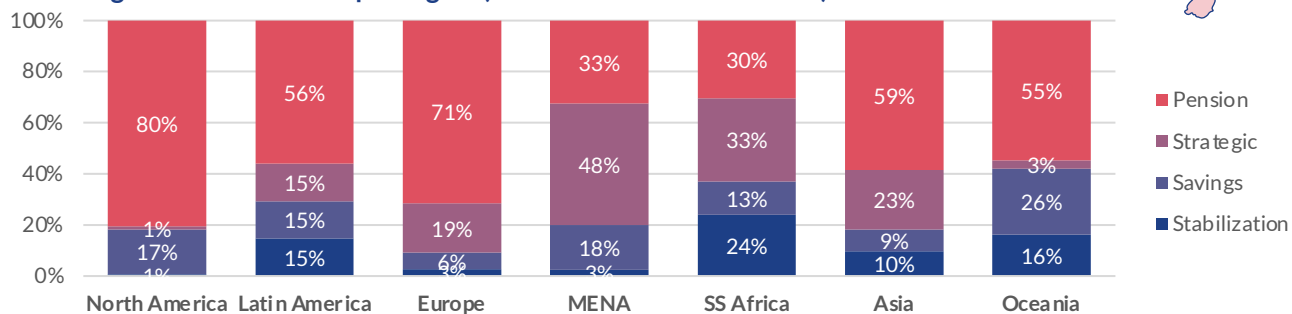


Figure 9. SOI mandate per region (% based on number of funds)





2. Year 2022 in Review

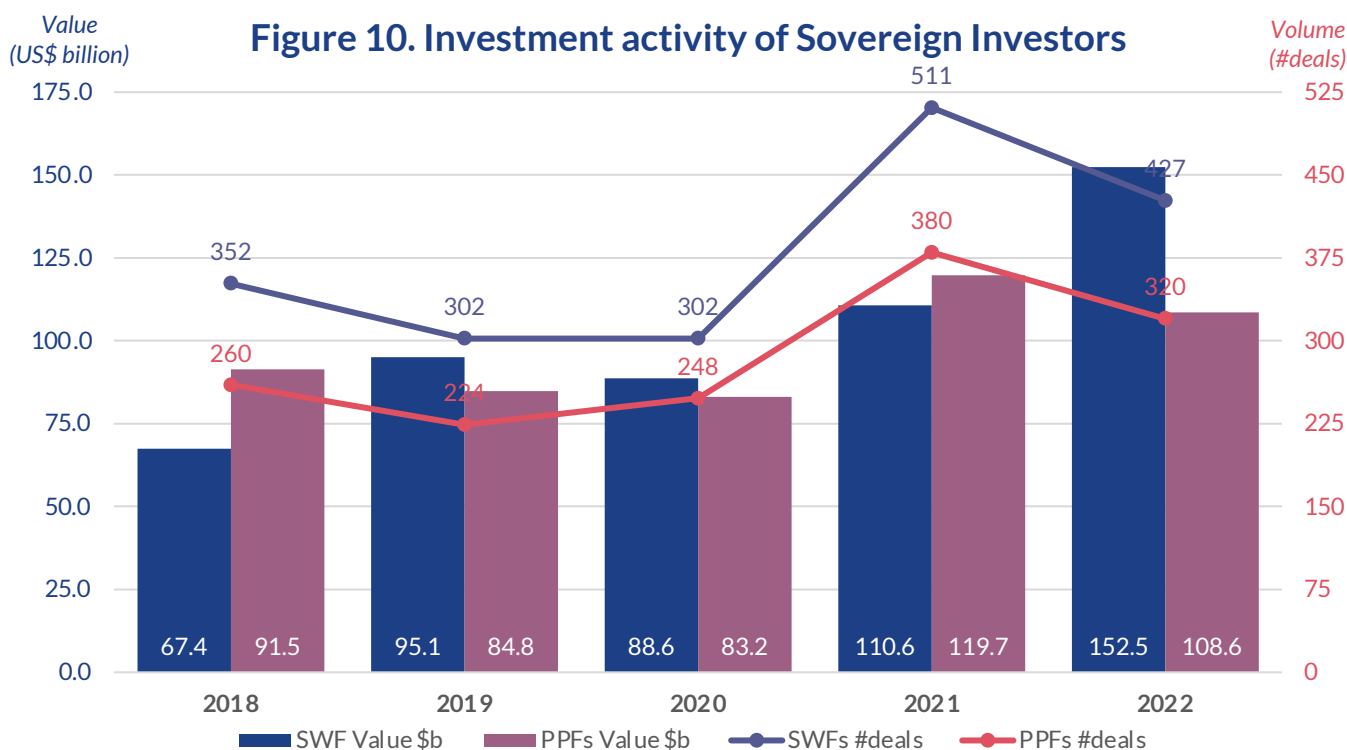


2022 has been a very challenging year for investors across the world due to geopolitics, high inflation, rising interest rates, and significantly negative returns in both stocks and bonds. It is the first year in history the size of the industry has shrunk. And yet, sovereign investors were able to deploy more capital than ever. The reason is the uptick in activity by SWFs, and more specifically, Gulf SWFs, pushed by oil prices; and the return of the mega-deals that were favored over venture capital in an attempt to deploy a lot of capital, very quickly.

- **SWFs** deployed an impressive US\$ 152.5 billion (38% up from 2021) in 427 deals (16% down from 2021). It is the second most active year after 2014, fueled by the good prospects among Gulf SWFs for year-end capital injections. Seven of the Top 10 investors were SWFs, and the average ticket by SWFs increased significantly to US\$ 357 million in 2022, helped by 41 mega-deals over US\$ 1 billion each in value.
- **PPFs** were not as active as SWFs and decreased its investments in both value (-9%) and volume (-16%) when compared to 2021. As a result, the average deal ticket remained relatively stable at US\$ 340 million. The “Maple 8”, i.e., the eight largest Canadian funds, were responsible for half of the investment deal value – and were active sellers throughout the year too, exiting assets worth over US\$ 10 billion.

The two largest tickets of the year were paid by Singaporean investors **Temasek** and **GIC**. The former acquired UK testing company Element for US\$ 7.0 billion in January, while the latter spent roughly the same amount in taking private American real estate investment trust (REIT) Store Capital alongside Oak Street in September. Both transactions are the second and third largest single tickets spent by a Sovereign Investor ever, just behind **CIC**'s US\$ 13.7 billion acquisition of Logikor Europe from Blackstone in June 2017.

The year also saw significant collaboration among sovereign investors. **ADIA** and **GIC** continued their “evolving relationship” and co-invested in several assets including Zendesk (US), Taibang Biologic (China), Triveni Turbine (India) and Climate Technology (US). Other significant club deals included Direct Chassis (**GIC**, **KIA**, **OMERS**), and Haddington ESP (**GIC**, **AIMCo**, **OTPP**). The Singaporean SWF was everywhere and topped the ranking of top spenders, for fifth year in a row, with US\$ 40.3 billion deployed in 73 different transactions.



Source: Global SWF Data Platform. Figures include private market transactions and sizeable and long-term equity deals, and exclude domestic developments and Government transfers



Table 2. Top 10 SOIs by fresh capital deployed* in the past 5 years (US\$ billion)

Fund	2018	Fund	2019	Fund	2020	Fund	2021	Fund	2022
GIC	18.8	GIC	24.0	GIC	17.7	GIC	34.5	GIC	40.3
CDPQ	13.7	CPP	17.4	CPP	14.6	CPP	23.7	ADIA	25.9
CPP	13.3	Temasek	13.7	CDPQ	12.1	Mubadala	14.5	PIF	20.7
NYSCRF	11.7	QIC	12.2	Mubadala	11.9	CDPQ	14.4	Temasek	13.5
Temasek	8.2	PIC	11.5	Temasek	11.4	APG	13.5	CPP	12.1
PIC	6.5	ADIA	10.2	NYSCRF	11.3	OTPP	12.7	Mubadala	11.3
OTPP	5.9	NYSCRF	9.3	ADQ	8.6	OMERS	12.7	CDPQ	10.3
OMERS	5.8	CDPQ	8.0	DP World	8.5	ADIA	10.8	ADQ	8.7
PSP	5.7	PSP	7.8	NPS	7.9	Temasek	10.6	OTPP	7.9
TCorp	4.6	Mubadala	7.6	PIF	7.9	ADQ	7.2	QIA	7.1

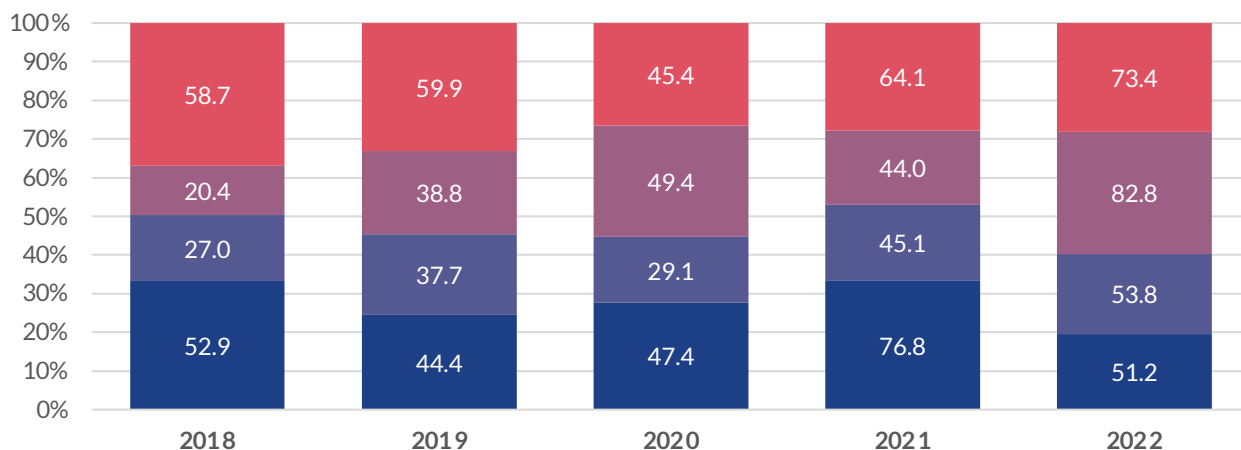
Source: Global SWF Data Platform. * Investment data refers to private market transactions (RE, Infra, PE) and certain public market deals that are sizable and long-term in nature. It does not include domestic developments (e.g., PIF's RIA) or transfers from Government (e.g., ADQ's Etihad).

The 2022 league table is led, once again, by **GIC**. The Singaporean SWF completed 73 deals for US\$ 40.3 billion, 17% more than it did in 2021. Over half of that capital was invested in real estate, with a clear bias towards logistics. This was followed by industrials (11%), infrastructure (10%) and technology (9%). **GIC** continued to prefer developed markets, with over 69% of the capital deployed in Europe and North America.

Five out of the ten most active investors hail from the Middle East. Abu Dhabi investors are covering all bases with **ADIA** most active in North America, **Mubadala** investing more in Europe in 2022, and **ADQ** investing across emerging markets. Saudi Arabia's **PIF** has been incredibly active both at home and overseas, and Qatar's **QIA** is back at the leaderboard thanks to a very active year, as predicted by **Global SWF** last year.

An interesting analysis arises from splitting SOIs in three buckets – Canadian pension funds, Singaporean investors and sovereign funds of the Gulf Cooperation Council (GCC) – and analyzing their investment activity for the past five years. Canadian funds were largely dominant in 2018, 2019, and, notably, in 2021. However, GCC SWFs played an important role in 2020 during the Covid-19 pandemic and now again in 2022 during times of financial distress. We analyze this in detail in pages 20 and 21 of this report.

Figure 11. Investments done by Canadian, Singaporean and GCC Sovereign Investors (US\$ billion)

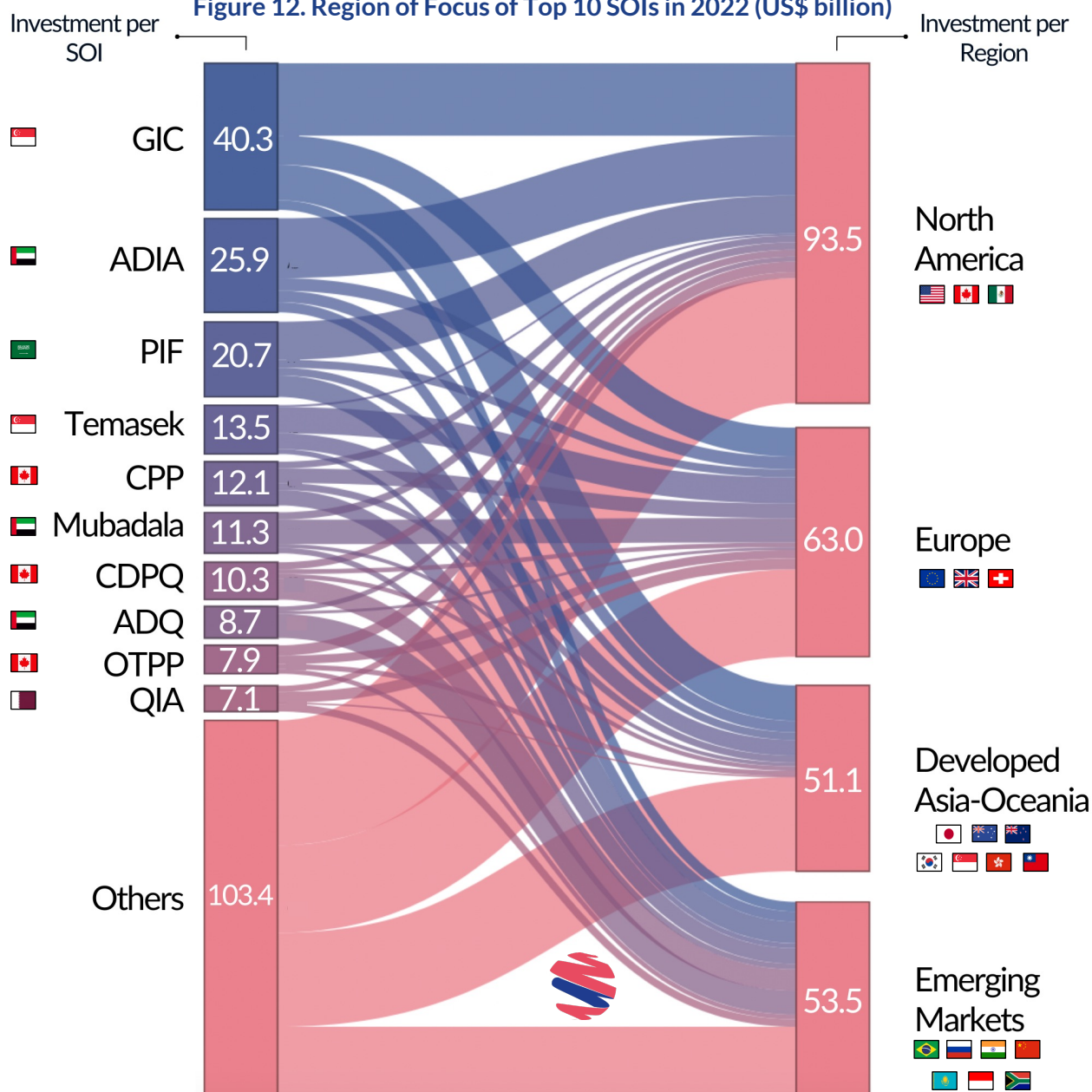


Source: Global SWF Data Platform

■ Canada ■ Singapore ■ GCC ■ Others



Figure 12. Region of Focus of Top 10 SOIs in 2022 (US\$ billion)



Source: Global SWF Data Platform

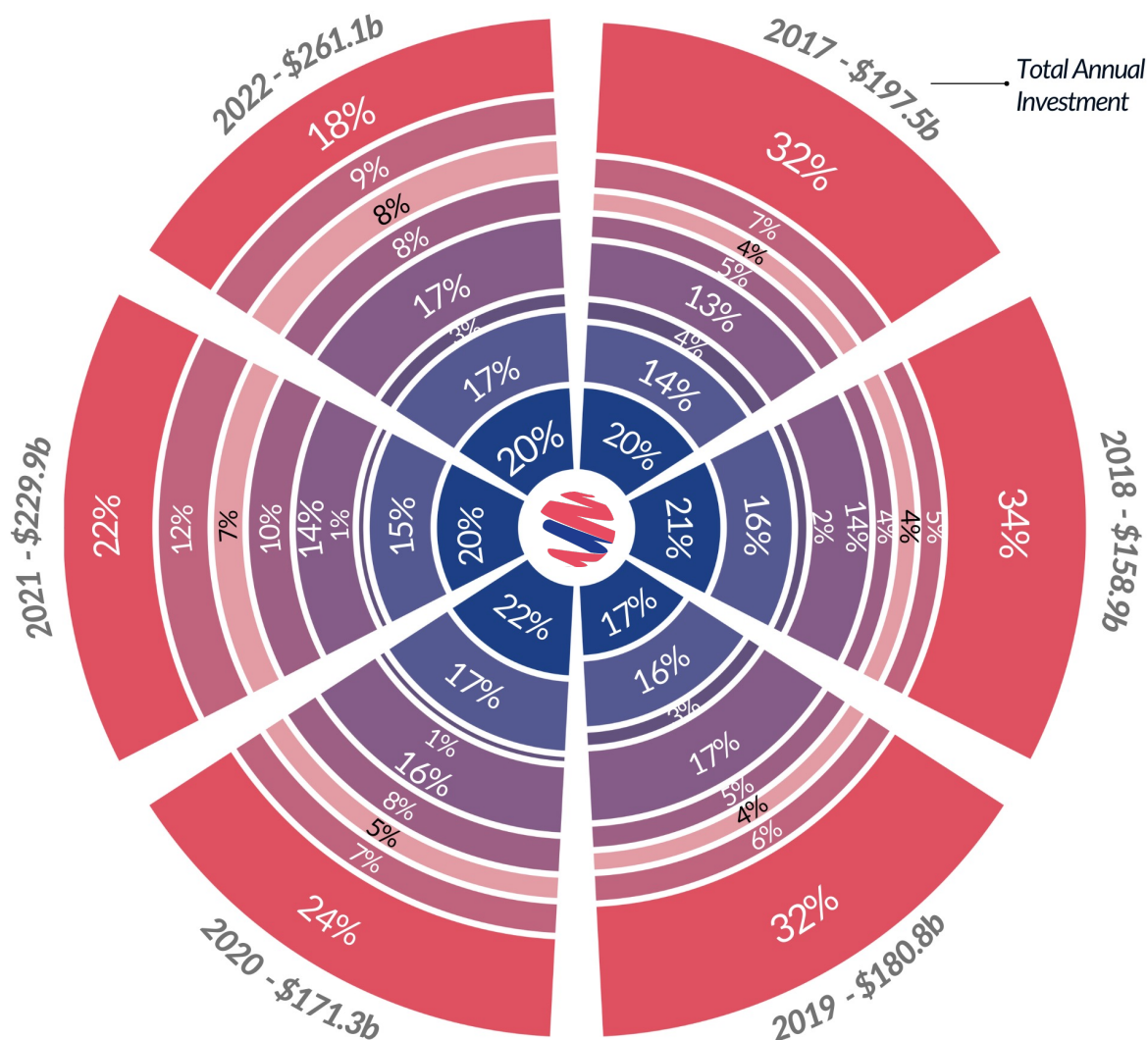
The regional preference of the most active sovereign investors have changed slightly in 2022. Five of the funds invested mostly in North America: **GIC**, **ADIA**, **PIF**, **CDPQ**, and **OTPP**. Another group led by **Temasek**, **Mubadala**, and **QIA** have invested more in Europe in 2022. **ADQ** continues to be an emerging market story. And **CPP** had a very balanced year, with a slight preference over Europe and developing economies.

The overall balance between regions has remained constant with 80% in developed markets and only 20% in emerging markets, which is the lowest figure in the past six years. The big winner is Developed Asia-Pacific (especially, Australia), which now attracts a fifth of all capital invested by sovereign investors globally.



Figure 13. Sectorial preferences of SOIs during 2017-2022 (#deals)

Percentages represent proportion of investment deals per year in each sector



Source: Global SWF Data Platform

● Real Estate ● Infrastructure ● Energy ● Financials ● Healthcare ● Industrials ● Consumer ● Technology

We can run a similar analysis in terms of industries, and how SOIs have changed their sectorial preferences in the past year. In this case, we analyze deal volume, as opposed to deal value, to avoid skewing the sample towards real estate and infrastructure, which normally involve much larger tickets.

The exercise sheds an important light on the activity of funds in 2022: infrastructure, energy, financials, and industrials have grown in interest, while healthcare, consumer and technology have lost momentum with the end of the pandemic and the recalibration of venture capital. Real estate has stayed constant at 20% of the total, with residential and office assets re-gaining some of the ground lost to logistics in the past few years.



Mega-Deals:

The significant increase in capital deployed by SWFs in 2022, despite the smaller number of deals, was mainly due to the return of mega-deals, i.e., investments over US\$ 1.0 billion at a time and per fund.

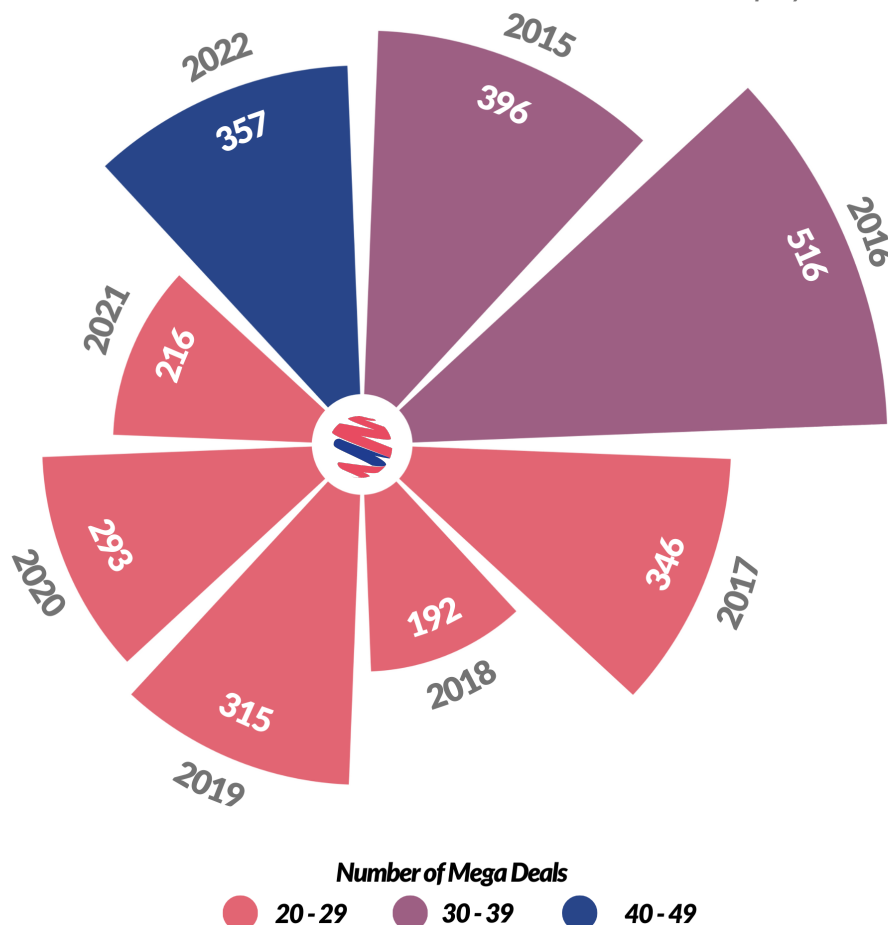
In fact, of the Top 10 largest investments ever by SOIs, five took place this year and most of them in Europe and North America. In January, **Temasek** spent US\$ 7.0 billion in buying out UK-based Element Materials from PE fund Bridgepoint. In May, **CDP Equity** spent US\$ 4.4 billion in buying Autostrade per l'Italia along with Blackstone and Macquarie. And in September and November, **GIC** spent US\$ 7.0 billion in US-based Store Capital with Oak St., and US\$ 3.9 billion in Canadian Summit with Dream Industrial REIT, respectively.

The first target from outside of Europe or North America to join this ranking was Dubai's free zone Jebel Ali, which attracted US\$ 5 billion by **CDPQ** in June, and half of that capital from **GOSI** in December.

If financial markets continue to fall in 2023, it is likely that sovereign funds will keep "chasing elephants" as an effective way of meeting their capital allocation requirements, especially those from the Gulf that will have received large injections from oil revenues.

Figure 14: Average deal size and mega-deals* for SWFs

Figures represent the average deal (ticket) size per year in US \$m



Source: Global SWF Data Platform. *Mega-deals refer to investments of US\$ 1 billion or more

Table 3. Largest single investments by SOIs ever

#	Fund	Asset	Date	Val \$b	Stake	Co-investors
1	CIC	Logicor Europe	Jun-17	13.7	100%	-
2	Temasek	Element Materials Tech	Jan-22	7.0	100%	-
3	GIC	STORE Capital	Sep-22	7.0	50%	Oak Street
4	GIC	Nouryon	Oct-18	5.8	50%	Carlyle
5	Mubadala	CEPSA (IPIC)	Aug-11	5.2	49%	Carlyle
6	CDPQ	Jebel Ali Assets	Jun-22	5.0	22%	GOSI
7	CDP Eq	Autostrate per l'Italia	May-22	4.4	51%	BX,MIRA
8	GIC	Genesee & Wyoming	Dec-19	4.2	50%	Brookfield
9	CPP	Ports America	Sep-21	4.0	100%	-
10	GIC	Summit Industrial REIT	Nov-22	3.9	90%	Dream Ind.

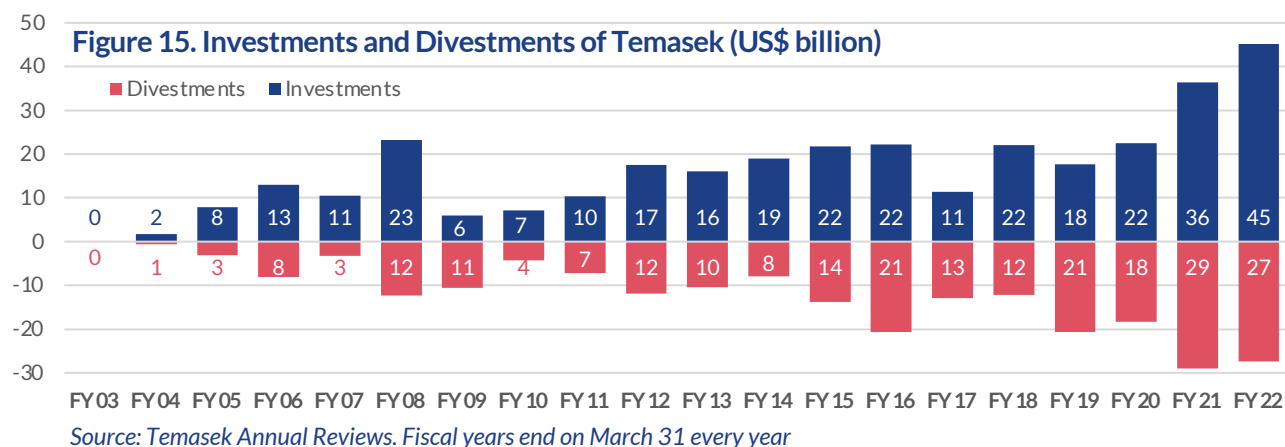
Source: Global SWF Data Platform. Investments in bold took place in 2022



Divestments:

Sovereign investors continue to monetize both domestic and international assets seeking high returns and / or diversification. In 2022, we tracked over US\$ 48 billion cashed in 60 exits, 33% up from 2021. The largest seller of the year was once again **Mubadala**, which continues to divest from oil and gas.

The scale and increase in divestments among SOIs can be also seen with **Temasek**: since 2008, the Singaporean entity has sold US\$ 219 billion, compared to US\$ 299 billion in investments. However, fiscal year 2022 saw the largest gap between investments and divestments due to an uptick in capital deployment.



Among the largest exits of the year, there were several domestic IPOs and “lateral transfers”. In Abu Dhabi Inc, **Mubadala** transferred certain assets to ADNOC, including 25% of OMV and Borealis, which were originally pursued by ADNOC-JV IPIC; as well as Masdar’s renewable and hydrogen assets. **ADQ** sold 9% of TAQA to Multiply (also chaired by Sh. Tahnoon) and **ADPF**. The emirate’s finances are increasingly interlinked.

Other significant exits in 2022 included **DP World**’s divestment of 33% of Jebel Ali free zone to **CDPQ** and **GOSI**; the US\$ 5.0 billion sale of LeasePlan to ALD, which was recently approved by the European Commission and involves several SOIs; and **Temasek**’s exit of AusNet, via Singapore Power. In September, **CPP** and **OMERS** sold 67% of Chicago Skyway after holding it for six years, at a 1.8x multiple-of-money.

Table 4. Top 15 divestments by SOIs in 2022

Fund/s	Divestment	Country	Buyer	Industry	Value (\$b)	Stake (%)
DP World	Jebel Ali Assets		CDPQ, GOSI-HIC	Transport	7.4	33%
ADIA, GIC, ATP, PGGM	LeasePlan		ALD Auto	Consumer	4.4	80%
Mubadala	OMV		ADNOC	Energy	4.1	25%
Temasek	AusNet (via SP)		Brookfield	Telecom	3.8	32%
ADQ	TAQA		Multiply, ADPF	Utilities	3.6	9%
PIF	Elm Company		IPO - Tadawul	Technology	3.2	n.a.
Mubadala	Borealis		ADNOC	Energy	3.0	25%
Dubai Holding	Dubai Creek Harbor		Emaar (ICD 24%)	Real Estate	2.0	100%
CPP, OMERS	Chicago Skyway		Atlas Arteria	Transport	2.0	67%
CPP	Puget Sound		OTPP, Macquarie	Utilities	1.8	32%
Mubadala	Masdar		ADNOC, TAQA	Renewables	1.3	67%
Mubadala	ADGM Towers		Aldar (MIC 25%)	Real Estate	1.2	100%
QIA	Glencore		2ndaries-LSE	Energy	1.1	1%
ADQ	AD Ports		IPO - ADX	Transport	1.1	25%
CDPQ	Fluxys Europe		EIP	Energy	1.0	20%

Source: Global SWF Data Platform

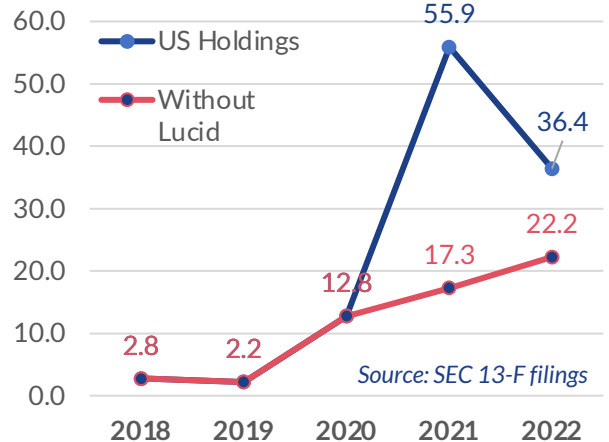


Listed Equities:

In a year when global stocks markets plummeted more than 15%, some sovereign investors adopted a passive strategy of sitting on the paper losses and waiting for the storm to pass. Given the heterogeneity and opacity of the industry, it is difficult to generalize but we can point out some key developments and trends.

For example, Saudi Arabia's **PIF** has been very active in US equities since the onset of the pandemic, when it invested US\$ 7.7 billion in 23 stocks in energy, entertainment, and financial services. Most of these positions were sold down from within a year and the fund has followed a different strategy since then, by holding mainly ETFs, technology, and gaming stocks. Its largest public holding continues to be a 63% stake in Lucid Motors, which boosted the value of PIF's US equity holdings when it went public in October 2021. The stock of the electronic vehicle manufacturer fell a -34% in 2022, which affected **PIF**'s portfolio. However, if we isolate the Lucid effect, we can see that the portfolio grew in 2022 due to an additional US\$ 7.6 billion invested in Q2 in major corporations including the Big 4 Tech firms (Alphabet, Amazon, Microsoft, and Meta).

Fig16. PIF's US Equities (US\$ billion)



Other SOIs were more conservative. **NBIM**, which is one of the largest investors in US equities, saw its holdings reduced 7% to US\$ 452 billion; **CPP** was 25% down; and Dutch pension manager **APG**, 34% down.

While US markets have plummeted, Middle East bourses went from strength to strength. In 2022, the Gulf saw over 50 IPOs raised more than US\$ 20 billion, the highest ever if we remove Aramco's listing in 2019. Some of the largest listings, including DEWA in Dubai and Borouge in Abu Dhabi, attracted significant capital from SOIs. The region expects the IPO boom to continue in 2023 across Tadawul, ADX, and DFM exchanges.

Elsewhere in China and India, financial markets were also significantly challenged. The Hang Seng and Shanghai stock exchanges were down over -12% and SOIs saw their A shares holdings fall significantly. **ADIA** and **NBIM** are now the only sovereign investors with over US\$ 1 billion in RMB-denominated shares. In India, major indexes NIFTY 50 and BSE SENSEX were among the few to have a positive performance in 2022, and investors including **GIC**, **NBIM**, and **Temasek** saw their portfolio of Indian equities rise by at least 18%.

Table 5. SOIs' portfolios in US Equities, Chinese A Shares and Indian Stocks

US\$ billion		US Equities			Chinese A Shares			Indian Stocks		
Fund		Dec-21	Sep-22	%	Dec-21	Sep-22	%	Dec-21	Sep-22	%
ADIA		n.a.	n.a.	n.a.	2.0	1.1	-46%	0.8	0.2	-73%
APG		77.6	51.0	-34%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
CDPQ		46.2	34.4	-26%	0.3	0.0	-99%	0.7	0.5	-25%
CPP		94.1	70.2	-25%	0.5	0.2	-56%	3.3	2.4	-29%
GIC		n.a.	n.a.	n.a.	2.0	0.2	-91%	14.9	17.7	+19%
KIA		n.a.	n.a.	n.a.	0.6	0.4	-22%	1.5	1.1	-25%
KIC		38.5	32.5	-16%	0.1	0.0	n.a.	n.a.	n.a.	n.a.
NBIM		486.4	452.0	-7%	1.5	1.0	-33%	6.6	8.5	+28%
PIF		55.9	36.8	-34%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Temasek		27.7	16.7	-40%	0.8	0.9	+18%	1.0	1.2	+18%
Top 10 SOIs		826.4	693.6	-16%	7.7	3.8	-51%	28.9	31.7	+10%

Source: SEC, QFII and BSE official filings, Global SWF analysis



Returns:

2022 has been one of the most difficult years for investors in history, as shown in the quarterly results below:

Figure 17. Performance of SOIs CYTD22 (Q3)

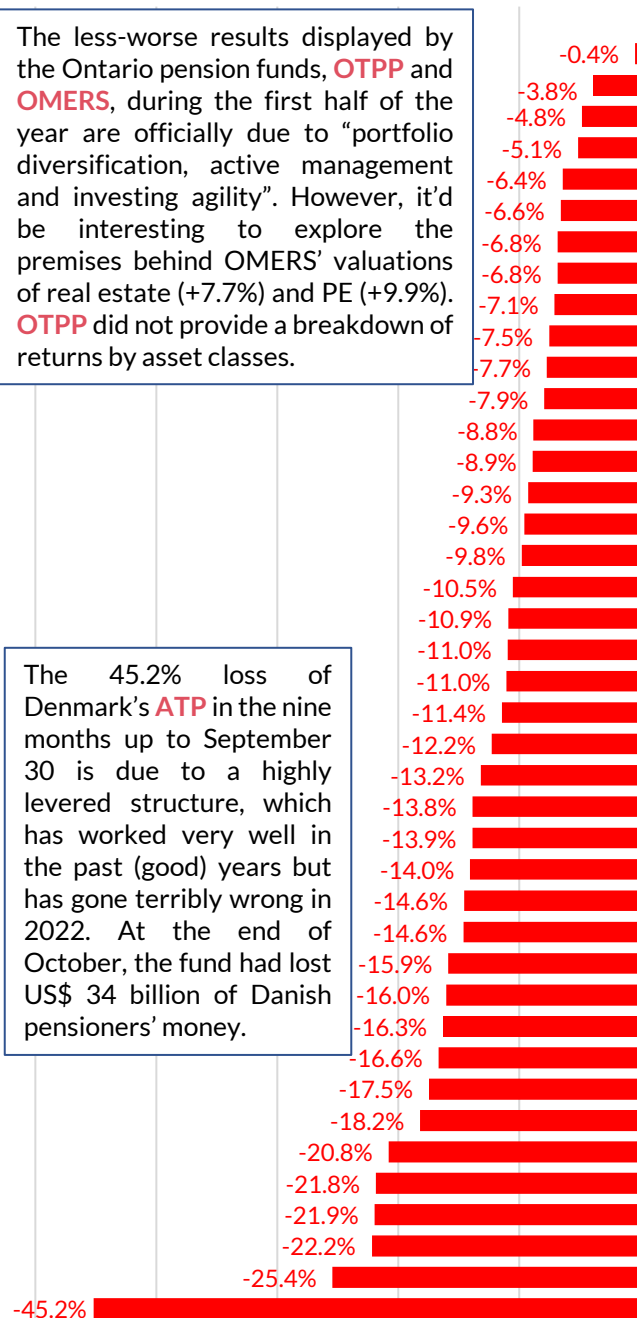


Table 6. Quarterly performance of SOIs

Fund	1Q22	2Q22	3Q22	CYTD
OTTP**	+1.2%	n.a.	+1.2%	+1.2%
OMERS**	-0.4%	n.a.	-0.4%	-0.4%
GPIF	-1.1%	-1.9%	-0.9%	-3.8%
PSERS**	+1.3%	-6.0%	n.a.	-4.8%
Future Fund	-1.5%	-3.1%	-0.6%	-5.1%
KEVA	-2.3%	-3.8%	-0.4%	-6.4%
WSIB	+0.6%	-4.0%	-3.3%	-6.6%
AIMCo**	-2.9%	-4.0%	n.a.	-6.8%
CPP Inv.	-2.9%	-4.2%	+0.2%	-6.8%
NPS	-2.7%	-5.5%	+1.0%	-7.1%
Aware BG	-2.7%	-4.4%	-0.6%	-7.5%
AuSuper B	-2.1%	-5.3%	-0.4%	-7.7%
CDPQ**	-7.9%	n.a.	-7.9%	-7.9%
AP-Fonden**	-8.8%	n.a.	-8.8%	-8.8%
VRS	-0.9%	-5.1%	-3.1%	-8.9%
FTF	-0.1%	-5.2%	-4.1%	-9.3%
LACERA	-0.2%	-6.0%	-3.5%	-9.6%
BLF	-1.1%	-7.6%	-1.2%	-9.8%
Alaska PFC	-1.0%	-6.1%	-3.8%	-10.5%
NMSIC LG	-1.3%	-6.8%	-3.1%	-10.9%
FAP	-3.4%	-5.3%	-2.7%	-11.0%
TexasPUF	-2.2%	-5.4%	-3.9%	-11.0%
NZ Super	-3.7%	-4.1%	-4.1%	-11.4%
TL PF	-4.0%	-5.3%	-3.5%	-12.2%
HKMA EF	-1.4%	-6.6%	-5.8%	-13.2%
NYSCRF	-2.4%	-8.2%	-3.9%	-13.8%
KIC*	-13.8%	n.a.	-13.9%	-13.9%
NYCTRS	-1.0%	-8.9%	-4.7%	-14.0%
NJ DoI	-2.8%	-8.6%	-3.8%	-14.6%
SBA Florida	-3.3%	-8.1%	-3.9%	-14.6%
CalPERS	-3.7%	-7.9%	-5.1%	-15.9%
MSBI	-3.8%	-8.8%	-4.3%	-16.0%
Chile ESSF	-5.0%	-6.6%	-5.7%	-16.3%
ABP	-3.9%	-8.4%	-5.3%	-16.6%
ND Legacy	-5.2%	-8.6%	-4.7%	-17.5%
NBIM	-4.9%	-10.0%	-4.4%	-18.2%
Alabama TF	-6.7%	-11.1%	-4.5%	-20.8%
Chile PRF	-5.5%	-11.4%	-6.7%	-21.8%
PFZW	-6.9%	-11.5%	-5.3%	-21.9%
Thrift L50	-5.2%	-13.1%	-5.5%	-22.2%
OPERF V	-5.4%	-15.7%	-6.5%	-25.4%
ATP	-13.3%	-26.6%	-13.8%	-45.2%
Average	-3.4%	-7.5%	-3.8%	-12.5%
S&P500 Bond	-7.1%	-7.1%	-4.5%	-17.5%
S&PGL1200	-5.2%	-15.9%	-7.3%	-26.1%
60/40 Portfolio	-5.9%	-12.4%	-6.2%	-22.7%

Source: Global SWF analysis, Nine months to September 30

* Eight months to August 31, ** Six months to June 30



3. The World in 2023



In the decade so far, there has not been a dull moment: a global pandemic, a gruesome war, inflation at 1980 levels, simultaneous fall of stocks and bonds – what could be next? Most analysts agree that the prospects for 2023 are worrying with the prospect of new recession and a delayed bounce-back in markets.

In the year ahead, two key geopolitical events may have a huge impact on global economy and finance. First, the war in Ukraine, which could take a huge toll in Europe's economy and stability if it continues. Second is the reactivation of the Chinese economy and the political tensions with Taiwan. An escalation of geopolitical instability and of the decoupling with the US could have terrible consequences for everyone.

Sovereign investors will also continue to pay attention to national elections. Lula, who spent 1.5 years in prison for corruption, will again take office as President of Brazil on January 1, coinciding with the second pink tide (turn to the left) in Latin America. Paraguay may follow in April. Other countries with presidential elections include Nigeria in February, Turkey in June, Pakistan and Argentina in October, and Bangladesh and DRC in December. King Charles III will be officially coronated on May 6 at Westminster Abbey in London.

Table 7. The calendar ahead 2023

January	February	March	April	May	June
-WEF in Davos -Sweden leads EU -Lula starts term	-SWF Academy at LBS Dubai -Elections in Nigeria	-SIC'23 in Singapore -Parliamentary elections in Cuba	-WBG-IMF spring meetings in DC -Elections Paraguay	-SWF Academy at LBS London -Coronation Charles	-Final UCL Football in Istanbul -Elections Turkey
July	August	September	October	November	December
-GSR Scoreboard 2023 publication -Spain leads EU	-Elections Myanmar -FIBA WC Asia -13 th African Games	-UNGA 78 in NYC -US Open NYC -F1 in Singapore	-WIF in Abu Dhabi -FII 7 th in Riyadh -WBG-IMF Morocco	-IFSWF in Madrid -F1 in Abu Dhabi -NYC Marathon	-COP28 in UAE -Elections in DRC, Bangladesh

Source: Global SWF from public sources

The global economy is projected to decelerate to 2.7% in 2023, and markets could keep falling. The magnitude of the 2022 burst in financial markets across the world is unlikely to be repeated, but the size of the through will depend on sustained inflation and rising interest rates. According to its latest projection, the Fed is expected to raise its key benchmark borrowing rate another 75bps, hitting a 17-year high of 5%-5.25% in 2023.

A lot of eyes will remain on the Middle East, even after the successful completion of the World Cup in Qatar. In October, the World Bank-IMF annual meeting will take place in Morocco after two years of postponements, Saudi will host once again FII after 6,000 people attended it in 2022, and the United Nations will take its annual event World Investment Forum to Abu Dhabi. The UAE will also host COP28 in December. Doha, Riyadh, and Abu Dhabi will likely continue benefitting from high oil prices and infrastructure projects.

Global events will put emerging markets in the spotlight, with sports being an increasing target for SOIs. On June 10, the football Champion's League final will be held in Istanbul, a week before the country's presidential elections. Between August 4 and 19, Accra will host the 13th African Games and the first ever African Para Games. And between August 25 and September 10, the basketball World Cup will be hosted for the second time in Asia, and for the first time by three different countries: Indonesia, the Philippines and Japan.



In terms of activity by sovereign investors, we expect 2023 to be a very busy year. There should be significant progress with SWFs that have been proposed and passed bills, namely in Mozambique, Papua New Guinea, and the Philippines – if an agreement is finally reached. We shall also see more of the superannuation consolidation Down Under, with the merger of **Hostplus** and **Maritime Super** scheduled for September.

We will see at least four new offices being opened in the next 12 months: **Khazanah**'s new post in New York, **Temasek**'s latest office in Paris, **BCI**'s added presence in London, and **AIMCo**'s new roots in Singapore. **PIF** may open a fourth and fifth post in Mainland China and India, once the recent offices of New York, London and Hong Kong have been fully staffed. It will be interesting to keep monitoring the debate between Hong Kong and Singapore and see whether **CPP** and **PSP** also decide to join the rest of their peers in the latter.

Investment activity will be more fluid and will depend on global developments. SOIs will need to mark down their portfolios of private markets before they can undertake any major change in allocation, and hedge funds may continue to benefit from the disruption of traditional markets. In terms of regions, we expect Asia in general and certain emerging countries to be of interest for sovereign investors, but the revaluation or further devaluation of the world's currencies against the USD may affect the geographical allocation.

Finally, aggressive products like volatility trading (**AIMCo**) and crypto (**CDPQ**, **Temasek**, **OTPP**) have created some reputational damage recently, and we would expect SOIs to be extra-cautious with new or riskier strategies in the year ahead. This includes venture capital, which could stay low-key for another year.

"As sovereign wealth funds and their public sector peers prepare for 2023, they must brace for major challenges and disruptions ahead. Coming on the heels of an unprecedented pandemic and a war in Europe, that is saying something. Indeed, there is no shortage of economic, social, and political problems, in both developed and emerging markets – stubborn inflation; rising rates and a strong US dollar; looming recession; cost-of-living crises and growing inequality with concomitant domestic political risks – all of which suggest much higher levels of uncertainty and volatility ahead. But, however challenging to navigate, these problems tend to be sufficiently well understood by investment practitioners, who can have at least some confidence in their analytical frameworks and tools.

There is one major risk, however, which is not at all well understood by the investment community, and which is rapidly becoming a clear and present danger to all globally diversified portfolios – geopolitics. Arguably, the closest comparator to the emerging geopolitical state of play is the global environment which existed from the late 19th century until the middle of the 20th century. There is not a single living practitioner today with the experience of investing in a multipolar world, characterized by great power rivalry and strategic competition across all domains.

Will the US and China truly decouple, and will it result in a higher risk of war? Will the EU acquire strategic autonomy as a more coherent and stronger geopolitical actor, or will it fragment back into nation states? Will there be a major reorientation of trade and capital flows? Will globalization reverse or take a radically different form? Will investments across geopolitical fault lines be safe? Are foreign exchange reserves and other sovereign assets secure?

Investors need to think through all of these questions and formulate their own views on the various plausible outcomes, which can impact their investment portfolios and their missions. During the last 20 years, investors did tremendous work integrating ESG risks into their analysis and decision-making. Now they must undertake similar efforts with respect to geopolitical risks, but they don't have the luxury of time. They must act quickly."

"Just because you do not take an interest in politics doesn't mean politics won't take an interest in you." – Pericles (c. 494 – 429 BC)

Andrew Rozanov is a Senior Advisor of Global SWF and a faculty member of the SWF Academy. He serves in the Board of Rwanda's Agaciro and was also a Board member at Kazakhstan's NIC. He is known for having coined the term "Sovereign Wealth Fund" while at State Street in 2005.





4. Trends: ME White Knights



In the global context of geopolitical, economic, and financial uncertainty, Middle Eastern funds are shining more than ever. Most funds have shattered stereotypes of following hidden agendas and only hunting trophy assets and are now recognized as smart, flexible, and mature investors that can move the needle locally and overseas. The 40 Middle Eastern SOIs manage US\$ 4.8 trillion in financial capital and 12,000 personnel in human capital.

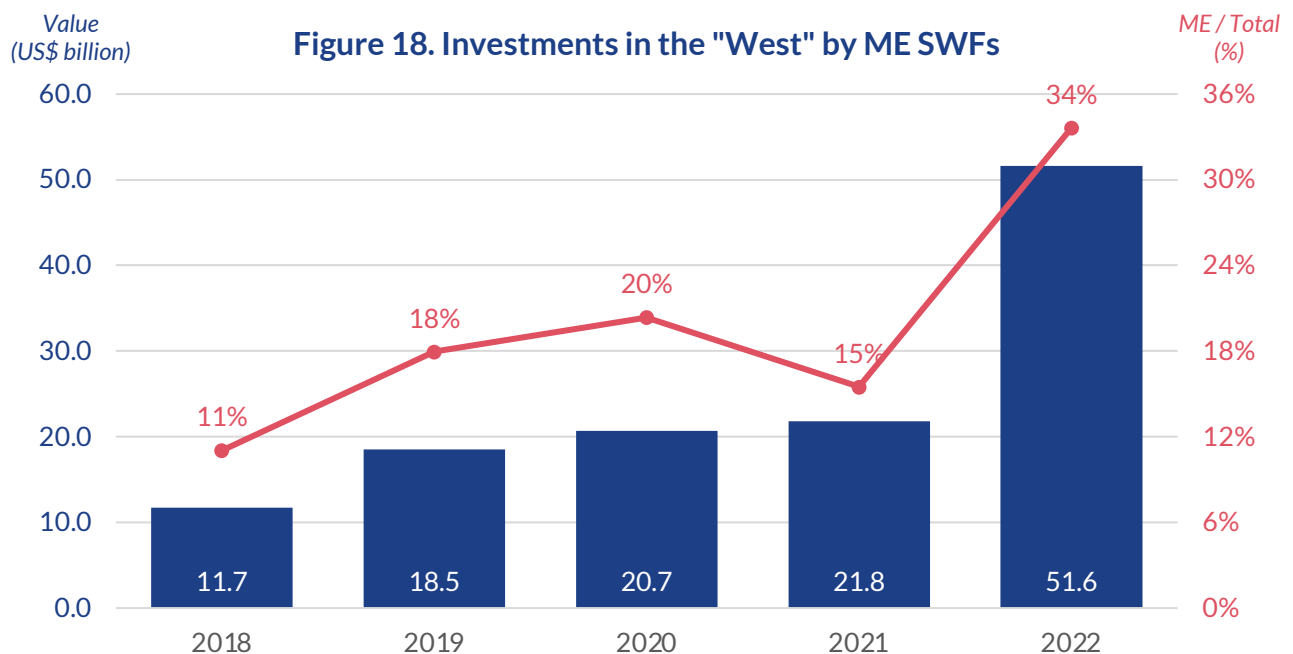
In times of economic distress, including the 2008 global financial crisis, the 2015 oil price crash, the Covid-19 pandemic and the current liquidity squeeze, these vehicles have provided the necessary resilience others could not. For those SWFs that are not oil-based, including those in China, Singapore or Korea, the investment momentum is ominous. Even Norway's **NBIM**, which could have offset the paper losses with the significant injections it received in 2022 from rising oil revenue, has been affected by currency losses.

However, the position and momentum of Middle Eastern SWFs, especially in the Gulf, is much better due to an average oil price of US\$ 99 / barrel and to the peg of their currencies to the dollar. For those GCC economies with lower fiscal expenditure, this translates into large surpluses, which were transferred to some of the SWFs at year-end. Therefore, the large savings funds that are more liquid and internationally focused, including Abu Dhabi's **ADIA**, Kuwait's **KIA** and Qatar's **QIA**, are set to receive significant inflows of capital.

At the same time, the strategic funds that have large portfolios of domestic assets, such as **Mubadala** and **ADQ** in Abu Dhabi, **ICD** in Dubai or **Mumtalakat** in Bahrain, do not expect any major capital injection, but will not endure such large losses either, because of the more limited exposure to traditional bonds and stocks. In summary, investors from the region will emerge even stronger from the current economic scenario.

In this context, Middle Eastern SWFs are readier than ever to shine. Overseas, they have more than doubled their investments in Western economies, including the US and Europe, from US\$ 21.8 billion in 2021 to US\$ 51.6 billion in 2022. Of the top 10 most active sovereign investors this year, five are from the Gulf region.

This means that Middle Eastern investors are driving forward with the pursuit of "cheap" assets in Europe (including the UK) and in the US, and with more limited competition coming from their international peers. While the push in 2008 was focused only on financial institutions (and was broader than just ME funds), today, it is Middle Eastern funds that are enjoying that privileged position to chase deals across all industries.



Source: Global SWF Data Platform

■ ME Funds in EU & NA

—●— ME Funds / Total West



Of this year's 60 mega-deals, i.e., tickets deployed by sovereign investors of US\$ 1.0 billion or more, 26 were carried out by Middle Eastern SWFs, and 17 of them were in American or European assets. The largest commitment was made by **ADIA**, when it invested US\$ 4.0 billion in Ardian's fund ASF IX and US\$ 2.0 billion for joint co-investments. This a reversed situation than in 2014, when the secondaries investor bought stakes worth US\$ 2 billion from the SWF. Both firms share some investments including Italian healthcare software provider Dedalus, and **ADIA** is reportedly considering buying a stake in Ardian's management company.

Buying into a PE management company is not new, as we began seeing it in 2007 with **ADIA** (Ares, Apollo), **CIC** (Blackstone), **Dubai Holding** (Och-Ziff), and **Mubadala** (Carlyle). The latter also bought a 5% stake into Silver Lake in 2021, and **ADQ** took over a slice in Vistria's management company in 2022.

Several of these deals were co-investments with other SOIs and/or PE firms. These structures are not new either: the asset owner/s leverage the network and reach of the PE firm, while the GP can punch above its weight in the auction process.

In 2023 and beyond, Middle Eastern sovereign investors will likely continue to be very active in Europe and North America, where there will be plenty of opportunities to buy listed equities or direct stakes, to pursue co-investments or buy into PE firms, and to find distressed portfolios and special situations.

Table 8. Largest deals of Gulf SWFs in "Western" assets

Fund	Asset	HQ	Coinvestor	Value \$b
ADIA	Ardian Funds		Ardian	6.0
ADIA	VTG AG		GIP	2.6
Mubadala	Skyborn Renewables		PIF	2.5
ADIA	Zendesk		GIC,H&F,PA	2.5
QIA	RWE AG		-	2.4
ADIA	Climate Technologies		Blackstone	2.4
KIA	Direct Chassis Inc		GIC,OMERS	1.5
Mubadala	Envirotainer		EQT	1.5
PIF	Savvy: ESL, FACEIT		-	1.5
ADIA	Merchants Fleet		Bain Capital	1.3
Mubadala	Pharma Intelligence		WP	1.2
PIF	Embracer		-	1.1
ADQ	Vistria		Vistria	1.0
ADIA	Landmark JV		Landmark	1.0
ADIA	Apollo S3		Apollo	1.0
ADIA	Rockpoint JV		Rockpoint	1.0

Source: Global SWF Data Platform

Case Study #1: QIA's investments in Europe and North America

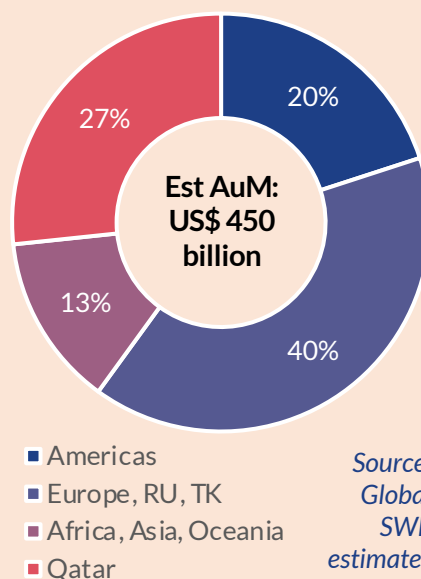
Since its establishment in 2005, Qatar's SWF has been known for being one of the most active dealmakers across Europe, especially in the UK and, more recently, in North America. Considering the significant stakes in domestic assets, **Global SWF** estimates that its overall portfolio is today split into 40% Europe (including Russia and Turkey), 20% Americas, 27% Qatar and 13% rest of the world.

In the past few years, the **QIA** has returned to active dealmaking in developed markets. In 2022, it spent US\$ 3.2 billion in Europe, including 10% of Germany's largest power producer RWE; and US\$ 1.7 billion in the USA, including a stake in tech company AIT.

Qatar has the lowest fiscal breakeven point in the Gulf, and Fitch Ratings estimates that the SWF could receive an additional US\$ 60 billion in capital relative to fiscal years 2022 and 2023.

The SWF could arise once again as a white knight for distressed assets in the West, just like it did during the financial crisis. In Europe, it could benefit from a cheap Euro given the QARUSD peg, looking for opportunities across industries. In the US, it has already announced plans for spending US\$ 10 billion in ports in years to come.

Figure 19. Regional split of QIA's portfolio



Source:
Global
SWF
estimates



Domestic vs Intl Investments



As discussed in detail on page 47, the number of strategic funds with a mission of attracting foreign investment and co-investing in the domestic economy is increasing significantly. At the same time, there are several SWFs that continue to be forbidden from investing at home. Therefore, one cannot undertake a proper analysis of trends about domestic vs international investments without excluding them.

If we consider only the “flexible funds” that can decide whether to invest domestically or internationally, we can see a very interesting trend as per the chart to the right: the Covid-19 pandemic saw them investing much more at home with up to 46% of the total capital. However, the trend has now reversed with this proportion falling to just 15% in 2022 with the rest invested overseas. Domestic bailouts have made room, once again, for opportunistic deals overseas.

Figure 20. Investments by flexible SWFs

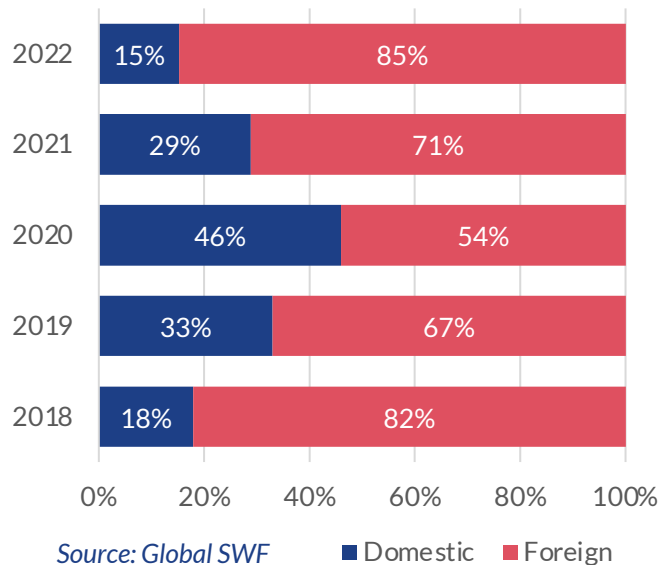


Table 9: Geographical limitations of SWFs

SWFs that can be asked for capital		SWFs that can be asked to invest domestically	
<u>Funds that invest abroad only</u>		<u>Funds that invest both abroad and at home (“flexible”)</u>	<u>Funds that invest at home only</u>
ADIA		KIA 10%	Agaciro
BIA		HKMA 13%	AIH
CADF		NZSF 13%	ANIF
ESSF-PRF		Future Fund 20%	Bpifrance
FAE		Mubadala 25%	CDP Eq
FAP		SOFAZ 25%	COFIDES
FEIP-FMP		Temasek 27%	EIH
FGRF		QIA 29%	FGIS
GIC		LIA 35%	FONSIS
GPF		ICD 49%	FSD
HSF		EIA 60%	HCAP
KIC		Mumtalakat 62%	INA
KWAN		OIA 62%	Ithmar
Nauru		CIC 67%	MGI
NBIM		Khazanah 67%	NDFI
NIC		PIF 71%	NIIF
NRF		Alaska 73%	PIF.PS
Pula Fund		ISIF 73%	RDIF
RERF		NSIA 80%	Samruk
SAFE IC		ADQ 89%	SCIC
TLPF		NSSF 91%	TSFE
Welwitschia		FSDEA 93%	TWF

Source: Global SWF Data Platform



The debate around investing domestically or internationally is at the heart of sovereign wealth funds, which used to be defined as “special investment funds created or owned by governments to hold foreign assets”. As we know, this is no longer the case, and the industry saw a variety of investment and strategic vehicles arise in recent years with the ability or duty to juggle domestic holdings with investments overseas.

The answer to this question is not universal as it depends on each economy’s capacity to absorb capital, other vehicles the government may own or manage, a country’s ability to attract FDI, the supply of investable opportunities, the strength and liquidity of the domestic stock markets, and the capabilities of investment teams and / or external managers, among other conditions. Of the industry’s global AuM of US\$ 11.2 trillion, **Global SWF** estimates that 40%, i.e., US\$ 4.6 trillion, is invested by SWFs within their respective economies.

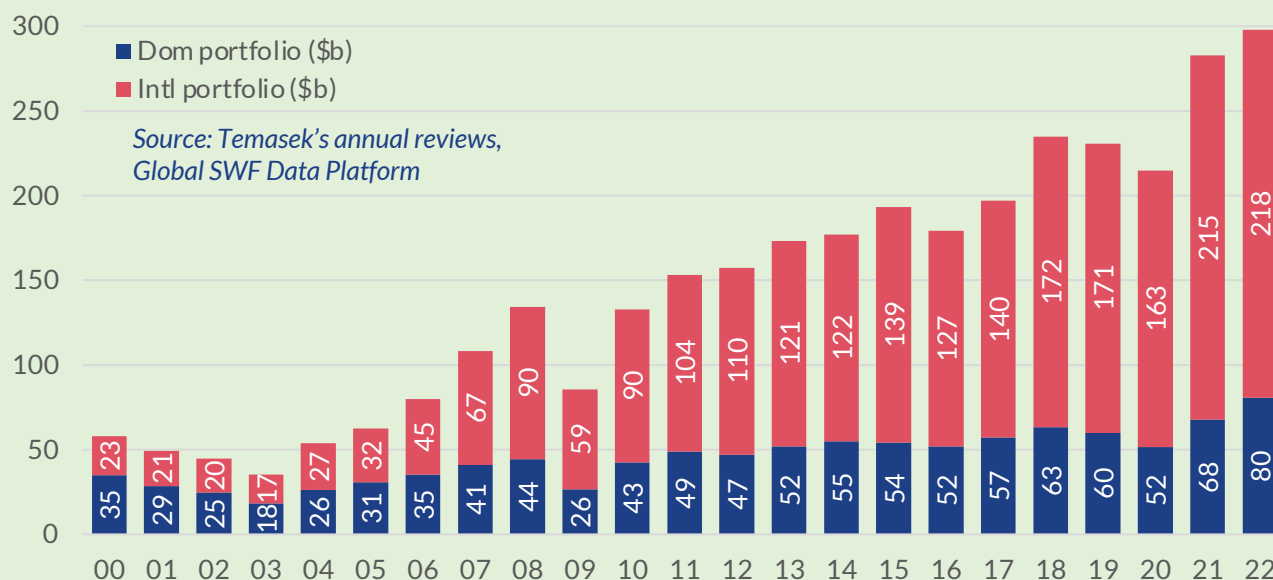
The trend of rising domestic investments will likely be sustained for two reasons: (i) the emergence of new strategic funds with the mission to attract capital; and (ii) the increased activity of some of the existing funds. A good example is **PIF**, which reached US\$ 620 billion in AuM as of March 31, 2022. The Saudi fund is sponsoring significantly large initiatives that have not yet been capitalized into its balance sheet. So, while the current portfolio is 29% international and the leadership is targeting to increase this percentage over time, the domestic giga-projects (e.g., US\$ 500 billion NEOM) may offset that target if they are to remain under **PIF**.

The benefit of having regionally diversified strategic vehicles is clear but managing them may be more challenging than operating conventional institutional investors. Most SWFs today are not only asked to perform financially, but also to create jobs, to propel the domestic economy and to contribute to decarbonization goals. Job descriptions for investment managers will become more complicated with time.

Case Study #2: Temasek’s domestic and international investments

Temasek is a perfect case study for the balance between domestic and international holdings. This government-owned investment company, as it likes to be called, was initially seeded with 35 domestic assets that were transferred from the Minister of Finance in 1974. Almost 50 years later, only 10 of those companies remain in **Temasek**’s portfolio. The investor continues to invest in local initiatives such as GenZero or 65 Equity Partners, but most of the growth and investment activities are pursued overseas, by a network of 13 global offices in nine countries, 880 employees, and a strong relationship with the world’s largest asset managers.

Figure 21. Temasek’s growth of domestic and international portfolios





Renewable energy is a highly attractive infrastructure sub-segment for SOIs, both offering the stable, inflation hedging qualities of infrastructure and supporting net zero objectives. Several governments have signed up to the Paris agreement on climate change and their SWFs are following suit. Pension funds are also reacting to policy holders' demands for greater environmental sensitivity with several joining the Net Zero Asset Owners Alliance, described by UN Secretary António Guterres as the "gold standard for net zero commitments".

The Alliance saw Gabon's **FGIS** become its third SWF member, after Germany's **KENFO** and **NZ Super**. Others including Norway's **NBIM** and Saudi's **PIF** have pledged to reach Net Zero goals without formally joining NZAOA. Several others have expressed their skepticism about reaching a net-zero economy under the current conditions. Singapore's **GIC** for one has no plans to set a net-zero target, which it believes does not help in fighting climate change, and it prefers to invest in green tech and to support the transition of its energy assets.

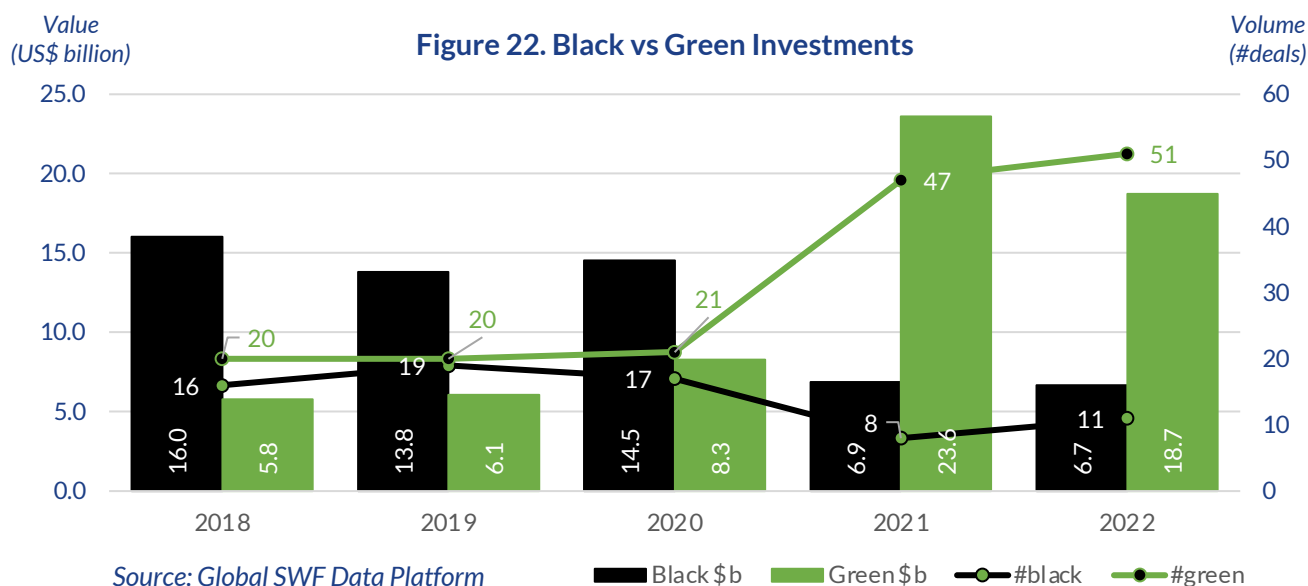
Supply arises, capital follows

In 2022, SOI investment in renewables assets totaled US\$ 18.7 billion, slightly behind 2021 figures. If we isolate the US\$ 6.0 billion commitment of **ADQ** and **Samruk-Kazyna** to build wind farms in Kazakhstan in 2021, this year would have been a record high for green investing. North America and Western Europe are the most popular destinations thanks to a high level of opportunity and a positive regulatory environment, as well as the FDI efforts in certain countries. In 2022, SOIs increased investment in European renewables by 45% to US\$ 8.4 billion, while Developed Asia and Pacific investments more than doubled to US\$ 4.7 billion.

Canadian funds were collectively the biggest source of capital, making up 33% of the total, while Gulf investors contributed 29% and Singapore 26% - altogether these three jurisdictions represented almost 90% of SOI renewables capital. The largest single investor in renewables this year was **GIC**, followed by **Mubadala**.

Europe's dominance of SOI investment in renewables is explained by the more proactive approach by governments to meeting Paris-aligned net zero targets and, latterly, the strategic need to ween the region off Russian gas imports through greater self-sufficiency in electricity generation. In May 2022, the EU launched plans for a massive increase in solar and wind power that will require US\$ 210 billion in the next five years.

European pension funds, particularly **APG** and **PGGM**, have also focused on deal origination in Europe. In mid-2022, the former teamed up with **OMERS** to acquire Groendus, a new leader in the Netherlands' energy transition with 170 MW of solar capacity installed. Another European investor, **NBIM**, failed to keep up with its push for renewables, which it started in 2021 with a US\$ 1.6 billion ticket in Danish windfarm Borssele.





Also in Europe, **CPP** ramped up its investments in Octopus Energy and committed over US\$ 1.0 billion to its platform Renewable Power Capital. **PIF** and **Mubadala** also weighed in heavily into the European renewables sector in 2022, investing alongside GIP in Germany-based Skyborn Renewables, with 7 GW of capacity completed in offshore wind generation. Lastly, **GIC** made a significant investment with Carlyle in UK-based Eneus Energy, to support the company's push to develop green ammonia projects using renewable energy.

Other developed markets also received significant capital in 2022. **GIC** made the year's largest investment in Australia's InterContinental Energy, which possesses a portfolio of 200 GW of onshore wind and solar capacity. **OTPP** committed a significant envelop to Macquarie-born new pipeline Corio Generation. And **CDPQ** invested US\$ 0.5 billion in Japan's Shizen Energy, which has 1 GW of capacity under development.

In contrast to Europe and Developed Asia-Pacific, direct investments in US renewables by SOIs slowed in 2022. The most significant investment was **APG's** acquisition of a 49% equity stake in the US\$ 1.2 billion Gemini Solar + Storage project near Las Vegas. President Joe Biden has made climate change a key theme of his presidency with greater opportunities in renewables, offering potentially higher rewards in an environment where carbon carries a penalty, and targeting US\$ 2 trillion of investment during his first term in office.

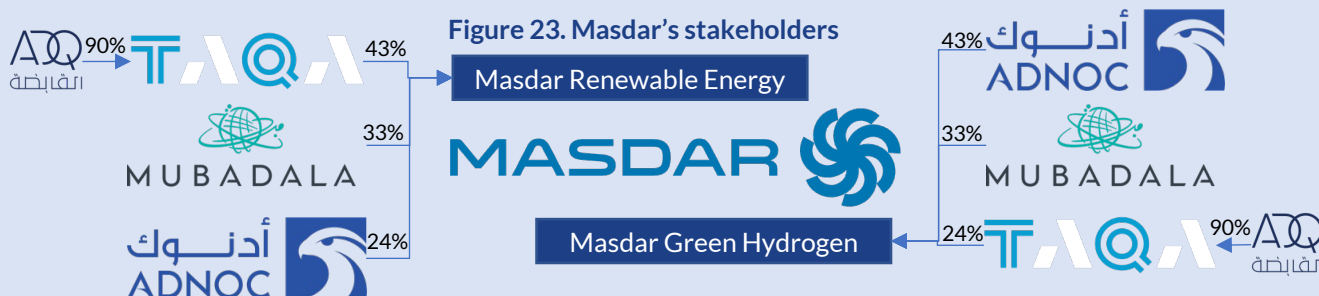
The transition to low carbon energy sources is also at the top of the agenda of Gulf SWFs as they seek to diversify domestic and regional economies and gain exposure to progress towards the Paris Agreement's net zero goals. One of the biggest draws is hydrogen production, particularly "green" hydrogen which offers a clean alternative to fossil fuels. During the COP27 Summit in Egypt, Oman's **OIA** announced a US\$ 1.5 billion acquisition of a 10% stake in the 1.1 GW Suez Wind Energy Project, overseen by Saudi's ACWA Power. In Saudi, Thyssenkrupp is building a green hydrogen plant to help supply electricity to NEOM city giga-project.

Lastly, India remained the prime target of SOIs in emerging markets, despite being the world's fourth biggest emitter after China, the US, and the EU. The country is a key target for **CPP**, which boosted its minority stake in solar and wind generator ReNew Power. **Mubadala**, together with Blackrock, outbid a consortium of **CPP**, **Temasek** and General Atlantic for a 10% stake in TATA Power Renewables. And **OTPP** acquired 30% of Mahindra Group's platform of 1.54 GW of operational solar plants spread across several states in India.

Case Study #3: Masdar's leadership in renewable energy

In 2006, a four-year-old **Mubadala** created Abu Dhabi Future Energy Company, or Masdar, as its green energy platform to push for the emirate's diversification of its economy and energy sources. In the following 15 years, Masdar grew to be one of the world's largest investors in renewable energy, with assets in 40+ countries across six continents and investments and developments with a combined value of over US\$ 20 billion globally.

On December 8, 2022, the company unveiled its new brand and plans under a new corporate structure combining three key stakeholders: ADNOC, TAQA (owned by **ADQ**), and **Mubadala**, which diluted its stake. By 2030, Masdar is targeting over 100 GW in capacity and up to 1 million tons of green hydrogen in production, with aspirations to grow its portfolio to 200 GW. ADNOC's CEO, HE Sultan Al Jaber, will serve as Chairman, and **ADQ's** CEO, HE Mohamed Al Suwaidi, as Deputy Chairman of the "new Masdar".



Source: Masdar and press releases



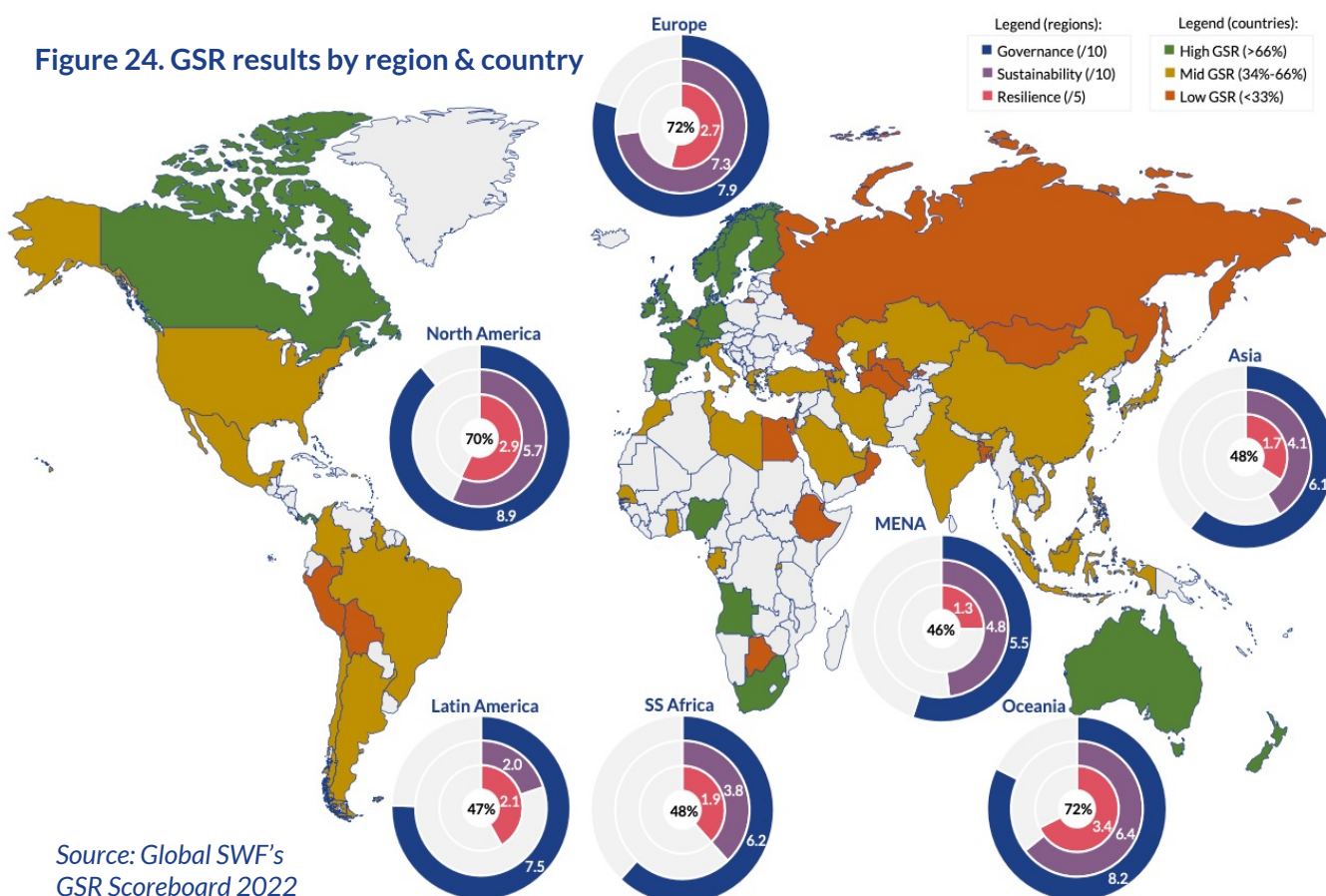
The GSR Scoreboard was first introduced by **Global SWF** in 2020 as an assessment tool for the best practices of state-owned investors, including sovereign wealth funds and public pension funds. We believe that important aspects such as transparency and accountability (**Governance**), responsible investing (**Sustainability**), and legitimacy and long-term survival (**Resilience**) are not mutually exclusive and must be considered jointly.

The scoring is based on 25 different elements: 10 related to governance, 10 to sustainability, and five to resilience. These questions, which have not changed since 2020, are answered binarily (Yes/No) with equal weight based on publicly available information only, and then converted into % points. The system is rigorous, quantitative, and fully independent, as the funds in question do not pay any membership fee to be assessed.

This year we observed a considerable improvement: sovereign wealth funds raised the average score by 6%, and public pension funds, by 5%. The scoreboard was led by eight investors with a 96% score: three from North America (**CPP**, **CDPQ**, and **BCI**), two from Europe (**PGGM**, **ISIF**), one from Asia (**Temasek**) and two from Oceania (**Future Fund** and **NZ Super Fund**). Two regions saw several improvements: the Middle East, led by Qatar's **QIA**, Abu Dhabi's **Mubadala**, and Saudi's **PIF**; and Sub-Saharan Africa, led by Angola's **FSDEA**, Gabon's **FGIS** and Senegal's **FONSIS**. We had the chance of discussing the results with the CIO of **CPP Investments** and published the interview in our report, which can be accessed at <https://globalswf.com/reports/2022gsr>.

Despite the positive trajectory, resilience is still an evolving concept among certain state-owned investors, which have issues with liquidity and spending control. After the significant withdrawals motivated by Covid-19 and the subsequent recovery, some funds may struggle with the expected 2022-23 bearish markets. Our next assessment round will start in May 2023, and we will contact all 200 SOIs with the preliminary results.

Figure 24. GSR results by region & country



Source: Global SWF's
GSR Scoreboard 2022

The SWF Academy

A partnership between
London Business School
and Global SWF to nurture
the future leaders
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5. Fund of the Year: CDPQ



Industry analysts and commentators usually group all Canadian Funds together. However, each of them has a distinct risk and investment profile. The *Caisse de dépôt et placement du Québec (CDPQ)* is unique in that it manages both public capital and pension contributions, and in that it juggles a dual mandate of achieving optimal financial returns as well as contributing to the economic development of the province of Québec.

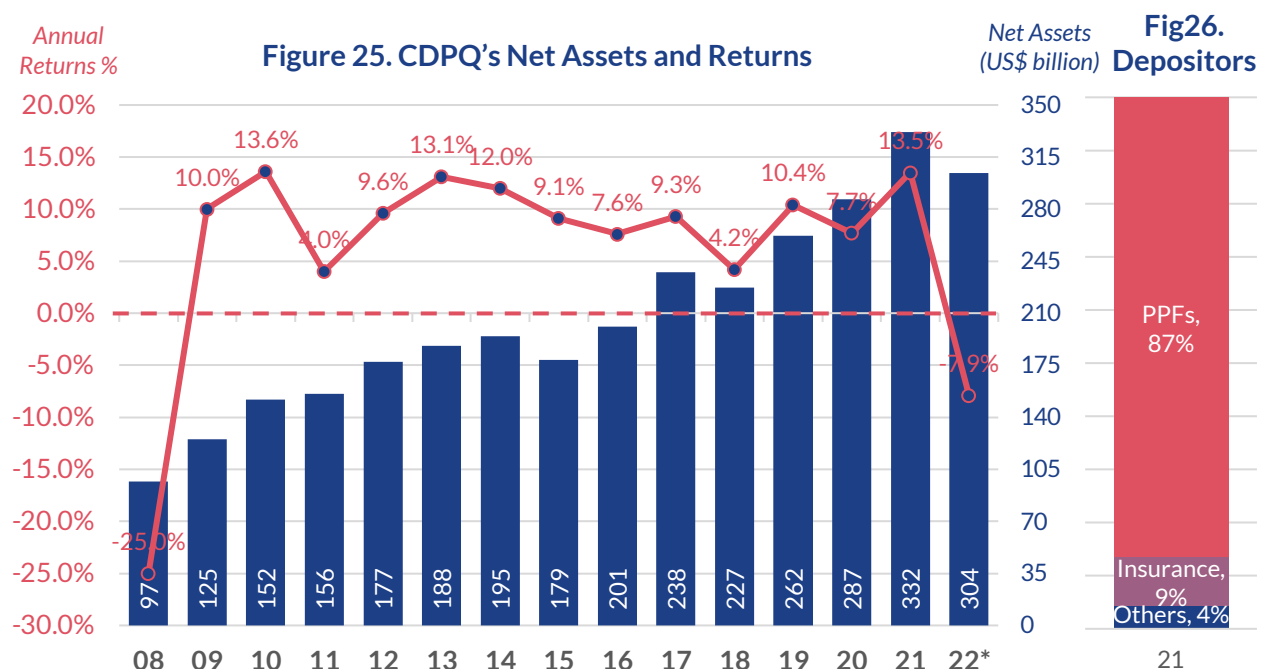
CDPQ invests on behalf of 47 different depositor groups, although three quarters of its capital comes from three pension plans: Finances Québec, Retraite Québec and RREGOP. It also manages the monies of several insurance plans, including those in the healthcare and automobile sectors.

Québec presents the right ecosystem for **CDPQ** to thrive, with a diversified economy based on the services sector and abundant in natural resources. If it were a country, the Francophone province would be the world's 42nd largest economy. At the same time, **CDPQ** has immensely benefitted Québec's development over the years and plans to increase its investment footprint from today's US\$ 59 billion to US\$ 74 billion (CAD\$ 100 billion) by 2026.

La Caisse has grown its assets under management (AuM) non-stop for the past 15 years. That is, until 2022, when sovereign investors worldwide have endured significant (paper) losses, as reflected in page 17 of this report. Yet, the **-7.9%** reported by **CDPQ** for the first six months of the year outperformed its benchmark (**-10.5%**) and the average of State-Owned Investors around the world (**-9.7%**).

In fact, **CDPQ** has become one of the world's most sizeable, active, and sophisticated global investors. In the past ten years, the fund has consistently been among the top 10 investors, and is also a frequent seller, identifying the right opportunities to monetize assets domestically and overseas. According to data compiled by **Global SWF**, **CDPQ** would have invested over US\$ 10 billion in 2022 in private markets alone.

Lastly, the Québec fund has been a trailblazer when it comes to sustainability and has put its money where its mouth is. In 2018, it sent a strong message by directly tying employees' variable compensation to the achievement of climate targets. In 2021, it renewed its climate ambitions with an aggressive set of objectives, and its President and CEO, Charles Emond, currently sits on the Steering Group of the UN-convened Net-Zero Asset Owner Alliance.



Source: CDPQ website and reports, Global SWF analysis. * 2022 refers to June 30 figures



A Robust Platform with Dedicated Subsidiaries and Branches:

CDPQ has evolved significantly as an organization in the past decade. Just like its Canadian peers, it has a sound corporate governance model, with a Board of Directors of up to 15 members, two thirds of which must be independent. The fund is driven by the CEO and senior executives of the various investment units. In addition to the different asset classes, CDPQ has three subsidiaries with separate boards and directors:

- **Ivanhoé Cambridge:** US\$ 52 billion real estate (equity) investor with a mixed portfolio across 15+ countries. It recently opened an office in Sydney.
- **Otéra Capital:** US\$ 21 billion real estate (debt) investor with a portfolio in 37 areas of North America. Its 150+ staff sit in Montréal, Toronto, and New York. The latter was opened in June 2022 with a former exec of Related.
- **CDPQ Infra:** Chaired by CDPQ's CEO, the infrastructure subsidiary acts as a principal owner and contractor for major projects and focuses on building sustainable transport infrastructure for communities like the REM light rail network in Montréal.

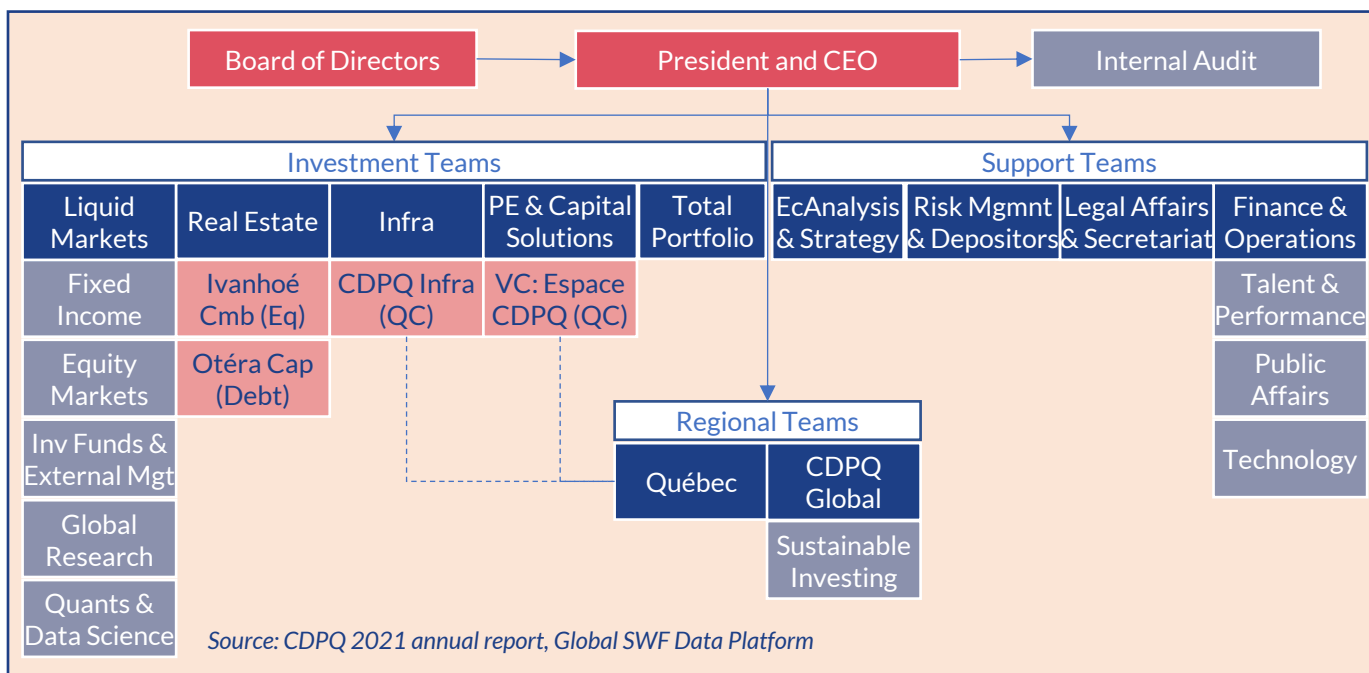
In addition, **CDPQ** itself employs 1,454 staff, 89% of whom sit in Canada and 162 overseas, in 9 different posts. São Paulo was the latest office to be opened in 2018, in order to co-manage the US\$ 14 billion Latin American portfolio, along with Mexico City. Eduardo Farhat replaced Denis Jungerman as the head of Brazil in August 2022.

Table 10: CDPQ Entities and Offices

	CDPQ	Ivanhoé	Otéra	Infra
Québec City	✓			
Montreal	✓	✓	✓	✓
Toronto		✓	✓	
New York	✓		✓	
Mexico City	✓			
São Paulo	✓	✓		
London	✓	✓		
Paris	✓	✓		
Berlin		✓		
Singapore	✓	✓		
New Delhi	✓			
Mumbai		✓		
Shanghai	✓	✓		
Sydney	✓	✓		
#Staff	1,454	600	158	124

Source: CDPQ website, Global SWF Data Platform

Figure 27: CDPQ's Organizational Structure





For its impact in the development of Québec, for its leadership among sovereign investors and public investors worldwide, for its significant investment activity during 2022, and, more broadly, for its contribution to the advancement of the industry, **Global SWF** believes that **Caisse de dépôt et placement du Québec (CDPQ)** is a worthy recipient of the **2022 Fund of the Year** award. We were delighted to present the award to **Charles Emond**, its Chief Executive Officer, and to speak with him about the fund's recent evolution and ambitions.

[GSWF] CDPQ was established 57 years ago to manage the province's newly created retirement plan. How has the fund's strategy changed and how will it continue to evolve in the years to come?

[CDPQ] La Caisse was created in 1965 at a time when Québec was expanding and has grown considerably since then, becoming Canada's second largest public investor. One thing that characterizes us is our dual mandate: serving our 47 depositors and contributing to the province's economic development. We can distinguish three buckets of evolution:

- *Asset diversification into private markets, which we started in the 1970s, and infrastructure among others;*
- *Our global expansion in the last 10-15 years, with 75% invested out of Canada and 14 offices; and*
- *Sustainability efforts including climate strategy and objectives.*

[GSWF] Québec is among the world's Top 50 economies and outpaced other Canadian provinces in 2021. What role is CDPQ playing in the development and sustainability of such growth?

[CDPQ] Investing in Québec has always been our raison d'être and is not mutually exclusive with our overseas efforts. Our assets in Québec have usually performed very well because it is an ecosystem we know very well. Today, we have about US\$ 59 billion invested in Québec across different asset classes, compared to the size of the economy of US\$ 380 billion. Considering our depositors – which represent about 6 million Quebecers – we have a huge domestic impact and the good thing about Québec's economy is that it is very well diversified, which plays to our strength as an investor and advisor.

[GSWF] Canadian Funds demonstrated their resilience in 2022, with investment returns better than their global peers – why do you think that is and what makes CDPQ successful?

[CDPQ] The Canadian model has done very well by applying strong governance criteria, the expansion into private markets and inflation-protected assets; and the ability to manage these assets internally. At CDPQ, we manage 85% of our portfolio internally, which allows us to manage the portfolio at a lower cost and play a more active role in the governance of our investments – including with operating partners who add value over the lifecycle of the investment – that can make an important difference to our performance.

[GSWF] CDPQ has raised over US\$7 billion in debt in the past two years including green bonds. How important is to diversify your capital base and how much is coming from overseas?

[CDPQ] Maintaining good levels of liquidity has become very important, especially in the past 10 years. For us, raising debt is one tool among many of creating liquidity as well as a tool for portfolio construction. By issuing in various markets, from USD to Euro and CAD, it allows us to stay in the market, diversify our investor base and our funding sources. The quality of our assets, liquidity position result in a very strong credit profile, allowing us to maintain a AAA rating, which is very attractive in the market and represents great value for investors. In terms of who buys this debt, 75% is central banks and banks, with the balance distributed to asset managers and insurers. From a geographical standpoint, our investors come mainly from North America (45%), followed by EMEA (35%), Asia and Latin America (20%). As with our assets under management which are diversified across the world, we try to diversify and keep a broad investor base, but at the same time have a very conservative capital structure and maintain a senior debt leverage level below 10%.



Charles Emond, CDPQ's Chief Executive Officer



[GSWF] CDPQ was especially active this 2022 – what transaction/s are you proudest of?

[CDPQ] We are proud of all our teams globally but there have been a few noteworthy investments this year, namely:

- Over 50 investments in Quebec-based companies, our local market;
- The acquisition of 22% of Jebel Ali Free Zone in the UAE for US\$ 4.0 billion, which was a trophy asset and seeks to leverage our relationship with DP World and our growth across the Southeast Asia and East Africa regions;
- Our US\$ 0.5 billion investment in Shizen Energy, which is a renewable energy leader and our first direct deal in Japan and seeks to dip our toes in the transition from fossil fuels to green energy in Asia;
- Ivanhoé Cambridge announcing a partnership – and two investments – with NVELOP to expand “Hub & Flow” in Germany for our European portfolio aimed at building a platform of logistics properties along key supply chains;
- Our fixed income team supporting KKR’s acquisition and the energy transition plan of France-based Albioma SA, representing the inaugural transaction for our CAD \$10 billion transition envelope; and
- Our recent acquisition of 100% of Akiem, the leading provider of locomotive leasing services in Europe that is operating 75% of its fleet on electricity, which plays well into our decarbonization efforts.

[GSWF] Infrastructure is a huge asset class for CDPQ. Where do you see the best opportunities?

[CDPQ] Infrastructure has grown from 6% to 13% of our portfolio, and we expect to raise it to 16% by 2026. This means an extra allocation of US\$ 18 billion in the next four years, though we may reduce North America in relative terms. Regarding sub-sectors, we are big into renewables and transportation, and we also like Telecom, and are finishing some parts of the REM (light-rail project) in Montreal. Our competitive edge in infrastructure is that we can go for large tickets where there is less competition, take control positions and do almost everything internally.

[GSWF] CDPQ’s portfolio is truly global – where do you see future growth? What is CDPQ Global’s role?

[CDPQ] Today, two thirds of our portfolio sit in North America and a potential tectonic shift would probably be for us increasing our weight in Asia, although that would depend on the asset classes. For example, in Private Credit there may be a push in the US and Europe. In Infrastructure, it could be all around the world including emerging markets, given our expertise. And in Real Estate it could be more granular including new cities in the US, in Japan or in Australia.

The idea with CDPQ Global was to make sure that we find the right partners and can also have an open dialogue with the regulatory authorities, governmental representatives, etc. In today’s environment, governmental affairs have become crucial. I am a big believer of having boots on the ground and having strong local representatives.

[GSWF] Can you walk us through your commitment to Indonesia’s INA and your international partnerships?

[CDPQ] Selecting the right partners when investing abroad is key to us as we benefit from their expertise, local networks and can come into big projects with more confidence and conviction. We signed an MoU with INA along with APG and a subsidiary of ADIA, which we thought was an ideal combination. We really like Indonesia; I had the chance of meeting with INA’s CEO when I was in that region recently, and we believe it is a country that offers a large pool of opportunities. The work is ongoing, and INA is looking at different opportunities that will also give us an edge on responsible investing.

[GSWF] CDPQ issued a very ambitious climate strategy in 2021 – how important is decarbonization for you?

[CDPQ] Decarbonization is now part of our culture and DNA, and we have made it our priority. Since 2017, we have set ambitious targets which we have exceeded, and in 2021, we raised the bar once more reducing carbon intensity. Today, for every dollar we own, we have 50% less of carbon intensity than we had five years ago. In terms of our portfolio, 80% of the US\$ 304 billion are now low carbon emission assets. We are also investing in assets from heavy-emitting sectors as part our CAD\$ 10 billion transition envelope, which is a great risk-return proposition for our clients. We have set very ambitious targets for 2025 and 2030 and we are one of the world’s only public investors (the first and the largest) to have compensation tied to carbon reduction targets since 2017.

[GSWF] CDPQ employs over 2,300 people in 11 countries – how do you expect these figures to grow?

[CDPQ] We have been growing at a pace of about 100 people a year for the past five or six years, which aligns with our growth in assets and objectives. However, our structure is quite lean, and our costs are quite low when compared to some of our peers. What keeps me awake at night is the battle for talent, which is real not only at CDPQ but all over the world. Ours is a very competitive market, but we believe our brand of constructive capital – which also appeals to the next generation – as well as our global mandate, makes us an attractive proposition. We deploy a lot of effort in this because if we don’t have people, we don’t have assets, and we don’t have returns.



An increasingly global and diversified portfolio:

CDPQ's portfolio has changed significantly since 2016 as it evolves and matures as a global investor. On the one hand, the domestic portfolio was reduced to 26% of the total pie, to the benefit of US-based assets and securities. On the other hand, the weight of Listed Equities in the overall portfolio decreased in 13% to the benefit of Private Equity and Infrastructure. The resulting 44% in illiquid markets puts the Québec investor at similar levels as **CPP** and **OTPP** in Canada, and as **Temasek** and **Mubadala** internationally.

The trend may continue in that direction as **CDPQ** aims at increasing its infrastructure portfolio to 16% in the next four years, including additional efforts in emerging markets that may also change the geographical split. That said, the fund will continue to be a key domestic investor and aims to increase its Québec portfolio (most of the Canadian investments) from today's US\$ 59 billion to US\$ 74 billion (CAD\$ 100 billion) by 2026.

Figure 28. CDPQ's portfolio by region

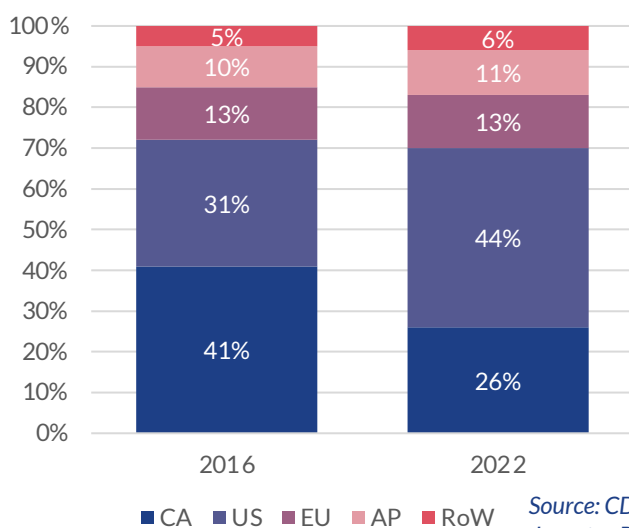
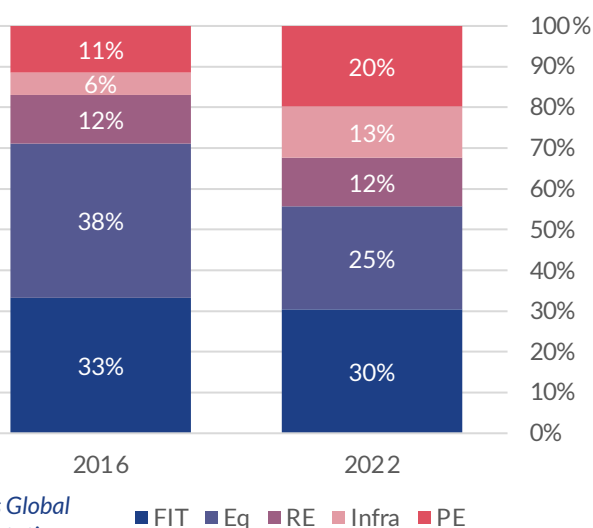


Figure 29. CDPQ's focus by asset class



Source: CDPQ's Global Investor Presentation

A Busy Year:

CDPQ had a very strong 2022 in terms of deal activity. Some of the largest transactions recorded include:

Table 11: Selected Investments of CDPQ in 2022

Selected Investment	Country	AssetClass	Industry	Date	Value (\$b)*	Stake
Jebel Ali Port		Infra	Ports	Jun-22	4.0	22%
Akiem		Infra	Railways	Dec-22	0.9	100%
Énergir		Infra	Utilities	Jan-22	0.7	81%
Scape Student Housing (via Ivanhoé)		RE	Residential	Oct-22	0.6	n.a.
Shizen Energy		Infra	Renewables	Oct-22	0.5	n.a.
Lodha's Logistics Platform (via Ivanhoé)		RE	Logistics	May-22	0.3	33%
Terna's Transmission Assets		Infra	Utilities	Apr-22	0.3	100%
Life Sciences JV Leandlease (via Ivanhoé)		RE	Healthcare	Feb-22	0.3	50%
Bouthillette Parizeau		PE	Industrials	Jun-22	0.2	n.a.
Albioma SA (with KKR)		PC	Renewables	Nov-22	0.2	n.a.

Source: CDPQ press releases, Global SWF Data Platform. * Estimated by Global SWF if not publicly available



A truly green investor:

CDPQ announced its first climate strategy in October 2017 in the wake of the Paris agreement. The document promised to factor in climate change in the investment decision process, a US\$ 6 billion increase in low carbon investments up to 2020, and a 25% reduction in its carbon footprint by 2025. Months later, the variable component of the staff's salary was linked to the achievement of climate targets, creating a direct incentive.

Looking to build on this experience to intensify its efforts in achieving a net-zero portfolio by 2050, the Canadian fund issued a revised climate strategy in September 2021. The new policy builds on the previous two pillars and created two new goals: a US\$ 7.4 billion decarbonization portfolio and an exit from oil production. The new targets are directly linked to UN's Sustainable Development Goals #11 & #13 around Climate Action.



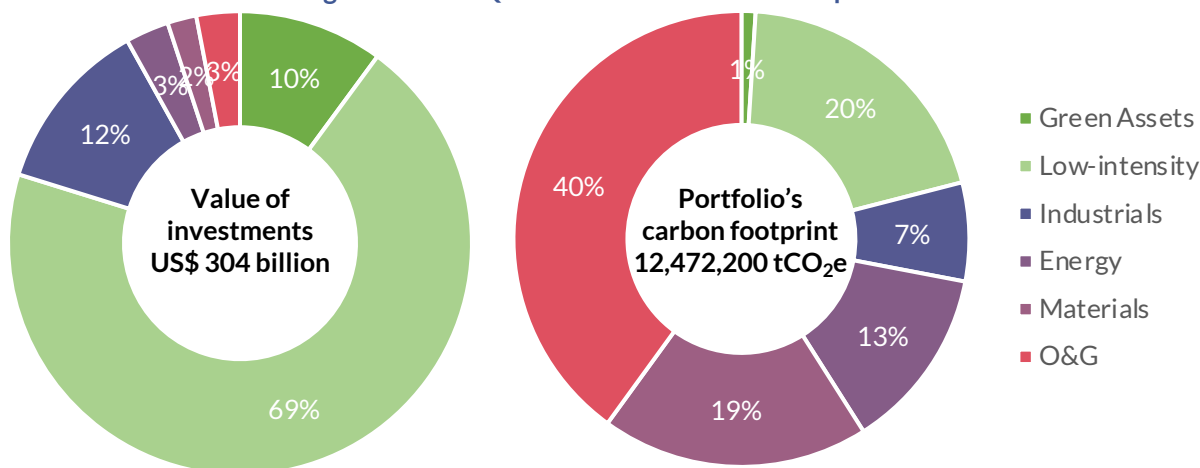
Figure 30:
CDPQ's
Climate Pillars

*Source: CDPQ
Global Investor
Presentation*

One of the main challenges in tracking green policies is the lack of clarity and transparency around key performance indicators. In the absence of regulatory pressures and internationally recognized structures, leading funds have adopted various formats and publish different metrics, which makes it difficult to evaluate different practices, complicates comparative analysis, and allows funds to publish the most flattering statistics.

However, **CDPQ** pursues a comprehensive reporting of its sustainability actions and produces regular reporting of its carbon footprint, which reveals the impact of its investments on the environment. Approximately 80% of the fund's global portfolio are either low-intensity or carbon neutral ("green") assets.

Figure 31: CDPQ's Portfolio and Carbon Footprint



Source: CDPQ's Global Investor Presentation

As a reflection of its efforts around Responsible Investing, our latest GSR Scoreboard, issued in July 2022, gave a perfect score of 10/10 to **CDPQ** in the Sustainability elements, which only 10% of the 200 State-Owned Investors achieved. The Québec fund was at the top of the general leaderboard with a 96% score, along with three other PPFs (**CPP**, **BCI** and **PGGM**), and four SWFs (**ISIF**, **Temasek**, **Future Fund** and **NZ Super**).



6. Asset Class of the Year: HF



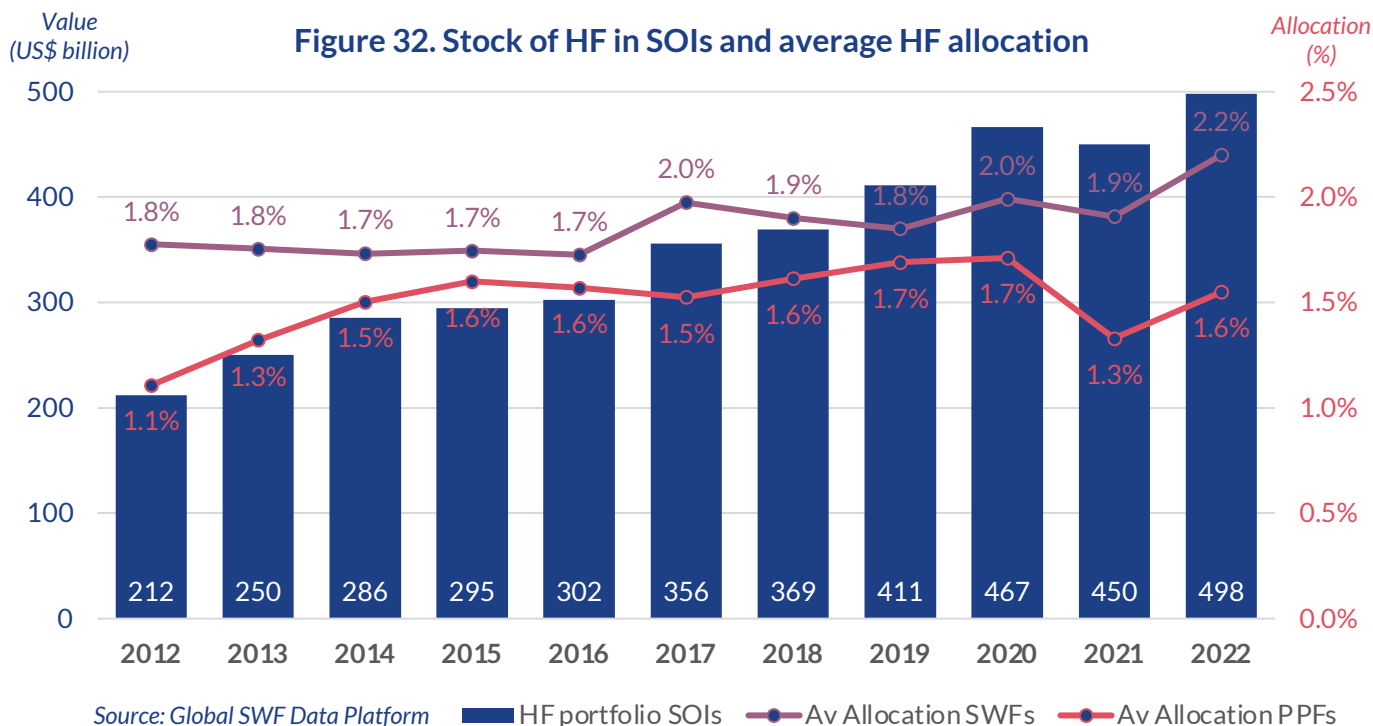
In a year when all major asset classes performed poorly, it is difficult to pick up the leading asset class in 2022. However, we saw an uptick in the interest and allocation of sovereign investors into hedge funds, and some of our conversations with SOIs have revolved around the same themes. Given the simultaneous fall of both stocks and bonds, asset owners are seeking diversification and uncorrelated strategies in hedge funds.

Sovereign investors use a variety of terms to define hedge fund investments, including “absolute returns”, “alternative assets”, “active global equities” or “public markets alternatives”, but they all refer to the same factor, which represents an important part of the portfolio mix. In 2022, the average allocation of sovereign investors to hedge funds reached an all-time high of 2.0%, up from 1.0% in 2009. **Global SWF** estimates that SWFs and PPFs hold about US\$ 0.5 trillion in hedge funds, i.e., a 25% of the total industry size.

The largest allocators in absolute terms among SWFs are, by far, **ADIA**, **CIC** and **KIA**, representing almost half of all the capital allocated by all SWFs to hedge funds. The Abu Dhabi fund has been investing in the asset class since the 1980s and employs 50+ staff in the sector, plus the recently set up Quantitative R&D (“Q Team”) and subsidiary ADIA Labs, as highlighted in the case study. In relative terms, **NZ Super** (20% of total portfolio) and **Future Fund** (17%) are above the rest, and present levels like American endowment funds.

Public pension funds have traditionally been more conservative when it comes to hedge funds due to the public scrutiny. In 2016, several systems including **CalPERS**, **NYCERS** and **ISBI** decided to drop their absolute returns programs due to the “excessively high” management fees, compared to the produced returns. In its 2022 report, **NYSCRF** states that its target return for the asset class is 8.8% and the five-year annualized return was 6.9%. Despite that, it is still pushing for its actual HF allocation, at 2.1%, to reach its target of 3.0%. Today, the average allocation of PPFs is still lower than that among SWFs but also increased in 2022 to 1.6%.

Endowment funds continue to present much larger portfolios, in relative terms. Harvard MC, Columbia IMC, and UC Investments’ endowments allocate as much as 33% to hedge funds, and the average among the USA’s top 10 endowments is 25%. Yet, the US\$ 18 billion portfolio held by Harvard MC is far from **ADIA**’s US\$ 60 billion. Yale University, which became a role model when CIO David Swensen started investing in hedge funds, private equity, and venture capital in the 1990s, has decreased its allocation to 22%, i.e., US\$ 6.7 billion.





Different strategies:

In terms of products, sovereign investors cover all well-known strategies, from diversifiers to return-enhancers. Macro strategies usually focus on Commodity Trading Advisors (CTAs), which SOIs are very comfortable with; active trading or currency plays, including discretionary. Other popular bets are equity-hedge (fundamental growth and value), event-driven (merger arbitrage, distress, etc.), and relative value.

There are vast differences across sovereign investors around the decision of managing the asset class internally or externally. For example, **Future Fund** and **ADIA** outsource most of the management, but **Alaska PFC** invests in the asset class almost entirely in-house. The benefits seem to be clear: in fiscal year 2022, **New York Common** paid US\$ 172 million in management and incentive fees to hedge fund managers, including US\$ 68 million to D.E. Shaw. That translates to 3.2% of the hedge fund portfolio of US\$ 5.4 billion as of March 31.

Another challenge of the industry is finding reliable performance indicators. Two of the industry known providers, issue a range of metrics that differ significantly. In any case, the highest last-five-year return, +5.6%, was still significantly lower than S&P500 annualized return for the past five years, +7.4%.

While most SOIs seem to agree that private markets, including private equity and infrastructure, present great prospects for the next few years, there is no discernable consensus about the benefits of having part of the portfolio invested in hedge funds. However, if we continue to see falling markets for fixed and variable income in 2023, we will likely see an uptick of investors looking to diversify and seek refuge in HF.

Table 12. HF Indices Returns

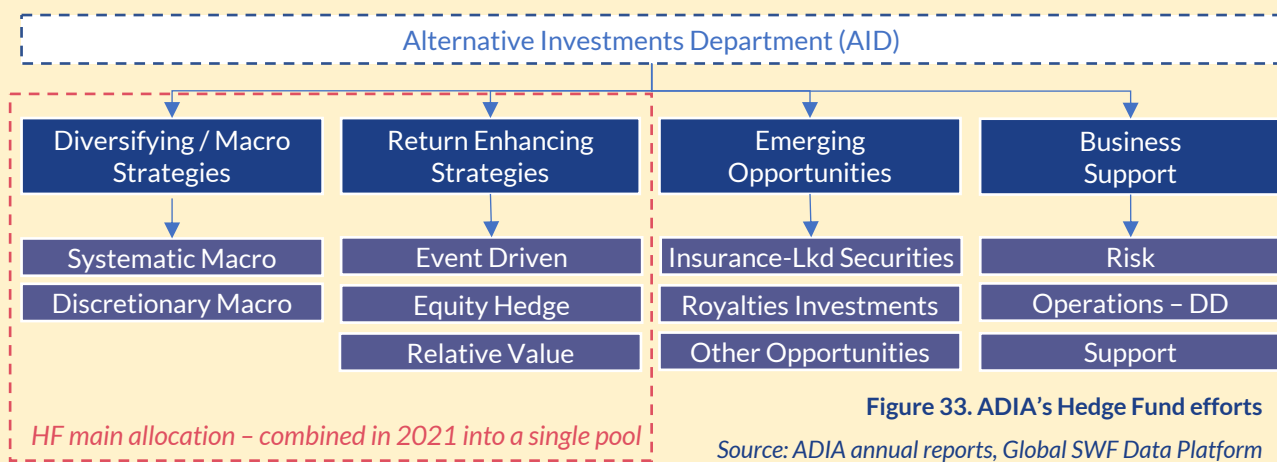
	CYTD22*	L5Y
HFRI 500	-2.6%	+4.8%
Equity Hedge	-11.2%	+4.3%
Event Driven	-5.9%	+4.9%
Macro	+14.3%	+5.6%
Relative Value	+0.4%	+3.5%
Low Beta	+3.0%	+3.5%
Fund of Funds MV	-5.0%	+3.6%
EurekaHedge HFI	-3.7%	+5.2%

Source: HFRI, EurekaHedge. * CYT22 refers to 11 months ending on Nov 30, 2022

Case Study #4: ADIA's US\$ 60 billion hedge fund portfolio

ADIA is the world's largest allocator to hedge funds, with an estimated US\$ 60 billion portfolio. The Abu Dhabi fund was a pioneer in the asset class when it started trading through commodity advisors (CTAs) back in mid-1980s and manages today twice as much as **CPP** and **CIC**, and three times as much as Harvard MC.

In 2019, the alternatives portfolio was restructured from the traditional products (CTA, HFG, ACM) into two main strategies (Diversifiers & Return Enhancers), in addition to an Emerging Opportunities mandate outside of the main allocation. However, a year later, **ADIA** decided to merge them into a single pool. The department employs 50 staff but most of the investment is outsourced. Since 2020, the team has been very active looking to benefit from a highly disrupted market and has added new managers across most strategies.





7. Region of the Year: Indonesia



With a population of 260 million, Indonesia is a rapidly developing market few can ignore. The economy grew at a rapid clip in recent years with GDP growth exceeding 5% in 2022. Robust private consumption, rising investment and double-digit export growth have supported the country's ongoing transformation. Although there is no guarantee that the Southeast Asian behemoth will continue to shake off global market turmoil sparked by the energy price spike, for sovereign investors its prospects are bright, and its potential is huge.

Foreign SWFs and PPFs have emerged as the country's leading financiers. Indonesia has attracted around US\$ 15 billion in inward investment by overseas state-owned investors, spanning the full range of asset classes and market segments – from logistics real estate to oil fields, and from roads to e-commerce.

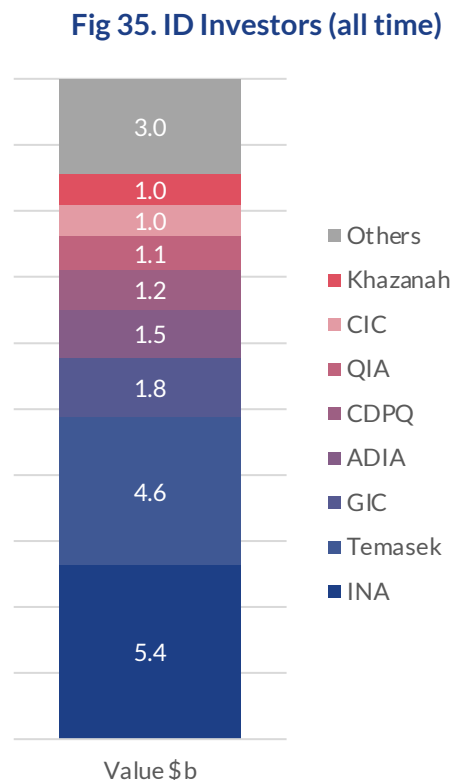
Before 2019, most of the SOI capital flow was in the oil, gas, and petrochemicals industries as **Mubadala** led efforts in offshore exploration, concentrated in the Andaman and West Sebuku blocks. Yet, attention quickly shifted to private equity and infrastructure as the government pushed for the expansion of transportation sector and for the development of the startup ecosystem.

Global SWF data finds that of the commitments from sovereign investors, 49% is in infrastructure with a further 42% in private equity and 10% in real estate. Within the private equity sector, US\$ 2.0 billion was devoted to venture capital in Indonesia's briskly rising number of startups in e-commerce and fintech, including the highly popular Tokopedia and Gojek (both now merged into GoTo), Traveloka and Bukalapak. The rest of the investment activity was in direct investment, channeled through private equity funds or in co-investments.

In terms of origin, Singapore's **Temasek** represents 22% of the investment value, followed by its stablemate **GIC** with 9%, Abu Dhabi's **ADIA** with 7%, Canada's **CDPQ** with 6%, and Qatar's **QIA**, Malaysia's **Khazanah**, and China's **CIC**, with 5% each. Yet, it is Indonesia's own new strategic SWF, **INA**, that is driving investment, particularly in infrastructure and the green energy transition.



Source: Global SWF Data Platform





The Developing the Digital Economy:

Indonesia is a significant target for investment in the digital economy due to the size of the market, growth in e-commerce and its specific geographical features. The country's digital economy was forecast to grow 22% to US\$ 77 billion in 2022 and is set to rise to US\$ 130 billion in 2025 and US\$ 220-360 billion by 2030, according to the latest annual e-Economy Southeast Asia report by Google, **Temasek** and Bain & Co. E-commerce will be the main driver of growth, representing 68% of the growth in the digital economy in 2022-25.

The fixed line network is unable to keep up with the demand of country comprised of many islands and territories, so it is looking to expand and enhance mobile networks to support growing smartphone access to the Internet. While robust 4G networks have been established in Java, less populous islands of Sumatra and Kalimantan are now a significant focus to boost subscribers from rural areas.

The region's fast-growing digital economy requires growth in telecommunications towers. **ADIA** invested US\$ 0.5 billion to acquire a minority stake in the EdgePoint Infrastructure platform, which is acquiring, developing, and operating telecommunications towers and distributed antenna systems in Indonesia and Malaysia. Meanwhile, **OTPP** and **Mubadala** have sought to develop their exposure to data centers, with US\$ 0.5 billion invested in Singapore-based Princeton Digital Group, which has built a portfolio of 18 data centers across China, Singapore, Indonesia, and India, and serves top hyperscalers, Internet, and cloud companies.

Indonesia has emerged as the chief target market for venture capital investment in Southeast Asia, particularly for funds that are chasing bigger returns and turning away from regulatory turmoil in Chinese markets. Indonesia's startups have drawn sovereign investors into the country with around US\$ 2 billion, the majority funded by Singapore's **GIC** and **Temasek**. However, it has not been plain sailing and Indonesia's newly listed tech companies did not escape the rout that swept public markets throughout the world in 2022.

GIC, **Temasek** and SoftBank Vision Fund 1 (supported by **PIF** and **Mubadala**) were early backers of e-commerce startup GoTo. The company was formed in May 2021 from the merger of Gojek (a super app for deliveries, e-payments and video streaming) and Tokopedia (an e-commerce platform similar to Alibaba). GoTo's IPO in April 2022 raised US\$ 1.1 billion, helped along by a buoyant local bourse, in addition to the US\$ 9 billion raised from an array of institutional investors ahead of the listing. However, by the end of the year, GoTo had lost around 70% of its initial US\$ 28 billion value and had losses of US\$ 1.3 billion in the first three quarters of the year. Its post-IPO stock selloff makes it the worst performer among 11 large tech and Internet stocks.

E-commerce company Bukalapak also provides a warning of the risks of emerging market startups. Backed by **GIC** in late-stage funding rounds, by end-2022 the company's stock price was slashed by 70% from an initial valuation of US\$6 billion since its Jakarta IPO in August 2021. The travails facing GoTo and Bukalapak are not unique to Indonesia, with other Southeast Asian tech companies also seeing their valuations fall in value since going public, such as Malaysian competitor Grab – backed by **Temasek** and **Mubadala** – which lost 69% of its initial valuation of about US\$ 40 billion since its US listing in December 2021.

Nevertheless, Singaporean investors have sustained their Indonesian VC strategies, with an eye on the scale of Indonesia's potential. In May 2022, **GIC** led a US\$ 80 million Series C round for digital investment platform Bibit. In April, **Temasek** participated in a US\$ 50 million Series B funding round for logistics startup Waresix. In July, **Temasek** also supported a US\$ 25 million investment led by Carousell Group to acquire Laku6, an electronics e-commerce platform. And Vertex Ventures also participated in a US\$ 14 million seed round for Pintarnya, a one-stop digital platform for blue-collar workers to find employment opportunities in Indonesia.

Indonesian fund **INA** also dipped its toe into e-commerce, by joining Blackrock and others in backing a US\$ 300 million finance facility for online travel agent Traveloka in September. However, sovereign investors are looking beyond tech and logistics: in January, startup eFishery raised US\$ 90 million in a Series C round led by **Temasek** to fund its scaling up of aquaculture into other markets; its products include software like eFarm and eFisheryKu, which let shrimp and fish farmers monitor their operations. Such developments support Singapore's bid to bolster agtech in a bid to improve the self-sufficiency of the island economy.



Case Study #5: INA as conduit of capital

Indonesia is one of several emerging markets establishing strategic sovereign wealth funds to encourage co-investments – often with other SWFs – in critically important sectors. The Indonesian Government has been marketing the **Indonesian Investment Authority (INA)** very aggressively and has reportedly reached out to more than 100 different parties including sovereign wealth funds and public pension funds since it launched in February 2021. It is part of a new breed of “catalytic funds”, established with the aim of attracting foreign capital into the country (inbound), rather than investing national capital overseas (outbound).

The **INA** successfully closed its first US\$ 15.5 billion tranche in December 2020 with commitments from the Indonesian government, the US International Development Finance Corporation, Japan Bank for International Cooperation, **ADIA**, **APG**, and **CDPQ**. The government has set a target for the **INA** to expand its assets to US\$ 20 billion by attracting co-investors with transportation development a clear target in its sights.

Road infrastructure is a key focus for **INA** and its international partners, which signed an agreement in 2021 for a US\$ 3.75 billion infrastructure platform to invest in toll roads. In April 2022, **INA** signed two agreements to invest in toll roads on the islands of Sumatra and Java worth more than US\$ 2.7 billion. The toll-road platform falls under **INA**’s traditional infrastructure theme, along with a seaport facilities platform, which Dubai-based **DP World** committed to in October 2021; and an airports platform, which is investing in the expansion of Indonesia’s busiest airport, Soekarno-Hatta.

The **INA** is seeking to align transportation with its low carbon energy transition and launched a US\$ 2.0 billion green fund initiative, which is part of a broader government strategy to position Indonesia as a major player in the electric vehicle (EV) market. Initially, it will focus on battery development and nickel mining to create the basis for a sustainable EV industry. The fund will include investment by CMB International (CMBI) and Contemporary Amperex Technology Ltd (CATL), a leading EV battery supplier to global auto majors.

The government is already supporting rapid EV adoption through cuts in taxes and duties on EVs and imports of equipment and parts to stimulate domestic manufacturing. The battery industry fits with President Jokowi’s policy of “downstreaming industry”, seeking to add value to natural resources. Indonesia holds 22% of the world’s nickel reserves and is set to become a heavyweight in global nickel production, supplying around 50% of the world’s refined nickel by 2030, according to **INA**.

The Indonesian SWF is planning to go beyond traditional infrastructure and has defined several other key sectors for the future, including healthcare, financial services, consumer, and tech – and it is succeeding in drawing partners in these sectors. The strategy is impressing many foreign partners beyond the initial capital commitment, with 2022 concluding with the signing of an investment framework agreement between the **INA** and the Danish government’s **Investment Fund for Developing Countries (IFU)** for up to US\$ 0.5 billion in co-investments in renewable energy, water, waste management, and other circular opportunities. **IFU** and **INA** have the ambition to provide risk capital to green and sustainable projects in the range of US\$ 100 million, respectively, with co-investors making up the remainder. The agreement with the Danish fund followed the US\$ 2.8 billion investment framework agreement signed in July 2022 between the **INA** and China’s Silk Road Fund, which is backed by **SAFE** and **CIC**. Its first deals came in November with the partners investing US\$ 120 million in listed pharma company PT Kimia Farma Tbk and its PT Kimia Farma Apotek unit.

INA’s efforts to meet its ambitions have not been without problems. SoftBank’s decision in early 2022 to bail on Indonesia’s plans to build a new capital city, Nusantara, in East Kalimantan prompted the country’s sovereign wealth fund to turn to peers for investment in the US\$ 32.5 billion giga-project, but no deals were signed in 2022. **INA** is the driving force behind the project to build Nusantara, a “carbon neutral and inclusive city” which is supposed to replace Jakarta as the administrative center of the world’s fourth most populous country. However, state funds are only expected to cover 20% of the cost, with reliance placed on institutional investors and foreign sovereign wealth funds.



In March 2022, the UAE reaffirmed its commitment to the project with its US\$ 10 billion pledged investment. A portion of the funds are supposedly set to be allocated to the new capital with the rest invested in infrastructure, food security, logistics, healthcare, and the digital economy. Saudi Arabia's Crown Prince also reportedly expressed his interest in investing in Nusantara, leading to a potential capital infusion by PIF. INA is actively courting the Saudi fund to help boost the project, given the fund's own domestic mega-projects. To revive interest, in October 2022 several investment incentives for foreign investors were introduced, including a tax holiday of up to 30 years and significant tax deductions for research and development. Yet, despite all this courtship, no foreign SWF had signed on the dotted line by end-2022.

Figure 36: INA's Investors and Investment Platforms



Outlook

Indonesia's regulatory landscape in 2023 is likely to become more conducive for foreign investment and fiscal sustainability, particularly in the drive to create a greener economy with reduced reliance on coal in the power sector. Under the so-called Just Energy Transition Partnership, several governments of developed economies have pledged to provide Indonesia with US\$ 20 billion of funding for its green transition to raise the share of renewable energy in Indonesia's power mix from 11% in 2021 to 34% by the end of the decade.

However, President Jokowi's era is approaching its end with the completion of his second and final term, due to constitutional limitations. INA and the broader development of the Indonesian economy are strongly tied to his reforms and a successor may take the country in a different direction. President Jokowi has reportedly hinted that Ganjar Pranowo, the governor of Central Java, is his preferred choice as successor. The frontrunner in the opinion polls, Pranowo has previously advocated a more economic nationalist agenda which could make foreign investors more cautious about entering the market. Yet, whoever wins, there will be more policy continuity than any radical break, particularly in areas that yield net gains – and INA's role as investment gatekeeper is likely to be upheld.



8. Industry of the Year: Infra



There are many factors counting in favor of sovereign fund investment in infrastructure at a time of both heightened risk and energy transition. Infrastructure is a tangible asset which retains a residual value, making it attractive at a time of economic distress. At the same time, it provides a predictable long-term cashflow that chimes with the inter-generational horizon of state-owned investors.

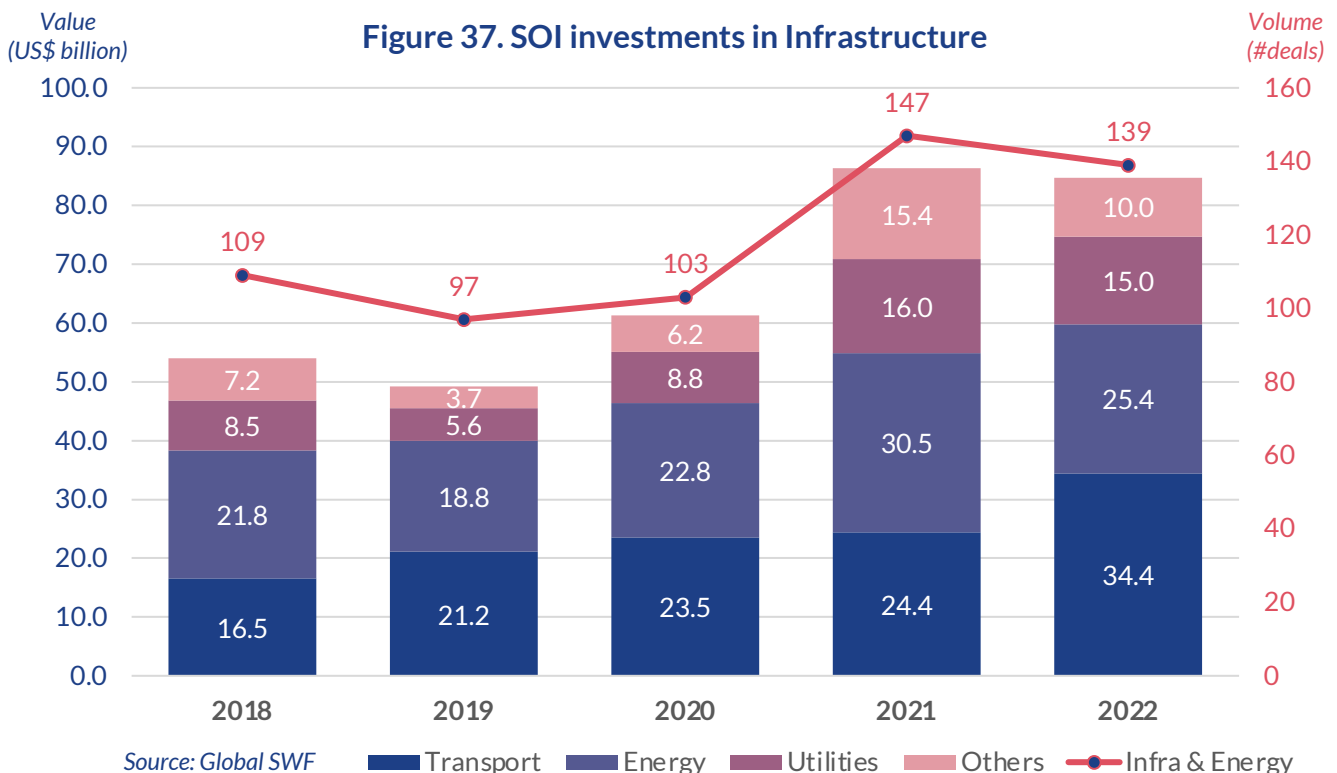
Regulated assets such as toll roads and utilities usually involve inflation-indexed increases in charges, which ensures a hedge against inflation – a particularly important factor at a time of heightened inflationary pressures. Digital infrastructure and telecommunications serve as the backbone of the digital economy, which is expanding rapidly. Meanwhile, renewables are heavily sought-after as SOIs seek to decarbonize their portfolios and achieve net zero goals, as well as taking advantage of state support for energy transition.

Infrastructure also allows state-owned investors an opportunity to add value to assets and expand portfolios. Unlike venture capital, infrastructure has a high barrier of entry that prevents competitors, giving its operators a monopolistic position in the market.

All these factors helped boost SOI infrastructure allocations in 2022, with a US\$ 10 billion increase in transportation assets up to US\$ 34.4 billion investment in 2022. This figure does not include Saudi Arabia latest carrier RIA, which is being developed by **PIF** with a staggering US\$ 30 billion of planned investment, or the transfer of Etihad Aviation Group (estimated at US\$ 2.5 billion) from the Government of Abu Dhabi to **ADQ**.

In energy, oil and gas infrastructure investment slumped while investments in renewable energy continued the strong trajectory of the past seven years. We expect these figures to keep rising significantly over the short- to medium-term as funds commit to ambitious green goals. Utilities had another strong year too, with several SOIs exchanging hands in some major assets like AusNet, TAQA and DEWA.

Lastly, sovereign investors were very active in telecom towers in both developed and emerging economies, with seven important investments during the year. The less active and staffed pension funds from North America and Europe sought exposure to the industry via external managers, committing large sums of capital to generic funds run by managers like Blackrock, Stonepeak, GIP, Macquarie, Brookfield, KKR or ISQ.





Transportation:

SOI direct investment in transportation has averaged US\$ 24.0 billion annually from 2018, but segment exposures, including maritime, air and land, change every year according to long-term potential for returns. If the pandemic demonstrated anything, it was the crucial importance of supply chains to the functioning of national and international markets, with transportation the glue that binds producers with consumers.

Interest in the aviation sector was revived in 2022 amid the lifting of lockdown restrictions as the global pandemic eased, leading to big ticket investments. Like Saudi Arabia with the new airline RIA under **PIF**, Abu Dhabi restructured the aviation sector under the auspices of **ADQ**, taking full control of Etihad Aviation Group, including Abu Dhabi Airports, Wizz Air Abu Dhabi and ADQ Aviation & Aerospace Services Company. **ADQ** also took a controlling stake in Abu Dhabi Aviation and merged the helicopter operator with its portfolio of engineering and aviation services firms creating a “globally competitive”, US\$ 2.6 billion aviation business.

The focus on aviation is not simply a strategic concern of SWFs. Sydney Airport attracted US\$ 5.2 billion from three Australian super funds – **UniSuper**, **AustralianSuper** and **Australian Retirement Trust** – as part of a US\$ 16.0 billion take-over led by GIP and IFM. Meanwhile, **CPP** increased its stake in Aéroports de Paris, which operates Charles de Gaulle, Orly and Le Bourget airports, to 5.6%, worth US\$ 0.7 billion.

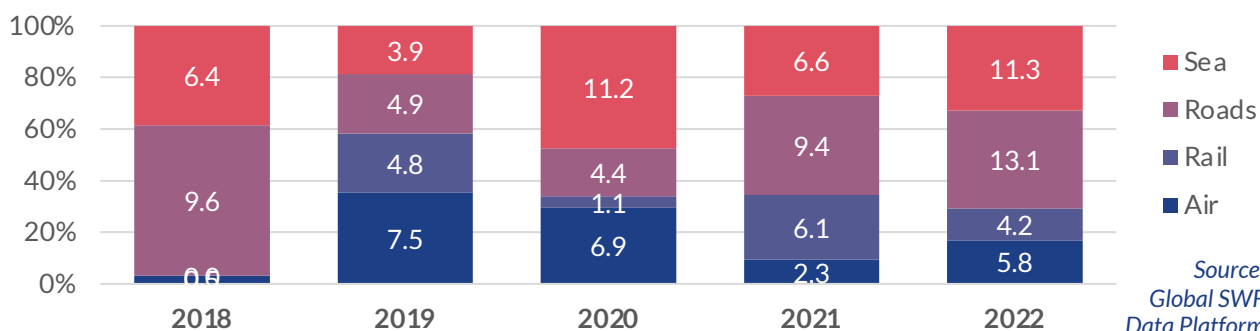
Seaports received US\$ 11.3 billion in SOI investment in 2022, most of which was invested by **CDPQ** and **GOSI** for a 32% stake in three assets in UAE owned by port operator **DP World**: Jebel Ali Port, Jebel Ali Free Zone and National Industries Park. India’s **NIIF** also forged a partnership with **DP World**, acquiring a 23% stake in Hindustan Ports Ltd (HPL) as part of the US\$ 3.0 billion platform to invest in ports, terminals, and logistics businesses in India. HPL operates five terminals across the country representing a 20% market share.

Strategic goals drove port investment in the Red Sea, with **ADQ** subsidiary Abu Dhabi Ports throwing its backing behind a new US\$ 4.0 billion port in Sudan, modelled after Jebel Ali. Further south, land-locked Ethiopia deployed its newly launched **EIH** to bolster energy security through the development of an oil storage facility in Djibouti’s Damerjog Industrial Park. Port development will continue to be a focal point for SWFs as they connect countries and regions to global markets with multiplier effects for industrial sectors.

Investment in roads continued to be dominated by emerging markets, where the sector will be a key driver of transport infrastructure development over the next decade. Indonesia’s **INA** scored the biggest investment with the toll roads on the islands of Sumatra and Java worth more than US\$ 2.7 billion. The signings are **INA**’s first steps since forming a US\$ 3.8 billion toll road fund in 2021 along with **ADIA**, **APG**, and **CDPQ**.

India has also demonstrated an enduring appeal for SOIs with a large pipeline of projects amid efforts to modernize highways and upgrade the quality of roads, and US\$ 270 billion pledged by the government over the next five years as part of the country’s National Infrastructure Pipeline. In 2022, **CPP** (46% stake) and **OMERS** (22%) invested US\$ 0.8 billion to support Indinfravit Trust take over certain toll roads from Brookfield. The manager currently holds 13 operational road concessions with about 5,000 km in five Indian states.

Figure 38: Investments in Transportation by SOIs (US\$ billion)





Energy:

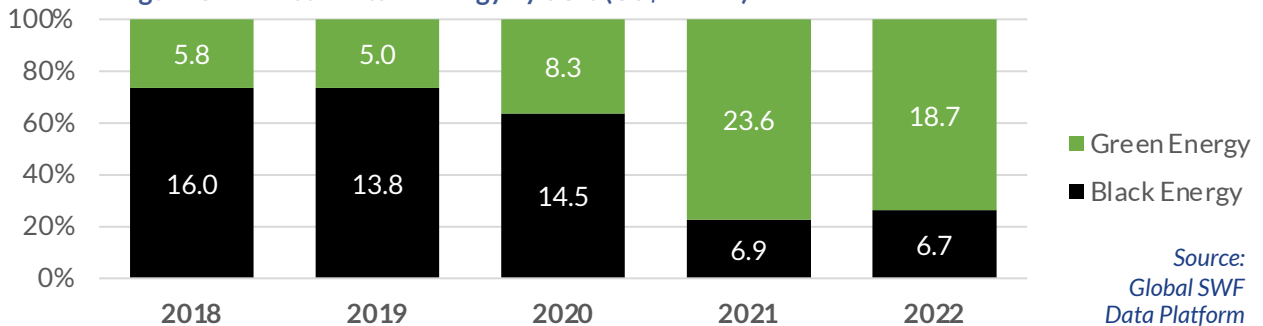
Although energy prices spiked in 2022, SOI investment in oil and gas infrastructure declined. One key reason was their commitment to sustainability, but also the growing realization that despite short-term market trends there are long-term downsides to maintaining exposures to fossil fuels. Many PPFs and some SWFs have set ambitious net zero targets and some of them adopted plans for tighter environmental sustainability policies.

Investments in finite sources of energy fell below US\$ 7.0 billion, just like 2021. The biggest deal involved the sale of a 60% stake in the UK's National Grid gas transmission and metering business to **BCI** and Macquarie for US\$ 7.6 billion. In another deal, **AIMCo** upped its stake in US business Howard Energy Partners, which owns and operates around 1,000km of natural gas pipelines. And on the mining side, **OTPP** invested US\$ 112 million in BC-based KSM, seeking inflation protection, real returns, and cash flow diversification.

The rest of the capital invested in energy went to renewable sources, which has quickly eaten a large share of the pie since the start of the pandemic. In 2022, SOI investment in renewables assets totaled US\$ 18.7 billion, slightly behind 2021 figures. SOIs increased investment in European renewables by 45% to US\$ 8.4 billion, while Developed Asia and Pacific investments more than doubled to US\$ 4.7 billion.

The largest investor in renewables was **GIC** with the year's largest investment in Australia's InterContinental Energy, which operates a portfolio of 200 GW of onshore wind and solar capacity. There were several high-profile deals in Europe, including: **CPP's** increased commitment via Renewable Power Capital; **Mubadala** and **PIF** investment in Skyborn Renewables, which operates 7 GW of capacity completed in offshore wind generation; and **GIC's** acquisition of Eneus Energy, in its pursuit to develop green ammonia projects. Dutch pension fund **APG** was very active both at home, with its acquisition of Groendus along with **OMERS**, and overseas, with its US\$ 1.2 billion investment in Gemini Solar + Storage project near Las Vegas.

Figure 39: Investments in Energy by SOIs (US\$ billion)



Utilities:

SOI investment in utilities reached US\$ 15 billion in 2022, just 7% down from 2021, and with a strong tilt towards electricity. As essential infrastructure, utilities have a captive market, but some segments offer considerable long-term growth potential particularly in emerging markets, with the digital economy and the need to align electricity transmission and supply to the development of renewables.

The largest deal of the year took place Down Under, with the US\$ 12 billion acquisition of AusNet by an array of Canadian (**HOOPP**, **IMCO**, and **PSP**) and Australian (**ART**) funds, led by Brookfield. Serving 1.5 million customers in Victoria, AusNet is a leader in electricity distribution and transmission and gas distribution. The company is looking to enable renewable generation to support Victoria state to be a net zero economy by 2050.

Another big deal came with the IPO of the Dubai Electricity and Water Authority (DEWA), which raised US\$ 6.1 billion from **ADQ**, **EIA**, and **GIC**, among others. The company is expected to capitalize on rising demand for electricity, water desalination and cooling systems as Dubai's population swells. In September, **ADQ** sold 8.6% of utility conglomerate TAQA to other local investors including Multiply Group and **ADPF**.



Others:

“Others” consisted of investments in infrastructure funds and in telecom towers. The growth of the digital economy, particularly broadband cell networks to support the need for higher bandwidth and increased connectivity, requires the development of telecommunications infrastructure and sovereign investors are at the forefront of this growth. The largest deal of the year came from **PIF**, when it bought 60% of Zain’s tower business for US\$ 0.6 billion. The transaction is set to help bolster the Saudi IT and communications ecosystem.

OMERS was also very active in this space, spending US\$ 1.3 billion in two deals in Australia: a portfolio of 428 towers and 809 rooftops from TPG, and 100% of Stilmark Group, which operates 75 towers. The Australian assets are part of **OMERS**’s growing digital infrastructure platform, which also includes Germany’s Deutsche Glasfaser and France’s XP Fibre. Other significant deals in this sub-segment in 2022 included **OTPP**’s 70% stake in Spark TowerCo NZ, **KIA**’s 10% stake in Phoenix Tower and **PIF**’s investment in American Tower.

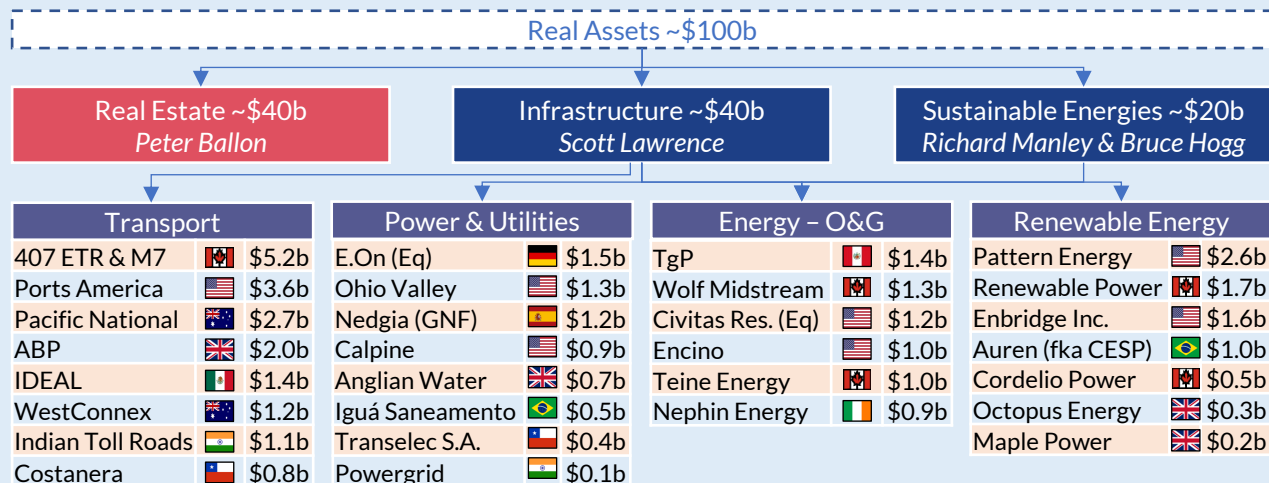
Outlook:

High inflation is driving investment into infrastructure. In the utilities sector, telcos are under pressure to shore up their balance sheets as rising interest rates increase costs, creating an incentive for disposals that could present further opportunities for acquisitions by SOIs. Similarly, in digital infrastructure, investors will be looking at businesses that align with long-term returns, technological change, and sustainability. Renewable energy is also poised to see another strong year of investment especially in Europe, which is most vulnerable to energy supply disruption and is pushing ahead with accelerated low carbon energy transition.

The main constraints to growth of the industry are cost pressures caused by inflation with material used in the renewables sector – from refined metals used in the manufacture of wind turbines to minerals used in utility-scale batteries – set to grow at a fast pace amid rapid growth in demand. The rush to ensure energy security and elevated energy prices will see more projects achieve final investment decision in 2023, presenting new opportunities for SOIs as backers. Yet, costs will be mitigated by reduced regulation and increased subsidies as governments seek to entice investors. While Europe is particularly disadvantaged, similar trends are seen in other markets, including energy-rich countries such as Saudi Arabia and Egypt where SOIs are playing a leading role in recycling fossil fuel income for solar generation.

Case Study #6: CPP Investments’ US\$ 60 billion infrastructure portfolio

Figure 40: CPP’s Infra portfolio



Source: CPP, Global SWF. It does not include stocks except for those marked with “(Eq)”
Other assets outside major categories include BAI (Comms), Viterro and Canterra (Agro)
A 33% stake in Chicago Skyway was recently sold to Atlas Arteria for 1.8x after 6 years



9. SOIs: A Diverse Village



If sovereign investors were a village of 100 inhabitants...

- 30 of them would be from North America, 18 from Asia, 17 from Europe and 9 from the Middle East.
- 57 of them would come from developed economies, and 43 of them, from emerging countries
- 26 of them would be from the USA, 4 from Australia, 2 from China and... only 1 from Abu Dhabi.
- 62 of them would be pensioners, 20 rich in commodities, and 18 rich in foreign exchange reserves.
- 62 of them would be worried about their pensions, 17 about investing at home, and 14 about their children.
- 44 of them would be well off, 33 HNWI, 11 VHNWI, 9 UHNWI and 3 of them... Musk, Bezos, and Gates!
- 18 of them would be Gen Alpha, 26 Gen Z, 14 Millennials, 12 Gen X, 13 Boomers, and 17, in their 80s / 90s.

In addition, the village would not be too environmental conscious...

- Only 33 of them would be members of the club "UNPRI", most of them pensioners.
- Only 69 of them would have passed the exam "GSR". The other 31 would have failed.

Fig. 41. Region

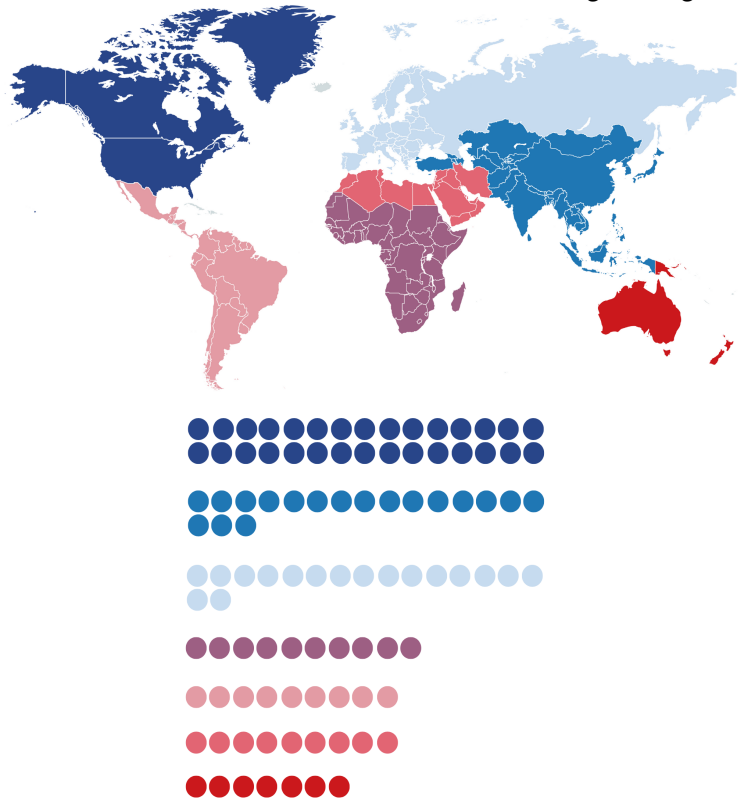
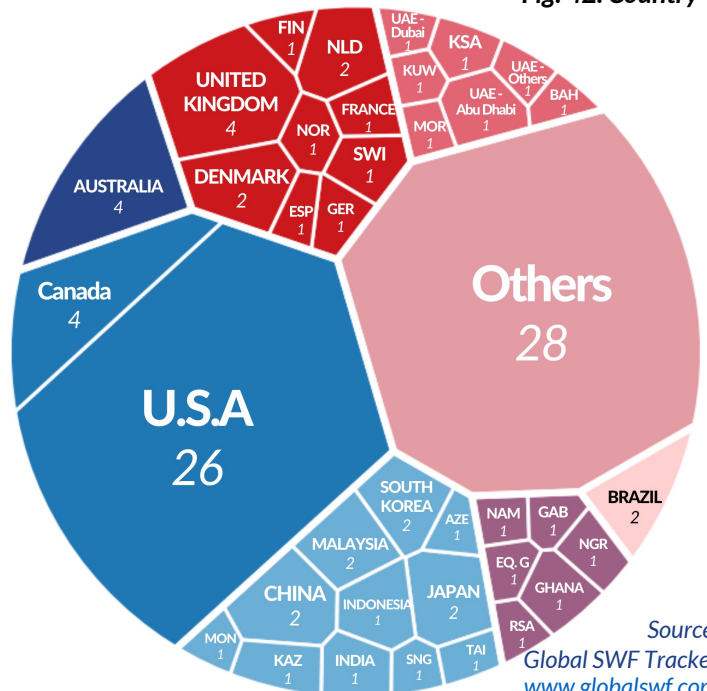


Fig. 42. Country



Source:
Global SWF Tracker
www.globalswf.com



Fig. 43. Source of Wealth

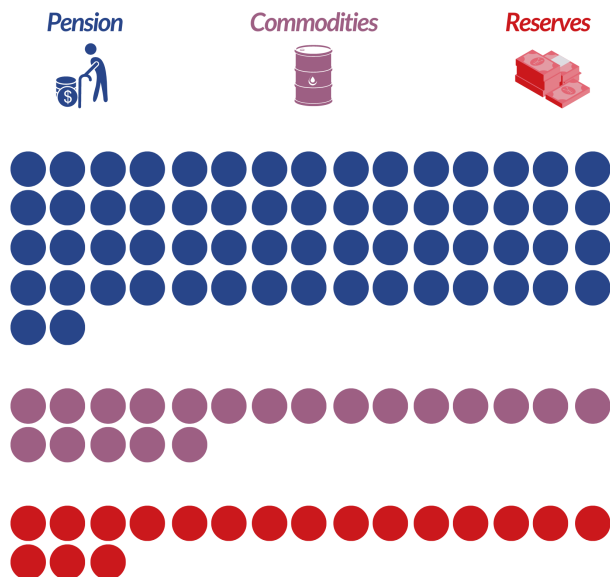


Fig. 45. Wealth Bracket

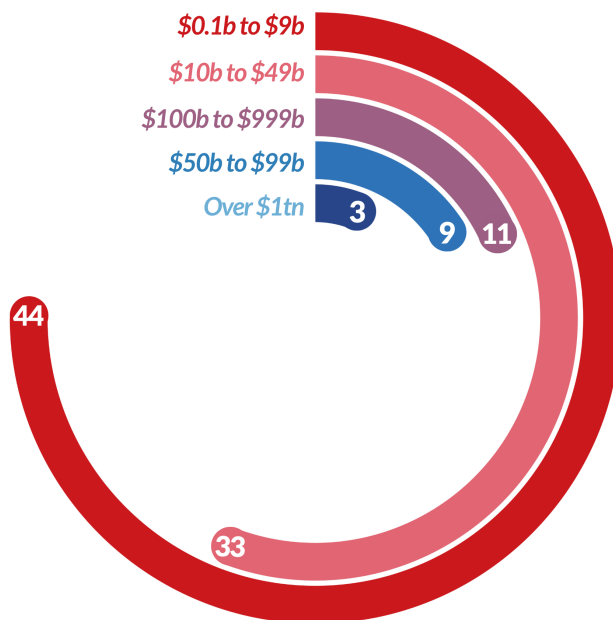


Fig. 44. Mission

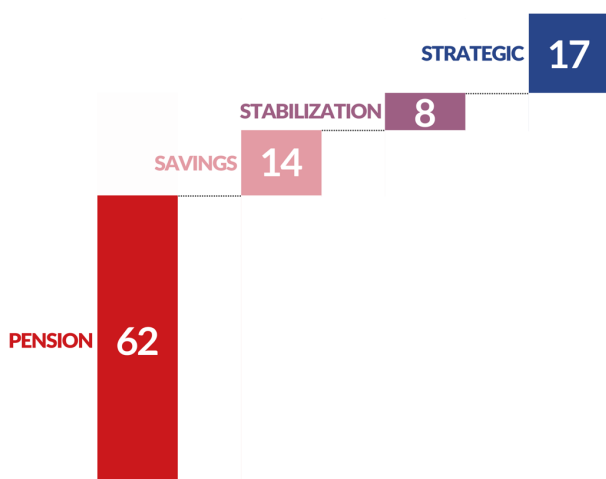
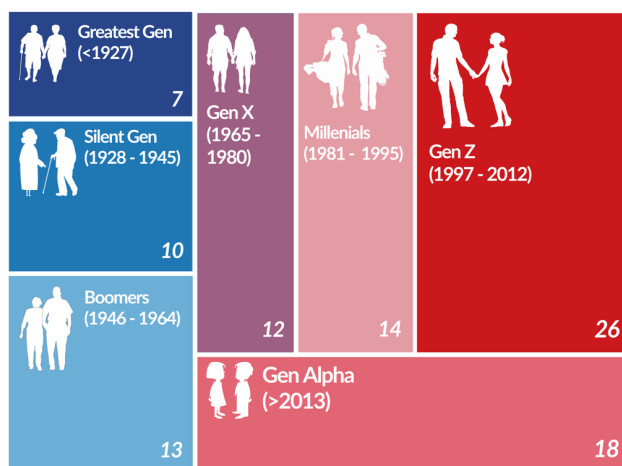


Fig. 46. Age / Generation



Source:
Global SWF Tracker
www.globalswf.com



Global SWF studies 455 State-Owned Investors (“SOIs”), including Sovereign Wealth Funds (“SWFs”) and Public Pension Funds (“PPFs”), which jointly manage US\$ 32.4 trillion in assets. SWFs are no longer defined simply as government-owned vehicles investing their capital overseas. Today the industry is highly complex, with mixed forms of legal structure, ownership and portfolios, and we define four major groups of SOIs:

- **SWF-Stabilization Funds:** this is the smallest group and yet the most intuitive. They are defined as “rainy-day funds” because they are established as a buffer mechanism that can cover fiscal deficits in times of uncertainty. For this reason, they are usually highly liquid funds that allocate on average 90% of their capital into stocks and bonds. Examples include Azerbaijan’s **SOFAZ**, Botswana’s **Pula Fund** and Chile’s **ESSF**.
- **SWF-Savings Funds:** also known as future generations funds, they face less pressure for short-term liquidity and can afford to invest more aggressively. They allocate an average of 22% to private markets, and with a combined AuM of US\$ 6.9 trillion, they represent some of the largest investors in real estate, infrastructure and private equity. Examples include Abu Dhabi’s **ADIA**, Norway’s **NBIM** and Singapore’s **GIC**.
- **SWF-Strategic Funds:** these have been the most popular choice among governments in the past decade, as they combine a financial goal with an economic mission, contributing to the domestic development. For this reason, some of them are set up without much “wealth” and seek to catalyze foreign capital and fundraise from other SOIs instead. Examples include Ireland’s **ISIF**, Malaysia’s **Khazanah** and Russia’s **RDIF**.
- **Public Pension Funds (PPFs):** PPFs have gained in significance and activity to such an extent that they are today similar in behavior to SWFs, despite the obvious differences in liability profile. Both groups keep similar strategies and asset allocations and can be seen competing for the same stakes in public auctions and private placements around the world. Examples include Canada’s **CPP**, Japan’s **GPIF** and Netherlands’ **APG**.

We are flexible in our definitions, which are driven by market interest. If we are too academic, e.g., using IMF’s definition of SWF, we risk leaving out some of the funds that we deem highly interesting, acquisitive and comparable to other SOIs, including India’s **NIIF**, Morocco’s **Ithmar Capital** or Singapore’s **Temasek**.

We also include certain Central Banks (“CBs”), for the portion that is investable, including China’s **SAFE** (Investment Company), Hong Kong’s **HKMA** (Exchange Fund), and Kazakhstan’s **NBK** (including NOF and NIC). We stopped covering **SAMA** when it changed name to SCB and adopted a less “SWF-like” strategy.

We must bear in mind that certain funds are asset managers that invest on behalf of asset owners, e.g., Australia’s **TCorp** manages a SWF (**NGF**) and several superannuation pools; Canada’s **AIMCo** manages a SWF (**AHSTF**) and different pension plans; and Netherlands’ **APG** invests on behalf of **ABP** and other pools.

Out of the 455 SOIs, we define a **Top 200** list, which can be found in Appendix 1 and allows us to focus our efforts on the 100 most active SWFs and the 100 most active PPFs. This sample serves us as a fair representation of the heterogeneous SOI universe. In 2022, we completed the additional coverage of Top 200.

Methodology:

All the data is proprietary and comes from public sources or estimated based on our knowledge and insights. Of the **Top 200**, only 10 funds do not report their AuM, including Abu Dhabi’s **ADIA**, Qatar’s **QIA** and Singapore’s **GIC**, and we maintain internal models to estimate the size based on allocation and investments.

As a policy, we do not like “n.a.” and always estimate figures based on our experience, if undeclared. We maintain a dynamic list of the funds’ allocations as well as an exhaustive list of investments and divestments – a proprietary data set that goes back to the birth of the funds. Unless indicated otherwise, our investment data refers to private markets and to certain public market activities that are sizable and long-term in nature.

Lastly, we are contemporaneous in our approach and report information the minute it happens. The present report, released on January 1, 2023, and collecting activity up to December 31, 2022, serves as a proof.



10. Organizational Matters



New and Proposed SWFs:

In the past few years, and especially since Covid-19, there has been growing debate around the role of SWFs. Some countries that have one or more existing vehicles have been assessing their use and even their mission, while governments without funds are examining whether to launch sovereign investment vehicles.

A total of 13 new SWFs were established in 2020-2022. Some like Azerbaijan's **AIH** or Ethiopia's **EIH** were conceived as umbrellas of some of their countries' most important assets. Others like Cape Verde's **FSE** and Namibia's **Welwitschia** were designed as fiscal stabilization mechanisms. A third group including Israel's **Citizens' Fund** and Australia's **Victorian Future Fund** were developed as savings tools. The latter will be invested by asset manager **VFMC** to offset the state's debt, just like Québec's and NSW's Generations Funds.

There is also an increasing trend to set up SWFs at sub-national level, especially in those federations with self-governing states or provinces including the USA, Canada, Brazil, Nigeria, UAE, Malaysia and Australia. Brazil has established four regional funds since it closed federal **FSB**, and four of the ten proposed funds at global level that we may see get established in 2023 are being proposed by devolved state governments.

The latest country to join the SWF discussion is the Philippines, following the proposal to create the **Maharlika Investment Fund**. The initial idea was for the **MIF** to be seeded with the country's two major PPFs, **GSIS** and **SSS** – however, that idea was promptly rejected. There is currently a heated debate between the ruling party and the opposition, which highlights the challenges of establishing a SWF in a democratic nation.

One of the alternative sources of wealth for SWFs is the Citizenship by Investment (CBI) programs. Several countries sell passports to individuals for a hefty sum, which are sometimes channeled to savings funds. This was pioneered by Malta's **NDSF** and by several nations in the Caribbean including Antigua & Barbuda's **NDF**, Grenada's **NTF**, Dominica's **EDF** and St Lucia's **NEF**, and may be followed by St Kitts & Nevis next year. In some other cases, the programs have triggered further corruption: tiny archipelago Comoros became the first African country to launch a similar system in 2001, and the president in charge has just been sentenced to jail.

Lastly, the Australian superannuation industry continues its consolidation. In December, **HESTA** boosted its AuM to US\$ 57 billion and its membership to 1 million following its acquisition of the smaller, 60-year-old Brisbane-based **Mercy Super**. Other deals are mergers of equals like the one that took place in February between **QSuper** and **SunSuper** in Queensland to form the US\$ 148 billion **Australian Retirement Trust (ART)**. The merger between **Hostplus** and **Maritime Super** is scheduled for September 2023.

As the definition of SWFs and State-Owned Investors becomes blurrier, we may see the pace of new vehicles arising around the world accelerate, and we may need to adjust our definitions accordingly.

Table 13. Latest SWFs to be established

SWF	HQ	Est	Type	Mission
VFF*		2022	7.0	Savings
EIH		2022	38.5	Strategic
Citizens' Fund		2022	0.3	Savings
Welwitschia		2022	0.0	Stabilization
FER-Niterói		2021	0.4	Savings
FSE, FSGIP		2020	0.1	Stabilization
AIH		2020	22.0	Strategic
FSD		2020	0.2	Strategic
INA		2020	5.5	Strategic
Mauritius IC		2020	1.0	Strategic

Table 14. Potential SWFs being discussed

SWF	HQ	Mission	Latest Update
Maharlika Investment Fund		Savings	Dec'22: Bill approved
St Kitts & Nevis SWF (CBI rev)		Savings	Dec'22: Proposed by PM, MF
Fundo Soberano Moçambique		Savings	Nov'22: Bill approved
Sarawak Future Fund		Savings	Nov'22: Bill approved
PNG Sovereign Wealth Fund		Stabilization	Nov'22: Inaugural deposit
Lagos State Wealth Fund		Savings	Oct'22: Governor signed bill
Newfoundland Future Fund		Savings	Oct'22: Proposed
Suez Canal Authority Fund		Savings	Jul'22: Cabinet approved law
Sovereign Fund Rep. Kosovo		Strategic	Apr'22: Concept document
Iraq Sovereign Wealth Fund		Savings	Jan'22: Proposed

Source: Global SWF Data Platform. * The new Victorian Future Fund will be managed by existing asset manager VFMC.



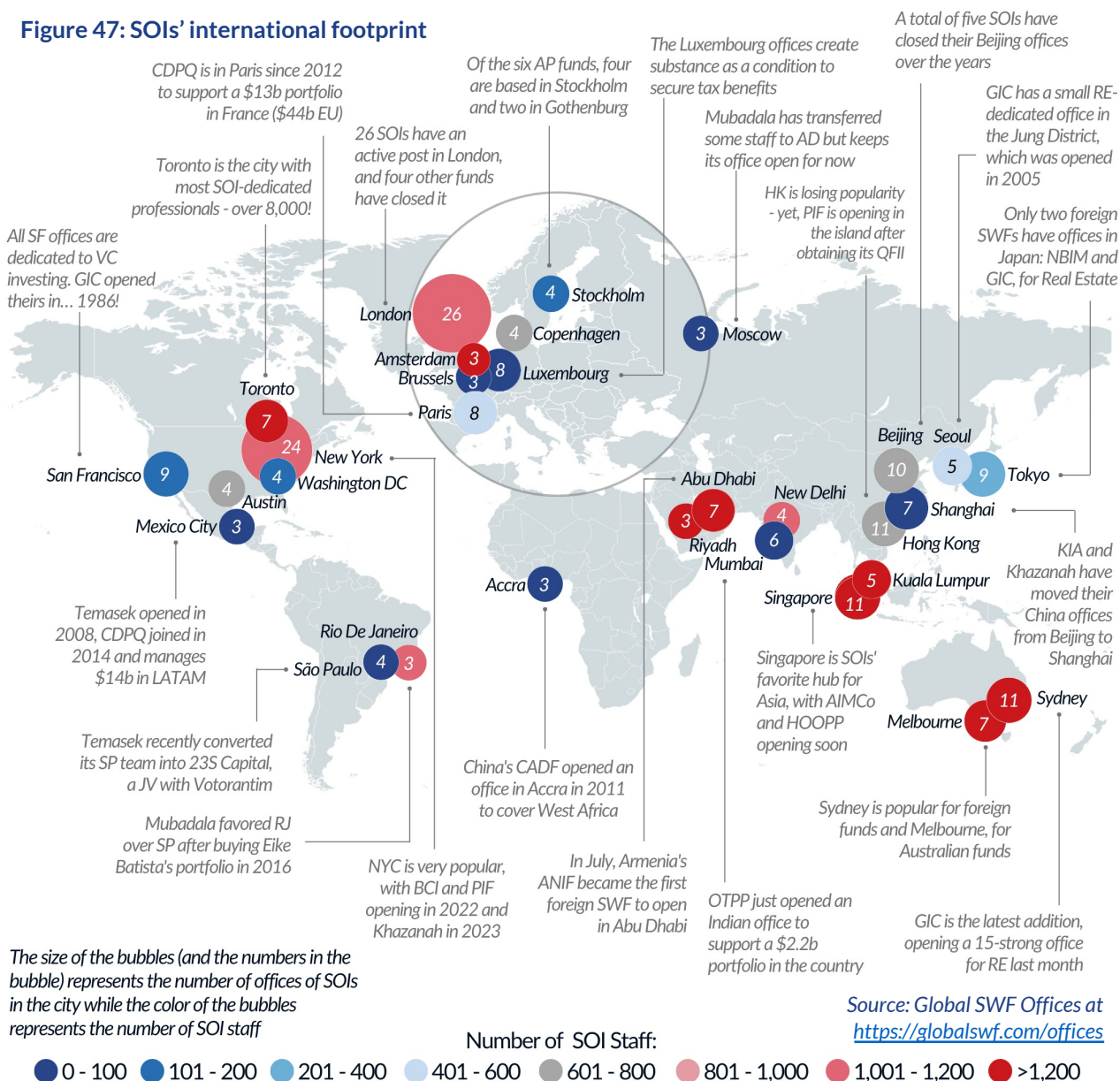
New Offices:

The foreign offices of SOIs are the reflection of the broader relationships between both countries and sheds a light on the significance of current and future investments of the fund in that particular nation or region.

In 2022, we saw the opening of 10 foreign offices, by **PIF** (New York, London, Hong Kong), **OTPP** (San Francisco, Mumbai), **GIC** (Sydney), **BCI** (New York), **CDPQ**-Ivanhoé (Sydney), **CDPQ**-Otéra (New York), and **ANIF** (Abu Dhabi). In a post-pandemic and fragmented world, SOIs are finding it easier and more important to establish roots overseas and six offices are already planned for 2023: **Temasek** will open a third European office in Paris, **PIF** may open a fourth and fifth office in Mainland China and India, **Khazanah** will move its US office from San Francisco to New York, **BCI** will open in London, and **AIMCo** will open a post in Singapore.

The Lion City is rapidly absorbing the exodus of companies and professionals from Hong Kong and has become the third most popular financial center for sovereign investors, after London and New York City.

Figure 47: SOIs' international footprint



Source: Global SWF Offices at <https://globalswf.com/offices>



New CEOs:

2022 witnessed as many changes in leadership as 2021: a total of 21 CEOs changed at the world's top sovereign investors. This represents a significant churn ratio at the top, which is not always a good thing. In the context of highly disrupted markets and economies, sovereign investors need stable leaders that can deliver.

Some of the changes were more voluntary than others. We wrote last year about **Alaska PFC** and the firing of Angela Rodell, who was finally replaced in October 2022 by Deven Mitchell, an executive with 30 years of state service and no prior investment experience. In March 2022, the CEO of Kazakhstan's **NIC** was also replaced overnight without much explanation. In 2021, the country's bigger SWF, **Samruk-Kazyna**, had witnessed a change of management and a huge restructuring that saw its personnel halved from 248 to 124.

But the biggest overhaul happened in Kuwait, where the change in Prime Minister in July accelerated changes at the country's state bodies. Saleh Al Ateeqi, the head of KIO (**KIA**'s London office) was ousted days after the appointment, highlighting the struggle between those attempting to reform **KIA** and the fund's "old guard". Two months later, the country's second largest investor, **PIFSS**, saw its highly reputed Director General and his four deputies been dismissed. The COO of the pension fund was appointed interim DG.

There were also some voluntary transitions, mostly in Europe. In Denmark, Bo Foged decided to leave **ATP** – in a perfect timing – to join Copenhagen Infrastructure Partners. In the Netherlands, Wim Hazeleger stepped down as the CEO of **APG**'s Asia-Pacific business. And in Spain, Rodrigo Madrazo left **COFIDES** to join Brussels-based development finance institution EDFI. Nine of the 21 changes were due to retirement, including **NSIA**'s Uche Orji, after 10 years at the helm, and **PSP**'s Neil Cunningham, who gave way to **CPP**'s Deb Orida.

Lastly, there was some noise in the press around India's **NIIF**, and Sujoy Bose, the fund's first chief executive, may have informed the board in September that he would step down a few years before the end of his term. Unfortunately, he will not be the only CEO that changes in 2023.

Table 15. Changes in CEOs during 2022

#	Fund	Country	Date	Outgoing	Reason	Incoming
1	WSIB		Jan-22	Theresa Whitmarsh	Retired	Allyson Tucker
2	EIH		Feb-22	n.a.	New Fund	Mamo Mihretu
3	NIC		Mar-22	Galymzhan Tajiyakov	Removed	Yermek Ospanov
4	QIC		Apr-22	Damien Frawley	Retired	Kylie Rampa
5	ADIC		May-22	Issa Al Suwaidi	Retired	Mohamed Al Dhaheri
6	NJ Dol		May-22	Corey Amon	Voluntary	Shoaib Khan
7	PSERS		Jun-22	Glen Grell	Retired	Terrill Sanchez
8	ATP		Jul-22	Bo Foged	Voluntary	Martin Praestegaard
9	FSGIP		Jul-22	n.a.	New Fund	Pedro Barros
10	KIO (KIA)		Jul-22	Saleh Al Ateeqi	Removed	Hussain Al Halabi
11	Bouwinvest		Sep-22	Dick van Hal	Retired	Mark Siezen
12	PSP		Sep-22	Neil Cunningham	Retired	Deb Orida
13	APG (Asia)		Sep-22	Wim Hazeleger	Voluntary	Thijs Aaten
14	PIFSS		Sep-22	Meshal Al-Othman	Removed	Ahmad Al Thunayan
15	NSIA		Oct-22	Uche Orji	Retired	Aminu Umar-Sadiq
16	MSBI		Oct-22	Mansco Perry III	Retired	Jill Schurtz
17	BBB		Oct-22	Catherine Lewis La Torre	Rotation	Louis Taylor
18	Alaska PFC		Oct-22	Angela Rodell	Removed	Deven Mitchell
19	COFIDES		Nov-22	Rodrigo Madrazo	Voluntary	Miguel Tiana
20	AP3		Dec-22	Kerstin Hessius	Retired	Staffan Hansén
21	London CIV		Dec-22	Mike O'Donnell	Voluntary	Dean Bowden

Source: Global SWF Data Platform



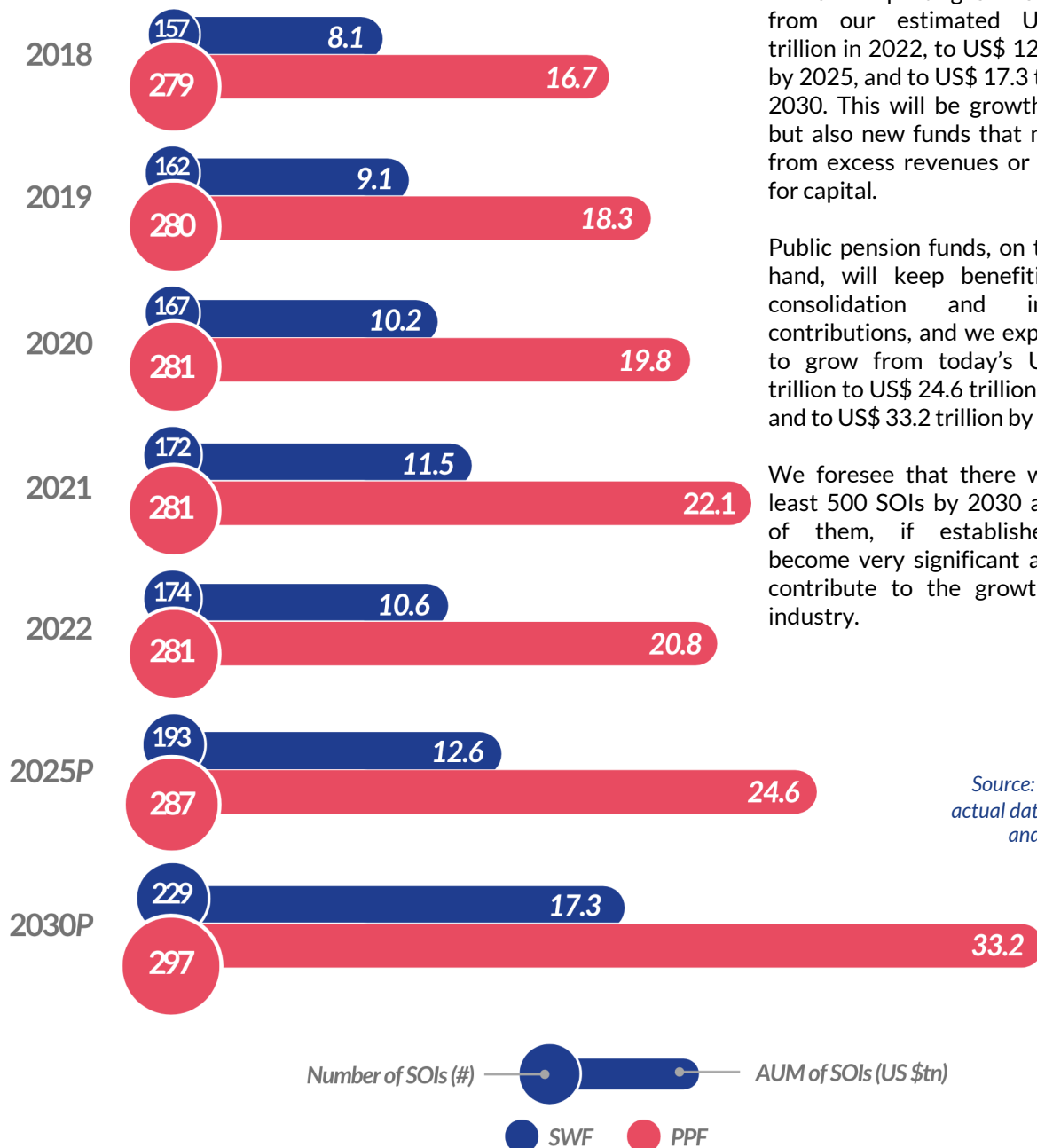
11. State-Owned Investors 2030



We first issued our prediction for 2030 in our 2021 Annual Report, expecting the industry to reach US\$ 50 trillion in AuM. Last year, we fine-tuned that figure to US\$ 53.7 trillion by 2030 given the stock rally and subsequent growth in AuM that followed last year. We are now adjusting our “crystal ball” figure slightly down to US\$ 50.5 trillion, including US\$ 17.3 trillion in SWFs and US\$ 33.2 trillion in PPFs by 2030.

This figure is based on individual projections for all the major funds. Some of them including **NBIM**, **PIF**, **APG**, **GPIF**, **NPS**, and **CPP** have been bold enough to project their balance sheets to 2025, 2030, 2050 and beyond (**GPIF** is now expecting to peak at US\$ 3.6 trillion in year 2079). For the rest, we have relied on the average growth between 2014-2022 when we believed they made sense, or our estimates otherwise.

Figure 48: Global SWF projections for SOIs 2030



We are expecting SWFs to grow from our estimated US\$ 10.6 trillion in 2022, to US\$ 12.6 trillion by 2025, and to US\$ 17.3 trillion by 2030. This will be growth in AuM but also new funds that may arise from excess revenues or the need for capital.

Public pension funds, on the other hand, will keep benefiting from consolidation and increasing contributions, and we expect them to grow from today's US\$ 20.8 trillion to US\$ 24.6 trillion by 2025, and to US\$ 33.2 trillion by 2030.

We foresee that there will be at least 500 SOIs by 2030 and some of them, if established, may become very significant and could contribute to the growth of the industry.

Source: Global SWF actual data, estimates and projections



As last year, we have paid closed attention to the latest forecasts from the IMF, issued in October 2022. The significant current account balances expected of **Germany** (US\$ 1.4 trillion), **Japan** (US\$ 0.7 trillion), **Taiwan** (US\$ 0.5 trillion) and **Switzerland** (US\$ 0.3 trillion) during the period 2022-2027, suggest that these territories could consider the establishment of their own future generations fund.

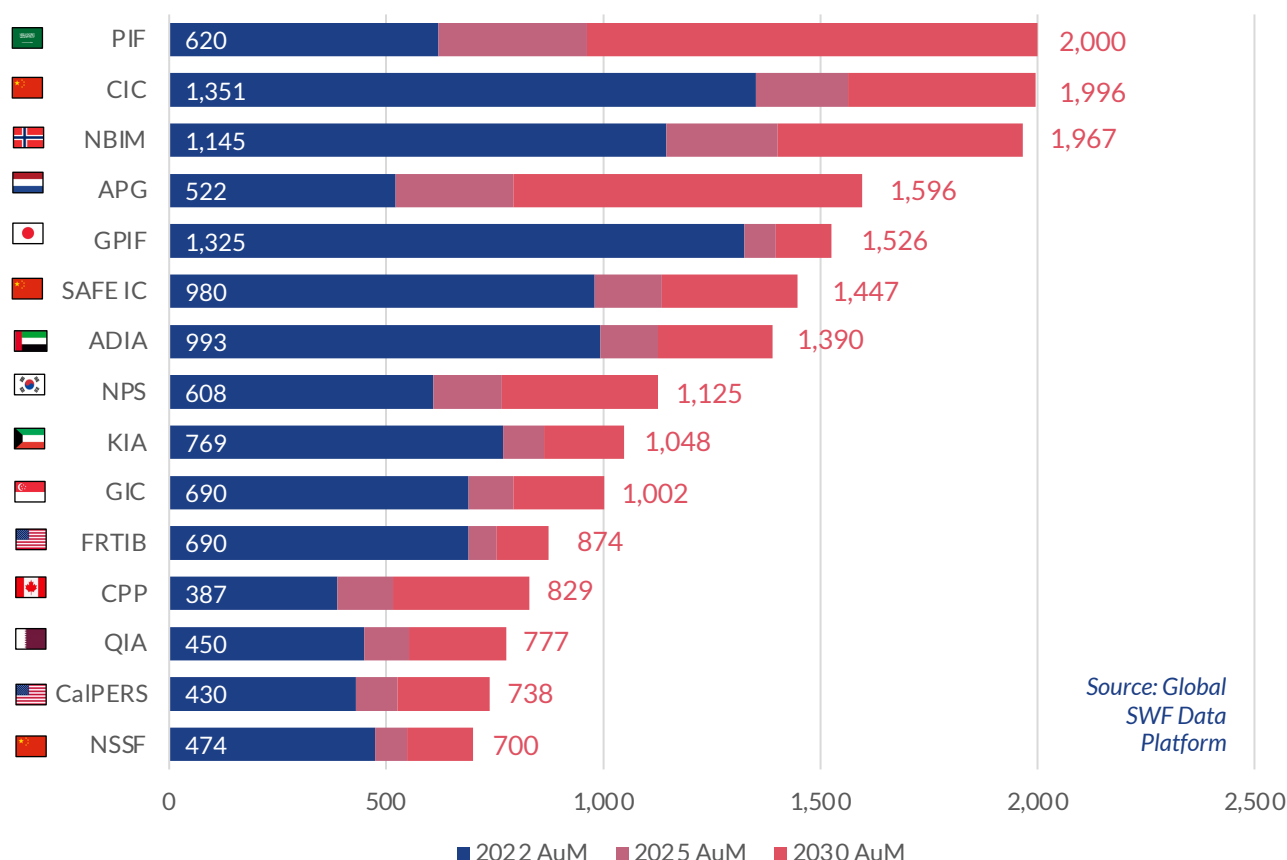
Geopolitics will play an important role in SOIs' activities. According to the WB and IMF projections, four of the top five world economies will be Asian by 2024: **China**, **India**, **Japan**, and **Indonesia**. The war in Ukraine and the tensions between US and China will determine the fate of the global political stability.

If sovereign investors continue to invest heavily in real assets and private markets, we may see new transformations and sub-segments arising in the next few years. We also expect private credit and hedge funds to gain a more significant allocation over the next few years, and some further downsizing of bonds portfolios.

Following the pandemic, strategic funds are moving from "forced investments" to "opportunistic investments", so we may see a recalibration of the balance between domestic and foreign investments. In any case, we believe domestic mandates are here to stay and most of the funds that will join the universe of SWFs will have an important role at home. This will only contribute to the blurrier line between owners and managers.

The projections of the Top 15 largest sovereign investors have been adjusted to reflect the drop in value among the most liquid funds, including **NBIM**, **GPIF**, and **FRTIB**. With a lower capital base, some of these funds will need to catch up quickly with the most diversified funds. The four largest funds in the Middle East will likely continue in the Top 15 by 2030, when Saudi Arabia's **PIF** may eventually lead the table with US\$ 2 trillion.

Figure 49. Top 15 SOIs by AuM (US\$ billion)





Appendix 1: Ranking of SWFs



#	SWF	Est.	AuM \$b	GSR'22
1	CIC	2007	1,351	68%
2	NBIM	1997	1,145	88%
3	ADIA	1967	993	56%
4	SAFE IC	1997	980	12%
5	KIA	1953	769	48%
6	GIC	1981	690	60%
7	PIF	1971	620	60%
8	HKMA EF	1993	500	88%
9	NSSF	2000	474	32%
10	QIA	2005	450	56%
11	ICD	2006	300	52%
12	Temasek	1974	298	96%
13	Mubadala	1984	284	84%
14	KIC	2005	205	84%
15	NWF	2008	187	16%
16	ADQ	2018	157	32%
17	Future Fund	2006	157	96%
18	NDFI	2011	139	52%
19	NDF	2017	93	40%
20	EIA	2007	91	20%
21	PNB	1978	81	72%
22	Alaska PFC	1976	73	68%
23	Samruk Kazyna	2008	71	72%
24	LIA	2006	68	60%
25	QIC	1991	67	64%
26	TCorp	1983	66	60%
27	UTIMCO	1876	64	68%
28	NBK (NOF+NIC)	2000	58	36%
29	Texas PSF	1854	56	68%
30	BIA	1983	55	8%
31	Bpifrance	2008	50	88%
32	VFMC	1994	50	68%
33	SOFAZ	1999	45	76%
34	Dubai World	2005	42	76%
35	OIA	2020	42	32%
36	EIH	2022	39	12%
37	New Mexico SIC	1958	37	60%
38	Dubai Holding	2004	35	36%
39	NZ Super Fund	2001	33	96%
40	Khazanah	1993	31	64%
41	FTF	2006	28	88%
42	RDIF	2011	28	28%
43	KENFO	2017	27	84%
44	WYO	1974	25	68%
45	UFRD	2006	23	20%
46	Baiterek	2014	22	60%
47	AIH	2020	22	28%
48	TVF	2017	22	44%
49	Mumtalakat	2006	19	52%
50	ND RIO	1989	17	64%

#	SWF	Est.	AuM \$b	GSR'22
51	TL PF	2005	17	44%
52	ISIF	2014	16	96%
53	SK CIC	1947	16	52%
54	ESSF+PRF	2007	14	56%
55	CDP Equity	2011	13	56%
56	CADF	2007	10	40%
57	Texas ESF	2014	10	20%
58	Solidium Oy	1991	8	52%
59	HCAP	2016	7	60%
60	FRC	1962	6	12%
61	INA	2020	6	60%
62	T&T HSF	2000	5	44%
63	FEF	1999	5	12%
64	NIIF	2015	4	72%
65	BBB IP	2014	4	68%
66	EMGL	2007	4	28%
67	COFIDES	1988	4	80%
68	KWAN	1988	3	8%
69	Pula Fund	1994	3	20%
70	Alabama	1985	3	44%
71	NSIA	2011	3	84%
72	FAE+FAEP	1995	3	40%
73	FSDEA	2012	3	80%
74	SFPI / FPIM	2006	2	52%
75	MGI	2015	2	n.a.
76	FEIP+FMPED	2000	2	36%
77	TSFE	2018	2	32%
78	SCIC	2006	2	36%
79	SAM	2008	2	28%
80	FGIS	2012	2	48%
81	Ithmar Capital	2011	2	36%
82	FAP	2012	1	84%
83	Mauritius IC	2020	1	n.a.
84	ANIF	2019	1	32%
85	GHF+GSF	2011	1	40%
86	Palestine	2003	1	48%
87	NIF	2019	0.8	12%
88	RERF	1956	0.7	40%
89	FINPRO	2015	0.4	28%
90	Citizen's Fund	2022	0.3	n.a.
91	GIIF	2016	0.3	n.a.
92	Agaciro Fund	2012	0.2	60%
93	FSD	2020	0.2	28%
94	Nauru TF	2015	0.2	64%
95	FSF	2010	0.1	0%
96	FSGIP	2021	0.1	16%
97	NRF	2019	0.1	44%
98	FHF	2019	0.1	8%
99	FONSIS	2012	0.1	56%
100	Welwitschia	2022	0.0	n.a.

Source: Global SWF Ranking <https://globalswf.com/ranking>
 Top 100 SWFs based on size, investments & market interest
 AuM refers to latest figure if available, estimation otherwise

Other SWFs 74 55
 Third-party capital - - 67
Total SWFs 174 11,358



Ranking of PPFs



#	PPF	Est.	AuM \$b	GSR'22
1	GPIF	2006	1,325	92%
2	FRTIB	1986	690	56%
3	NPS	1988	608	84%
4	APG	1922	522	92%
5	CalPERS	1932	430	84%
6	CPP	1997	387	96%
7	CPF	1955	377	52%
8	PGGM	1969	332	96%
9	CDPQ	1965	304	96%
10	CalSTRS	1913	298	92%
11	AP1-7	2001	273	92%
12	GOSI	2022	250	48%
13	NYC Compt	1920	242	68%
14	NYSCRF	1983	233	88%
15	SBA Florida	1943	218	64%
16	KWSP	1951	208	84%
17	MN	2014	207	80%
18	EPFO	1952	194	56%
19	OTPP	1917	188	92%
20	BLF	2014	188	52%
21	PSP	1999	185	88%
22	Texas TRS	1937	184	72%
23	AusSuper	2006	178	84%
24	PIC	2015	176	80%
25	CDC	1816	175	76%
26	BCI	1999	169	96%
27	UC Investments	1961	168	88%
28	AusRetirement	2022	148	76%
29	WSIB	2005	147	72%
30	MPFA	1995	143	64%
31	PIFSS	1976	137	56%
32	NYS TRS	1913	132	72%
33	AIMCo	1976	129	92%
34	Ohio PERS	1935	127	60%
35	Amitim	2011	122	40%
36	BVK	1995	122	76%
37	MSBI	1981	118	72%
38	SWIB	1951	117	72%
39	PFA	1967	113	52%
40	NCRS	1941	111	52%
41	KLP	1949	102	92%
42	Virginia RS	1942	101	60%
43	Aware	2020	100	88%
44	NPST	2008	97	52%
45	Michigan ORS	1942	95	52%
46	Oregon PERF	1946	95	64%
47	OMERS	1962	93	80%
48	MassPRIM	1983	90	48%
49	HOOPP	1960	90	84%
50	ATP	1964	89	84%

#	PPF	Est.	AuM \$b	GSR'22
51	Georgia TRS	1943	87	56%
52	Ohio STRS	1919	83	52%
53	NJ Dol	1950	82	60%
54	Chikyoren	1984	81	60%
55	NLGPS	2017	76	56%
56	Penn PSERS	1917	76	56%
57	Kokkyoren	2017	71	28%
58	UniSuper	2000	70	84%
59	LACERA	1937	68	76%
60	COPERA	1931	66	84%
61	SSO	1990	66	52%
62	Pooled Super	2021	64	72%
63	Illinois STRS	1939	62	60%
64	IMCO	2016	62	80%
65	KEVA	1988	61	84%
66	PKA	1954	61	84%
67	FGS	2008	52	36%
68	SERAMA	1959	51	8%
69	BCPP	2018	50	88%
70	JMAAPST	1971	49	32%
71	CBUS	1984	49	92%
72	PUBLICA	2001	48	68%
73	SamPension	1999	46	80%
74	HESTA	1999	46	76%
75	PREVI	1904	45	68%
76	BVK Zurich	1926	45	80%
77	PnsDanmark	1993	45	92%
78	KTCU	1971	44	80%
79	REST	1988	43	88%
80	CSC	1976	41	76%
81	BVV	1909	39	64%
82	KWAP	2007	38	56%
83	Compenswiss	1948	38	56%
84	CDG	1959	35	64%
85	ESSS / BPJS	1977	35	36%
86	GSIS	1936	30	44%
87	FDC	2004	30	92%
88	FRR	2001	29	88%
89	Taiwan PSPF	1943	26	44%
90	PMAC	1954	26	32%
91	ADPF	2000	25	28%
92	Aramco PF	2017	23	12%
93	OCERS	1945	23	56%
94	VER	1990	21	68%
95	Petros	1970	20	64%
96	OPTrust	1995	20	88%
97	Bouwinvest	2002	18	88%
98	POBA	1952	16	60%
99	GPF	1997	12	76%
100	GPSSA	1999	8	n.a.

Other PPFs *

Total PPFs

181

281

7,409

21,042

* Others include US Federal funds OASDI, MRF and CSRDf

Source: Global SWF Ranking <https://globalswf.com/ranking>
Top 100 PPFs based on size, investments & market interest
AuM refers to latest figure if available, estimation otherwise

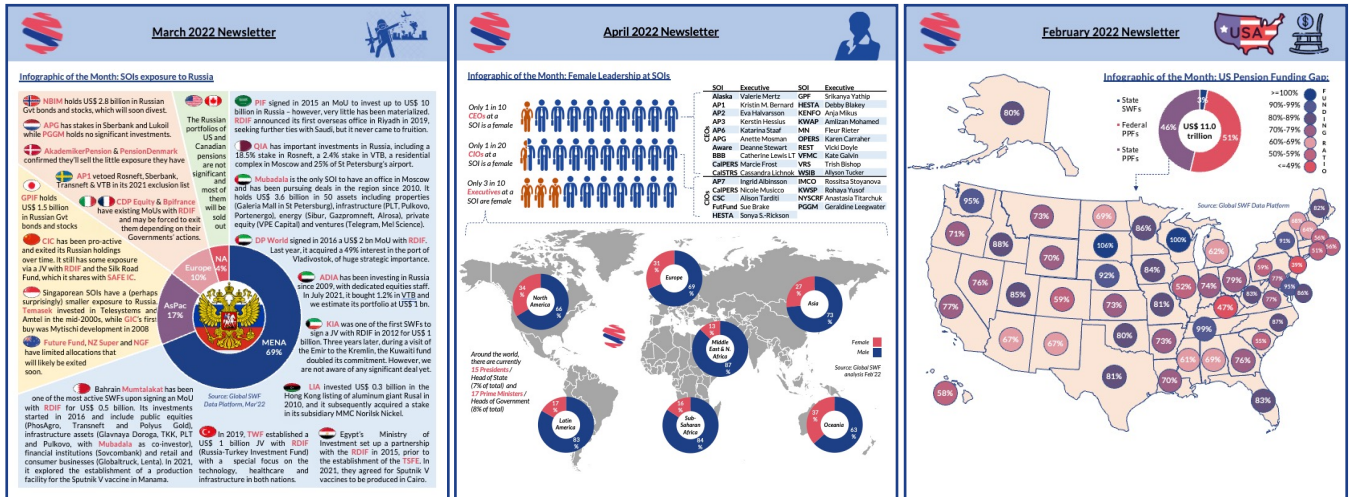
Appendix 2: Summary of 2022



Breakthroughs:

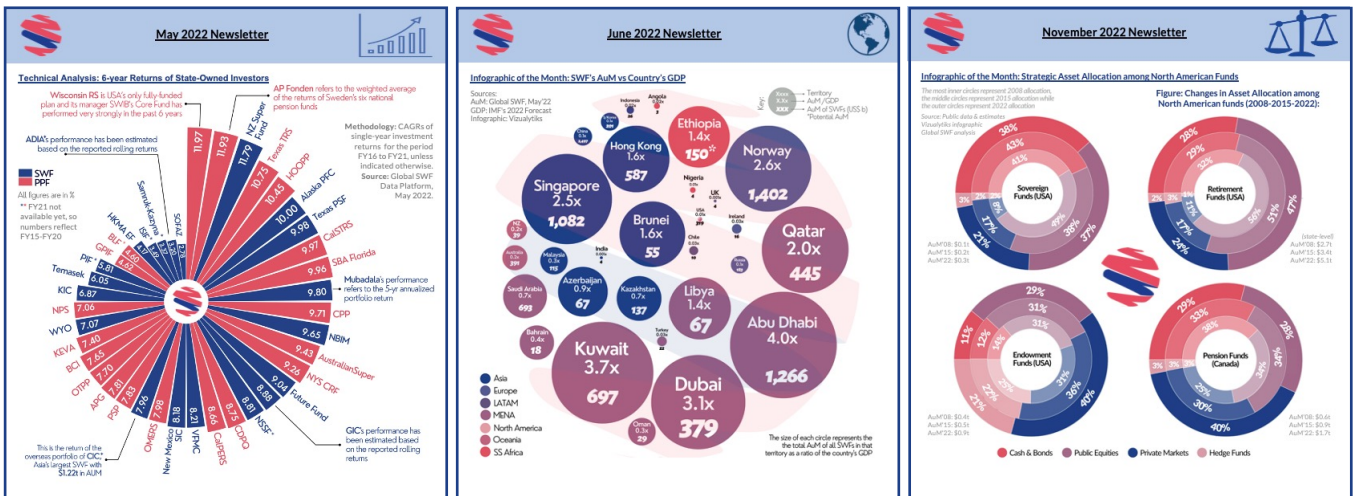
We had a busy 2022 and have tried and stayed on top of all news. Our monthly newsletters are sent on the first day of the month to our clients and asset owners around the world to keep them updated. For example, we reported on all Russian holdings held by sovereign investors on March 1, a week after the military invasion began; we issued a special analysis on female leadership across the industry on April 1, weeks after Women's Day; and we circulated the new funding ratios of pension plans across America on February 1.

We also reported on what we saw on the ground during our various roadshows, in the Middle East (Riyadh, Abu Dhabi, Doha and Tehran) on June 1; and in Southeast Asia (Singapore, KL, Jakarta) on October 1.



Technical Analyses:

Beyond covering the news, our mission is to produce in-depth research that can be easily digested by our readers. On May 1, we issued our annual update of 6-year average returns of SOIs; on June 1, we talked about the ideal size for a SWF and its relationship with the country's GDP; on September 1, we analyzed the alpha achieved by sovereign investors across different asset classes; and on November 1, we tracked the changes in investment preferences by North American funds (SWFs, PPFs, EFs) in the past 15 years.





Interviews:

Lastly, we would not be doing our job right if we were not talking to the funds themselves. Throughout the year, we have had *in-person* private sessions with **ADIA, ADIC, ADQ, Mubadala, EIA, ICD, PIF, QIA, LIA, TWF, FAP, FSDEA, GIC, Temasek, Khazanah, KWAP**, and met representatives of **BCI, OMERS, FGRF, Mumtalakat, SAFE**, and **Future Fund** at various events. It was definitely a refreshing year after 2020 and 2021.

In addition, we kept our tradition of issuing an interview with an executive of a fund once a month. We have interviewed CEOs and CIOs of seven different sovereign wealth funds and five different public pension funds across all regions: North America (**CPP, CalPERS**), Europe (**COFIDES, Growthfund**), Middle East (**Mubadala, PIFSS-Wafra, KIA, NDFI**), Africa (**EIH**), Central Asia (**ANIF**) and Australia (**VFMC, AusSuper**). We also published an update of a Latin American fund, **FAP**, after a session with their Board on Sept 30 in Panama.

We look forward to many more meetings and interviews in 2023, and to tell you all about them.

2021 Fund of the Year:
Mubadala Investment Co.
of Abu Dhabi, UAE

MUBADALA

Offered to **Ahmed Saeed Al Cailey**,
Chief Strategy & Risk Officer

"For its significant contribution to the development of Abu Dhabi and the UAE, for its leadership in pursuing global partnerships, for its unparalleled investment and divestment activity displayed throughout the year, and, in general, for its contribution to the advancement of the SWF industry, Global SWF believes that **Mubadala Investment Company** is a worthy recipient of the 2021 Fund of the Year award."

Diego López, MD of Global SWF




Global SWF's Fund of the Month: Wafra Inc. / Capital Constellation

Wafra
Capital Constellation

"Capital Constellation is a novel departure from traditional asset managers that intermediate capital from the underlying assets. We now have 13 GPs with a range of products, including Industrials, Renewables, Telecom, Healthcare, FinTech, Financials and Credit. Our orientation is towards specialists and new economy sectors where we believe our asset owners will have an increasing appetite in the decade ahead and where we can solve shared objectives together."

Mr. Daniel Adamson, SMD of Wafra Inc. and President of Capital Constellation



Global SWF's Fund of the Month: California State Teachers' Retirement System

CALSTRS

"The next frontier for CalSTRS is to shape our 'Collaborative Model 2.0,' which includes:

- Leveraging our existing relationships and becoming their global partner of choice.
- Exploiting our 'one-fund advantage' across all asset classes.
- Capitalizing on scale to capture more across the value chain.

We would like to become a very strategic investor; pursuing returns is important but so is how we get there and preserving our shared values."

Mr. Scott Chan, Deputy CIO of California State Teachers' Retirement System (CalSTRS)



Global SWF's Fund of the Month: Kuwait Investment Authority

الهيئة العامة للاستثمار KUIA

"My rise to leadership took me 25 years and required a lot of hard work, but I always felt supported by my organization. It is important to have women around and a good balance. I don't think there is a glass ceiling and I always aspire for more. My advice to young women aspiring to become the next generation of SWF leaders would be:

- Work hard;
- Don't let anybody tell you can't do it;
- Believe in yourself; and
- You will succeed!"

Ms. Aliah Al-Tameemi, ED of Alternatives at the Kuwait Investment Authority (KIA)



Global SWF's Fund of the Month: Victorian Funds Management Corp. (VFMC)

VFMC
Victoria's investment specialist

"It is always hard to predict exogenous shocks, but we draw on our key levers that enable us to respond in an appropriate manner:

- Strategic asset allocation, which provides portfolio diversification within our risk parameters;
- Cycle-aware asset allocation, which allows episodic adjustments with a 3-5 year timeframe to improve risk-adjusted returns; and
- Dynamic asset allocation, which is designed to identify short-term opportunities or risks.

For example, in the current environment, we are looking at how current persistent inflation and geopolitical developments may impact global growth and markets."

Ms. Kate Galvin, CEO of the Victorian Funds Management Corporation (VFMC)



Global SWF's Fund of the Month: Ethiopian Investment Holdings (EIH)

ETHIOPIAN INVESTMENT HOLDINGS

"EIH is the strategic investment arm of the Government of Ethiopia with three different mandates:

- Pursuing the national development plan and the creation of wealth for current and future generations.
- Changing the narrative around investment in Africa by becoming a world-class partner that de-risks investment.
- Unlocking the commercial value of tangible and intangible assets by providing professional oversight and leveraging international best practices.

We have looked at several strategic funds worldwide as role models, including Temasek and Khazanah."

Mr. Mamo Mihretu and Ms. Bilen Mamo, CEO and Deputy CEO of the EIH



GSR Scoreboard 2022 Leader: CPP Investments

CPP Investments

"We spend most of our time ensuring our portfolio is diverse in terms of asset classes and regions and is sustainable in the long term. During COVID-19, we managed to strengthen our crisis management governance, which will allow us to even better respond to future, similar market shocks."

Going forward, we will continue to tackle climate change across three dimensions: transition, fiscal and innovation risk."

Mr. Ed Cass, CPP Investments' SMD and Chief Investment Officer (CIO)




Global SWF's Fund of the Month: National Development Fund of Iran (NDFI)

NDFI

"Oil revenues must not be used for the budget but rather turned into a more valuable capital asset. After COVID-19, the board decided to amend the regulations and to clarify which domestic investments the fund could pursue to create more wealth and GDP growth."

Additionally, one of our main objectives is to expand international ties and to pursue agreements with other SWFs and related forums to advance NDFI's goals. Our Foreign Investment and International Relations Department has developed by-law for foreign investment and is negotiating with related organizations, forums, and SWFs with some promising progress."

Dr. Mehdi Ghazanfari, Chairman of the National Development Fund of Iran (NDFI)



Global SWF's Fund of the Month: Spain's COFIDES

COFIDES
We invest in development


"For the past year, we have invested almost **US\$ 1 billion** in 89 different companies affected by Covid-19 through our fund **FONREC**, which goes to show our versatility."

In 2022, we are expecting COFIDES to **multiply its capacity by five**, by investing **US\$ 1 billion** in over 140 different deals."

In the coming years, COFIDES will become a truly green financial entity through the pursuit of three ambitious goals:

- Carbon footprint reduction and net zero emissions
- COFIDES Impact Program
- 30% of new projects to be climate investments"

Dr. Rodrigo Madrazo García de Lomana, Director-General of COFIDES



Global SWF's Fund of the Month: AustralianSuper

AustralianSuper

"We are taking three steps that will help us grow organically:

- increasing the internationalization of certain strategic areas
- pursuing more investments overseas, and
- allocating more capital to private markets.

As an Australian investor, we are naturally exposed to China, India and Asia more broadly, so we may look at other regions that are further from us, like Latin America. We also had a small delegation going to Jakarta two weeks ago and we may further explore if Indonesia might be of interest. In terms of offices, we aim to grow our New York and London to 100 and 150 staff, respectively."

Damian Moloney, Head of Investments, International at AustralianSuper



Global SWF's Fund of the Month: Growthfund (HCAP)

GROWTHFUND
THE NATIONAL FUND OF GREECE

"We aim at increasing the value to state assets, which will spill over into the economy to the benefit of society at large."

In this context, we will, by 2024:

- invest €50 million in the Greek economy,
- contribute €85 million to the Public Investment Program,
- increase our net asset value by 15%,
- stabilize overall Group profitability by 30%+, and
- improve dividend payouts by 60%.

"We want to maximize Greece's wealth with long-term returns and to build a relationship of trust with the citizens."

Gregory D. Dimitriadis, Chief Executive Officer of the Growthfund



Global SWF's Fund of the Month: ANIF

ANIF
ARMENIAN NATIONAL INTERESTS FUND


"We are looking for any asset that will have a decarbonization effect and broader positive ESG impact in our country, including but not limited to waste treatment."

The deal with Masdar for the construction of a 200MW solar plant in Armenia was very important because:

- It is the largest renewable project in Armenia producing just under 7% of the country's electricity;
- It has attracted a prime name into the country, and we are learning from their significant expertise; and
- we closed a great deal with a price of only \$2.9 cents/KW.

We think about our impact constantly and our first impact report covering "ESG-F" will be published on December 12."

David Papazian, Chief Executive Officer of the Armenian National Interests Fund (ANIF)





Appendix 3: Top 50 SOIs Series



Throughout 2022, we published a ranking of Top 50 sovereign investors in each of the major asset classes they invest in: Fixed Income & Treasuries (FIT), Public Equities (Eq), Real Estate (RE), Infrastructure (Infra), Private Equity (PE) and Hedge Funds (HF), and the sub-sets Venture Capital (VC) and Private Credit (PC).

The reason is that there is a variety of rankings out there we do not necessarily agree with, in terms of methodology, criteria or just estimates. For example, not many outlets list **NBIM** as the world's largest Sovereign Investor in Real Estate, even though they own almost US\$ 100 billion in the industry – whether public or private. Each of the tables includes a column for notes to specify what is considered and what is not.

We can consolidate all figures into the table below, breaking down SWFs and PPFs, per major region and asset class. Venture Capital and Private Credit are listed but not included in the totals as they are normally included in the PE and/or FIT allocations.

The resulting average allocations are quite different for both classes of investors: SWFs invest on average 74% in liquid markets and 26% in unlisted real assets and private equity; while PPFs invest 82% in liquid markets and only 18% in private markets. The figures for the pension funds have been adjusted to exclude the federal pension funds in the US, which manage US\$ 5 trillion but are only allowed to invest in Treasuries by law.

This year has represented a great dislocation in asset allocation due to the fall in prices of both stocks and bonds, and we will keep monitoring how these figures change in the years to come.

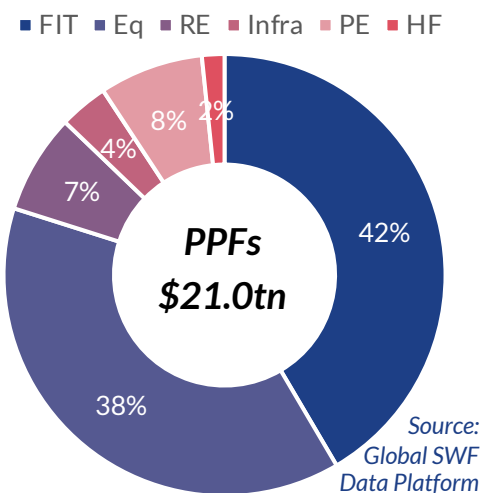
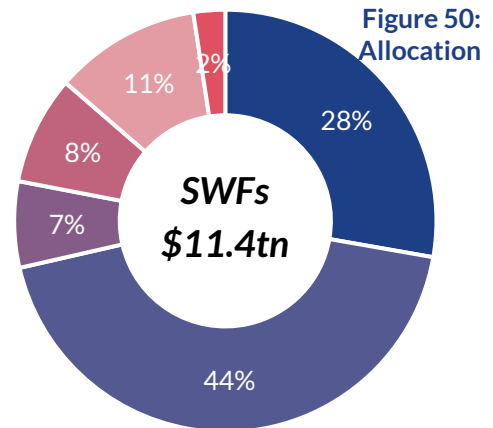


Table 18. Distribution of SOIs' investments by region and asset class

US\$ trillion	FIT	Eq	RE	Infra	PE	HF	Total	VC	PC
Asia-Pacific	1.8	2.3	0.3	0.3	0.5	0.1	5.3	0.0	0.0
Middle East	0.8	1.7	0.4	0.5	0.6	0.1	4.1	0.1	0.0
Europe	0.4	0.8	0.1	0.1	0.1	0.0	1.5	0.0	0.0
Rest of World	0.1	0.1	0.0	0.0	0.1	0.0	0.4	0.0	0.0
SWFs	3.2	5.0	0.7	0.9	1.3	0.3	11.4	0.1	0.1
%	28%	44%	7%	8%	11%	2%			
US\$ trillion	FIT	Eq	RE	Infra	PE	HF	Total	VC	PC
North America	7.5	2.8	0.6	0.3	0.9	0.2	12.2	0.0	0.2
Asia-Pacific	2.5	2.0	0.2	0.1	0.1	0.0	4.8	0.0	0.0
Europe	1.2	1.1	0.3	0.1	0.2	0.0	2.9	0.0	0.0
Rest of World	0.5	0.3	0.1	0.0	0.1	0.0	1.1	0.0	0.0
PPFs	11.7	6.1	1.2	0.6	1.2	0.3	21.0	0.0	0.2
adjusted* %	42%	38%	7%	4%	8%	2%			
US\$ trillion	FIT	Eq	RE	Infra	PE	HF	Total	VC	PC
SOIs	14.8	11.1	1.9	1.5	2.5	0.5	32.4	0.2	0.3
adjusted* %	36%	41%	7%	6%	9%	2%			

Source: Global SWF Data Platform. * Adjusted to exclude US federal funds OASDI, MRF and CSRDF, which only invest in Treasuries.



Top 50 SOIs in Fixed Income (FIT)



Rank	Fund	HQ	Reg	Type	AuM \$b	FIT %	FIT \$b	Domestic	Description
1	GPIF		AS	PPF	1,413	51%	726	50%	\$180b in US Treasuries and bonds
2	HKMA EF		AS	SWF	576	73%	422	45%	\$232b in debt securities outside HK
3	CPF		AS	PPF	381	100%	380	100%	Mostly SSGS and \$1b corporate bonds
4	SAFE IC		AS	SWF	980	34%	331	0%	Debt securities in the External Portfolio
5	FRTIB		NA	PPF	827	39%	323	100%	\$286b in US Govs, rest in Debt Index
6	NPS		AS	PPF	707	42%	300	80%	80% KR (86% int), 20% Foreign (47% int)
7	NBIM		EU	SWF	1180	25%	300	0%	73% Gvt / 27% Corporate. 39% in USA
8	GIC		AS	SWF	690	43%	297	0%	6% ILB, rest in nominal bonds and cash
9	APG		EU	PPF	720	40%	288	4%	\$143b Treasuries, \$105b Credit
10	NSSF		AS	SWF	474	47%	223	91%	34% internally managed, 66% external
11	KIA		ME	SWF	769	28%	212	5%	Estimated: 50% of GRF and 25% of FGF
12	ADIA		ME	SWF	829	25%	208	0%	Internal, External & Treasuries Liquidity
13	EPFO		AS	PPF	215	85%	182	100%	Increasing weight in ETFs
14	PGGM		EU	PPF	332	38%	126	24%	\$80b Gvt, \$20b Corp, \$26b Treasuries
15	NWF		EU	SWF	178	70%	125	83%	Deposits in VEB & foreign debt securities
16	GOSI		ME	PPF	250	50%	125	85%	Estimated based on GOSI & PPA merger
17	CDC		EU	PPF	181	68%	122	100%	Excluding La Poste, Bpifrance, SFIL
18	KWSP		NA	PPF	242	50%	121	64%	\$109b MY Govs, loans, bonds; \$12b cash
19	PIF		ME	SWF	620	19%	118	69%	Heritage pre-2015, plus Private Credit
20	CalPERS		NA	PPF	440	27%	118	75%	Long Spread, Treasury and High Yield
21	CDPQ		NA	PPF	304	31%	94.1	34%	2/3 Credit, 1/3 Rates incl Otéra (RE Debt)
22	CPP		NA	PPF	406	23%	93.4	16%	\$65b credit incl. Antares, \$28b bonds
23	BLF		AS	PPF	195	45%	87.3	63%	\$35b cash, \$19b domestic, \$33b foreign
24	ATP		EU	PPF	144	60%	87.0	56%	Mostly DE & DK bonds, incl. Green bonds
25	KIC		AS	SWF	205	42%	86.1	0%	\$72b fixed income, \$14b ILB, hybrid, cash
26	CIC		AS	SWF	1303	6%	81.0	67%	\$48b Gvt, \$17b Corporate, \$9b Cash
27	MN		EU	PPF	207	40%	83.0	50%	On behalf of pension funds PMT and PME
28	QIA		ME	SWF	445	17%	74.2	29%	Estimated - cash, Govt and IG / HY bonds
29	NYSCRF		NA	PPF	246	28%	69.0	90%	23% fixed income, 4% credit, 1% cash
30	AP1-7		EU	PPF	314	22%	67.8	25%	\$17b AP3-4, \$14b AP2, \$10b AP1-7
31	Amitim		ME	PPF	122	55%	67.3	100%	50% portfolio is Israel government bonds
32	PIC		AF	PPF	176	38%	67.3	97%	\$56b ZA bonds, \$2b int bonds, \$9b cash
33	NYC Compt		NA	PPF	242	27%	65.5	95%	\$63.5b fixed income, \$2b cash, most US
34	NPST		AS	PPF	94	65%	61.0	100%	Estimated based on public figures
35	KLP		EU	PPF	102	58%	59.3	10%	Estimated based on public figures
36	SSO		AS	PPF	71	80%	56.9	93%	Estimated based on public figures
37	PSP		NA	PPF	185	30%	54.8	33%	\$37.3b Gvt bonds, \$17.5b credit
38	PFA		AS	PPF	113	47%	53.0	58%	45.4% bonds, 1.7% liquidity
39	NCRS		NA	PPF	111	46%	51.3	75%	\$30b IG bonds, \$14b cash, \$7b Opp FI
40	Chikyoren		AS	PPF	96	52%	50.3	50%	In line with GPIF's investment strategy
41	WSIB		NA	PPF	182	27%	48.7	60%	\$46.5b fixed income, \$2.2b cash
42	MPFA		AS	PPF	143	34%	48.7	58%	Estimated based on public figures
43	BCI		NA	PPF	169	29%	48.6	41%	1/5 Gvt, 1/5 Corporate, 10% cash
44	Future Fund		OC	SWF	167	29%	47.6	20%	\$34b Cash (21% fund), 8% debt securities
45	NBK		AS	SWF	58	81%	47.0	5%	Mostly at National Fund level
46	Texas TRS		NA	PPF	202	16%	42.4	75%	\$33.6b fixed income, \$8.8b cash
47	SBA Florida		NA	PPF	230	19%	42.8	75%	\$39.6b fixed income, \$3.2b cash
48	CalSTRS		NA	PPF	289	14%	40.4	67%	Fixed income, inflation sensitive, cash
49	AIMCo		NA	PPF	108	35%	37.9	34%	26% of balance funds, 81% of Gvt funds
50	SOFAZ		AS	SWF	45	76%	34.8	25%	62% fixed income, cash, 14% gold

Source: Global SWF, November 2022 Newsletter



Top 50 SOIs in Listed Equities (Eq)



Rank	Fund	HQ	Reg	Type	AuM \$b	Eq %	Eq \$b	Domestic	Description
1	CIC		AS	SWF	1,351	67%	909	82%	Mostly Chinese listed banks (\$741b)
2	NBIM		EU	SWF	1,145	72%	824	0%	\$450b in US Equities, \$207b in Tech
3	GPIF		AS	PPF	1,325	50%	669	50%	\$401b in JP, \$251b in US Equities
4	FRTIB		NA	PPF	822	55%	452	93%	Funds C (S&P), S (small cap), I (intl)
5	SAFE IC		AS	SWF	980	45%	441	74%	Stakes in local banks, rest overseas
6	ADIA		ME	SWF	829	51%	420	0%	All overseas: indexed, internal, external
7	KIA		ME	SWF	769	49%	376	25%	Both domestic (GRF), overseas (FGF)
8	PIF		ME	SWF	620	45%	279	71%	Telecom (36%), RE (24%), FS (23%)
9	NPS		AS	PPF	687	40%	276	36%	\$99b in Korean, \$115b in US Equities
10	APG		EU	PPF	720	37%	266	4%	\$200b in Developed Markets, rest EM
11	GIC		AS	SWF	690	30%	207	0%	Half Developed Markets, Half EM
12	CalPERS		NA	PPF	430	48%	205	75%	\$34b in Californian listed companies
13	QIA		ME	SWF	445	42%	189	29%	\$56b in local banks, mostly QNB
14	AP1-7		EU	PPF	314	59%	186	25%	\$77b in AP7 (55% US), rest AP1-4
15	NSSF		AS	SWF	474	39%	185	91%	Holdings in China's Big 4 just like Huijin
16	PGGM		EU	PPF	332	37%	124	24%	\$103b in equities, \$20b in listed RE
17	CalSTRS		NA	PPF	298	38%	113	58%	\$65b in the US, \$7b JP, \$4b UK, CA
18	SBA Florida		NA	PPF	230	49%	113	75%	49% Active, and 52% Internal Mgmt
19	NYS CRF		NA	PPF	233	47%	110	68%	\$75b in US equities, rest intl equities
20	CPP		NA	PPF	387	27%	104	16%	TFM: balancing portfolio global securities
21	Temasek		AS	SWF	298	34%	101	27%	Includes key SG assets: ST, SIA, DBS
22	PIC		AF	PPF	175	57%	99	88%	80% internally managed, 10% of JSE
23	NYC Compt		NA	PPF	228	43%	97	81%	Mostly TRS, ERS, NYPD and NYFD
24	AusSuper		OC	PPF	178	55%	97	40%	Domestic & intl shares across options
25	MN		EU	PPF	207	45%	93	50%	Estimated allocation based on comps
26	MPFA		AS	PPF	143	65%	93	50%	\$47b HK, \$19b Asia, \$20b NA, \$9b EU
27	ART		OC	PPF	168	55%	93	50%	Estimated based on Balanced Option
28	CDPQ		NA	PPF	304	30%	92	17%	65% Developed ex-CA, 19% EM, 17% CA
29	KWSP		AS	PPF	242	38%	92	50%	Both domestic (Shariah) and international
30	KIC		AS	SWF	205	41%	83	0%	15.4% annualized return 2017-2021
31	SWIB		NA	PPF	166	50%	83	70%	50% Core Fund, 100% Variable Fund
32	NYS TRS		NA	PPF	148	55%	81	63%	22% TMT, 19% Consumer, 12% HC
33	ADQ		ME	SWF	157	51%	81	98%	\$72b TAQA, \$6b ADPorts, \$3b others
34	BLF		AS	PPF	189	42%	79	48%	Across all funds and risk profiles
35	HKMA EF		AS	SWF	506	15%	77	26%	Investment portfolio, below target 27%
36	Texas TRS		NA	PPF	184	40%	74	45%	45% US, 33% Non-US DM, 22% EM
37	Mubadala		ME	SWF	284	25%	71	25%	Estimated from public markets portfolio
38	UC Inv		NA	PPF	152	46%	70	80%	\$55b of pensions, \$10b of endowments
39	MSBI		NA	PPF	131	49%	64	68%	Estimates based on Combined Funds
40	Georgia TRS		NA	PPF	87	70%	61	78%	\$47b US Equities, \$13b International
41	Aware		OC	PPF	111	55%	61	35%	Estimated based on peer benchmarking
42	PNB		AS	SWF	81	73%	59	84%	Includes key local assets (Maybank, TM)
43	EIA		ME	SWF	91	65%	59	64%	\$38b Etisalat+du, rest global portfolio
44	BCI		NA	PPF	169	31%	52	10%	50% US, 19% EM, 11% DA, 10% EU
45	PSP		NA	PPF	185	26%	49	33%	Both internal / external, active / passive
46	PIFSS		ME	PPF	137	35%	48	20%	Estimated based on peer benchmarking
47	Ohio STRS		NA	PPF	98	49%	48	56%	\$27b in US equities, rest international
48	UniSuper		OC	PPF	76	63%	48	45%	Estimated based on Balanced Option
49	Ohio PERS		NA	PPF	106	43%	46	50%	\$23b in US equities, rest international
50	WSIB		NA	PPF	176	26%	46	60%	\$40b retirement funds, rest labor funds

Source: Global SWF, December 2022 Newsletter



Top 50 SOIs in Real Estate (RE)



Rank	Fund	HQ	Reg	Type	AuM \$b	RE %	RE \$b	Domestic	Description
1	NBIM		EU	SWF	1,402	7%	98.9	0%	US\$ 63 billion in listed RE in 41 countries
2	GIC		AS	SWF	744	10%	77.1	0%	GIC RE: 34% Logistics, 20% Offices
3	APG		EU	PPF	708	10%	73.0	4%	27% Listed, 57% Strategic, 17% Tactical
4	PIF		ME	SWF	560	13%	72.9	98%	Including Giga Projects, KAFCO
5	QIA		ME	SWF	445	14%	64.3	33%	Including QD, Katara, Lusail
6	ADIA		ME	SWF	829	7%	56.7	0%	23% Hotels, 21% Logistics, 17% Offices
7	CIC		AS	SWF	1,222	4%	53.4	0%	Mostly Logistics, Offices in DM - 6% listed
8	CalPERS		NA	PPF	482	10%	49.2	95%	85% Core RE
9	CalSTRS		NA	PPF	320	15%	47.9	96%	96% in the US, 41% Offices
10	CPP		NA	PPF	432	10%	43.5	10%	Fueled by partnerships, includes Credit
11	KIA		ME	SWF	693	6%	38.3	5%	Including St Martins, Cale St, Foster Lane
12	PGGM		EU	PPF	330	11%	36.8	50%	About half listed. It includes mortgages
13	Temasek		AS	SWF	283	12%	33.9	75%	Including CapitalLand, Mapletree, M+S
14	Dubai Hdg		ME	SWF	35	95%	33.8	100%	Residential, Retail, Hosp., Entertainment
15	CDPQ		NA	PPF	329	10%	34.5	26%	Ivanhoe Cambridge & Otéra. 26% is funds
16	NPS		AS	PPF	776	4%	31.4	20%	42% USA, 21% EU. 55% of total is funds
17	BVK		EU	PPF	120	25%	29.5	44%	33% Offices, 28% Retail, 28% Residential
18	BCI		NA	PPF	158	18%	28.1	56%	Quadreal: 32% Offices, 31% Res, 22% Log
19	OTPP		NA	PPF	190	15%	27.9	49%	Cadillac Fairview: devlts & investments
20	WSIB		NA	PPF	194	13%	26.8	90%	Mostly external partnerships
21	NYS TRS		NA	PPF	148	17%	25.6	90%	Two thirds equity, one third debt
22	SBA Florida		NA	PPF	260	10%	25.5	95%	Mostly via funds and REITs (40% external)
23	Texas TRS		NA	PPF	202	12%	25.0	95%	Offices, multi-family, retail and industrial
24	GOSI		ME	PPF	250	10%	25.0	50%	KSA largest portfolio - land, assets, funds
25	Mubadala		ME	SWF	243	9%	22.4	80%	Includes Aldar, Al Maryah, ADGM
26	ICD		ME	SWF	302	7%	22.3	90%	RE and Hospitality - Emaar, DAFZA
27	AP1-7		EU	PPF	325	7%	21.7	50%	33% AP1, 24% AP2, 25% AP3, 17% AP4
28	PSP		NA	PPF	162	13%	21.2	25%	37% Residential, 26% Office, 20% Industrial
29	SAFE IC		AS	SWF	813	3%	20.3	50%	Overseas RE driven by partnerships
30	NYSCRF		NA	PPF	280	7%	20.3	95%	27% Offices, 23% Log, 17% Retail, 12% Res
31	NYC Compt		NA	PPF	275	7%	20.3	95%	Overseas RE driven by partnerships
32	PIFSS		ME	PPF	134	15%	20.1	25%	Overseas RE driven by partnerships
33	Amitim		ME	PPF	122	15%	18.3	25%	Overseas RE driven by partnerships
34	Bouwinvest		EU	PPF	17	100%	16.7	74%	59% Residential, 14% Offices, 11% Retail
35	ATP		EU	PPF	144	11%	16.6	50%	Direct via JVs and indirect via funds
36	HOOPP		NA	PPF	90	18%	15.8	56%	33% Industrial, 29% Office, 27% Residential
37	OMERS		NA	PPF	95	16%	15.2	29%	Oxford Properties: devlts & investments
38	KTCU		AS	PPF	42	35%	14.7	29%	Overseas RE driven by partnerships
39	AIMCo		NA	PPF	103	14%	14.0	65%	Direct via JVs: office, retail, industrial, resid.
40	HKMA EF		AS	SWF	587	2%	13.9	50%	Held under the LT Growth Portfolio
41	KLP		EU	PPF	102	13%	13.5	50%	Include Norwegian and international funds
42	ART		OC	PPF	168	8%	13.5	50%	Include Australian and international funds
43	QIC		OC	SWF	69	18%	12.6	50%	Mandates and 43 direct assets in AU / US
44	AusSuper		OC	PPF	189	6%	12.2	50%	Include Australian and international funds
45	OPERF		NA	PPF	99	12%	11.7	90%	Mostly domestic RE via fund commitments
46	BLF		AS	PPF	202	6%	11.6	75%	Across different mandates, 25% in-house
47	LIA		ME	SWF	67	17%	11.2	20%	Includes LAICO (Africa), LAFICO (EU)
48	MN		EU	PPF	207	5%	10.4	50%	Overseas RE driven by partnerships
49	VRS		NA	PPF	104	10%	10.4	90%	Mostly domestic RE via funds
50	Ohio STRS		NA	PPF	98	10%	10.0	90%	Mostly domestic RE via funds

Source: Global SWF, April 2022 Newsletter



Top 50 SOIs in Infrastructure (Infra)



Rank	Fund	HQ	Reg	Type	AuM \$b	Inf %	Inf \$b	Domestic	Description
1	ADQ		ME	SWF	108	69%	74.4	99%	Mostly UAE: Utilities, Energy, Transport
2	PIF		ME	SWF	600	11%	66.0	60%	Estimated costs to date on Giga Projects
3	ICD		ME	SWF	302	21%	63.4	100%	Transport (Emirates, Flydubai, DAE, dnata)
4	NBIM		EU	SWF	1,362	5%	63.1	0%	60% Energy, 38% Utilities, 3% Renewables
5	SAFE IC		AS	SWF	813	7%	56.9	75%	Includes 65% in Silk Road Fund
6	NDF		ME	SWF	93	57%	53.0	100%	BLK-managed National Infrastructure Fund
7	CIC		AS	SWF	1,222	4%	47.8	36%	Includes 5% of overseas public equities
8	QIA		ME	SWF	445	11%	46.7	67%	Qatar (QR, Qatar Rail, QEWS) & overseas
9	DP World		ME	SWF	42	100%	42.2	55%	Terminals, Logistics and Economic Zones
10	GIC		AS	SWF	799	5%	40.0	0%	Large, unlisted funds and assets overseas
11	Temasek		AS	SWF	283	14%	39.6	87%	Mostly domestic: PSA, SP Group, SIA, etc.
12	CPP		NA	PPF	432	9%	38.9	22%	75% in developed markets, 25% emerging
13	CDPQ		NA	PPF	329	12%	38.0	16%	49% Energy, 37% Transport, 14% Utilities
14	ADIA		ME	SWF	829	4%	34.0	0%	Utilities, Energy, Transport, Digital, Green
15	Mubadala		ME	SWF	243	14%	33.5	6%	Traditional & Digital Infra, MIP, Masdar
16	KIA		ME	SWF	693	4%	31.0	5%	Includes \$10b Wren House Infrastructure
17	OTPP		NA	PPF	190	15%	28.4	40%	46% Transport, 41% Energy, 11% Water
18	OMERS		NA	PPF	95	27%	25.2	29%	Clean power, social infra, transport & digital
19	NPS		AS	PPF	757	3%	24.3	32%	42% funds, 58% direct - 40% in AsiaPacific
20	PSP		NA	PPF	162	14%	22.1	9%	45% NR, 23% Industrials, 20% Utilities
21	APG		EU	PPF	720	3%	21.7	4%	Energy, Transport, Utilities, Digital Infra
22	QIC		OC	SWF	69	28%	19.4	43%	Incl. third party capital from SWFs, PPFs
23	AIH		AS	SWF	22	86%	18.9	100%	63% Oil & Gas, 15% Utilities, 15% Transport
24	AusSuper		OC	PPF	189	10%	18.9	68%	38% Toll Roads, 37% Transport, 8% Utilities
25	ART		OC	PPF	168	10%	16.8	50%	Transportation, Co-investments, Funds
26	BCI		NA	PPF	158	10%	15.7	20%	Utilities, Transport, Telecom & Timberland
27	NWF		EU	SWF	155	10%	15.6	77%	Highways, Railways, Aeroflot, Energy Plants
28	Fut Fund		OC	SWF	183	8%	15.2	48%	28% Utilities, 27% Airports, 15% Comms
29	SK CIC		NA	SWF	17	90%	15.2	100%	SaskPower, SaskEnergy and SaskTel
30	RDIF		EU	SWF	28	40%	11.2	100%	Incl. third Party Capital from SWFs, PPFs
31	PGGM		EU	PPF	330	4%	13.0	7%	Energy, Transport, Communications, Social
32	INA		AS	SWF	26	50%	12.8	100%	Jointly with ADIA, APG, CDPQ & DP World
33	GOSI		ME	PPF	250	5%	12.5	85%	Includes Saudi Aramco oil pipelines
34	NSSF		AS	SWF	452	3%	11.3	100%	Domestic highway & railway systems
35	NDFI		ME	SWF	21	50%	10.6	100%	Agriculture, Energy, Transportation, Water
36	Texas TRS		NA	PPF	202	5%	10.5	75%	Energy, Natural Resources & Infrastructure
37	AP Fonden		EU	PPF	325	5%	10.2	25%	33% AP3, 30% AP4, 24% AP2, 12% AP1
38	Samruk-Kz		AS	SWF	69	14%	9.6	100%	Power & Utilities, Transport (Air Astana etc)
39	WSIB		NA	PPF	181	5%	9.0	72%	38% Energy, 30% Agro, 25% Essentials
40	AIMCo		NA	PPF	108	8%	8.7	34%	Utilities, Energy, Transport, Renewables
41	NYSRCF		NA	PPF	280	3%	8.4	90%	Agriculture, Energy, Infrasset and Timber
42	Aware		OC	PPF	111	7%	8.0	75%	Funds, Renewables, Timberland, Transport
43	KWSP		NA	PPF	237	3%	7.1	90%	PLUS Malaysia, Kwasa, Melati Infra, etc.
44	CalPERS		NA	PPF	482	1%	7.0	75%	\$6.1 Infra Partnerships, \$0.8b Timberland
45	GPIF		AS	PPF	1,733	0%	6.9	7%	22% Airports, 21% Green, 12% Utilities
46	CalSTRS		NA	PPF	320	2%	6.5	75%	Partnerships including Arevon Energy
47	ATP		EU	PPF	144	4%	6.2	56%	Timberland (US, Australia), Renewables
48	OPERF		NA	PPF	99	6%	6.2	80%	Real Assets other than Real Estate
49	BVK		EU	PPF	120	5%	6.0	50%	Renewable energies, Forest investments
50	PSERS		NA	PPF	73	8%	5.4	80%	Funds including BX, GCM, iSquared

Source: Global SWF, May 2022 Newsletter



Top 50 SOIs in Private Equity (PE)



Rank	Fund	HQ	Reg	Type	AuM \$b	PE %	PE \$b	Domestic	Description
1	CIC		AS	SWF	1,222	14%	171.5	71%	\$122b in domestic unlisted banks, rest intl
2	CPP		NA	PPF	432	32%	138.2	16%	166 employees in 6 offices including Asia
3	GIC		AS	SWF	799	13%	104.9	0%	Including Direct, Funds, PE Debt and VC
4	Mubadala		ME	SWF	284	34%	96.6	25%	Incl. \$15b in SVF and large O&G holdings
5	PIF		ME	SWF	600	15%	90.0	18%	Incl. \$45b in SVF and domestic assets
6	KIA		ME	SWF	693	9%	65.0	31%	Incl. KPC, KFC and other local assets
7	CDPQ		NA	PPF	329	20%	64.7	19%	75% direct / 60% US-CA / 26% Technology
8	ICD		ME	SWF	302	20%	59.6	73%	\$43b domestic assets incl. ENOC, EGA, etc.
9	ADIA		ME	SWF	829	7%	56.7	0%	\$25b+ in direct investments, all out of UAE
10	QIA		ME	SWF	445	12%	53.4	22%	Including CBQ, Ooredoo and other Q assets
11	CalPERS		NA	PPF	456	12%	52.8	70%	70% BO, 15% Gwth, 8% Opp, 6% PC, 2% VC
12	APG		EU	PPF	720	7%	52.6	4%	Mostly overseas via fund investments
13	Temasek		AS	SWF	283	18%	50.9	24%	Incl. Pavillion Energy and other SG entities
14	CalSTRS		NA	PPF	312	15%	46.6	80%	Mostly fund investments in North America
15	WSIB		NA	PPF	192	23%	44.9	70%	69% Buyout, 19% VC, 8% Co-investment
16	OTPP		NA	PPF	190	24%	44.7	40%	Incl \$6b in TVG. 75+ invest. professionals
17	NDF		ME	SWF	93	43%	40.0	100%	Everything except for NIF managed by BLK
18	HKMA EF		AS	SWF	587	7%	39.1	50%	Global PE as part of LT Growth Portfolio
19	NPS		AS	PPF	725	5%	37.0	34%	80% Fund, 20% Direct. It includes HFs
20	Samruk		AS	SWF	69	51%	35.4	100%	All domestic: KMG, KMGK, TKS, KT, SK Inv
21	ADQ		ME	SWF	108	32%	35.0	84%	Incl. \$10b in INA via ADG, local JVs, Senaat
22	NYSCRF		NA	PPF	280	11%	29.5	80%	Mostly fund investments in North America
23	Texas TRS		NA	PPF	202	15%	29.3	75%	Incl. Buyouts, Credit/Special Sits, EM & VC
24	Bpifrance		EU	SWF	51	55%	28.3	100%	Incl. Small caps, VC, FoF and LAC1 (JV MIC)
25	Fut Fund		OC	SWF	187	15%	27.5	3%	71% VC & Growth, 28% Buyout. 68% US
26	OPERF		NA	PPF	98	27%	26.3	80%	Mostly fund investments in North America
27	PSP		NA	PPF	162	16%	25.1	4%	27% Tech, 20% Healthcare, 20% Consumer
28	PGGM		EU	PPF	330	8%	25.1	10%	Return of 50% in 2021. Focus on SDGs
29	GOSI		ME	PPF	250	10%	25.0	25%	Local JVs and fund investment overseas
30	NYC Compt		NA	PPF	263	9%	22.7	80%	Mostly fund investments in North America
31	NSSF		AS	SWF	452	5%	22.6	90%	Mostly local assets incl. CDB, CCC, Datang
32	SBA FLA		NA	PPF	253	9%	22.5	80%	Mostly fund investments in North America
33	SWIB		NA	PPF	166	12%	20.3	80%	Mostly fund investments in North America
34	SAFE IC		AS	SWF	813	3%	20.3	5%	Invested mostly via RWIC (US) & GTIL (UK)
35	AP1-7		EU	PPF	325	6%	19.1	5%	29% AP2, 27% AP6, 16% AP4, 15% AP1
36	UTIMCO		NA	SWF	68	26%	17.6	80%	Mostly fund investments in North America
37	BCI		NA	PPF	158	10%	16.4	2%	45% US, 34% EU, 16% EM. Funds & Direct
38	NWF		EU	SWF	155	11%	16.3	95%	Mostly domestic assets incl. \$8b in VEB
39	Alaska PFC		NA	SWF	81	15%	16.2	80%	Incl. \$5b Special Sits; 47% Internal Managed
40	Virginia RS		NA	PPF	104	16%	16.2	80%	Mostly fund investments in North America
41	PIFSS		ME	PPF	134	12%	16.0	25%	Local JVs & intl funds/direct, via Wafra
42	MORS		NA	PPF	95	16%	15.3	80%	Mostly fund investments in North America
43	OMERS		NA	PPF	95	16%	15.2	5%	Financials, Healthcare, Industrials & Tech
44	NYS TRS		NA	PPF	148	10%	15.0	80%	Mostly fund investments in North America
45	MassPRIM		NA	PPF	101	14%	13.8	80%	Mostly fund investments in North America
46	KIC		AS	SWF	201	7%	13.1	0%	Direct, Funds, PC and KIC Venture Growth
47	UC Inv		NA	PPF	168	8%	12.8	69%	Incl. \$11.6 Pvt Equity and \$1b Prvt Credit
48	TVF		ME	SWF	22	59%	12.8	100%	Incl. Banks, O&G, Industrials, Post, Lottery
49	PSERS		NA	PPF	73	17%	12.5	80%	Mostly fund investments in North America
50	RDIF		EU	SWF	28	44%	12.4	92%	All in Russia except for \$1b China via RCIF

Source: Global SWF, June 2022 Newsletter



Top 50 SOIs in Private Credit (PC)*



Rank	Fund	HQ	Reg	Type	AuM \$b	PC %	PC \$b	Est.	Internal Group
1	CPP		NA	PPF	427	7.2%	30.6	1997	Capital Solutions, Leveraged Finance
2	CalPERS		NA	PPF	490	5.0%	24.5	1932	Opportunistic Strategies (OS)
3	NYC Compt		NA	PPF	267	8.5%	22.7	1920	Asset Mgmt, Alternative Credit
4	CalSTRS		NA	PPF	322	5.0%	16.1	1913	Private Equity; Private Credit
5	GIC		AS	SWF	744	2.0%	14.9	1981	Integrated Strategies Group (ISG)
6	Virginia RS		NA	PPF	104	14.0%	14.5	1942	Credit Strategies: Alternative Credit, PIP
7	PSP		NA	PPF	162	7.8%	12.7	1999	Private Equity; Private Credit
8	CDPQ		NA	PPF	315	4.0%	12.6	1965	Fixed Income & Treasuries
9	CIC		AS	SWF	1222	1.0%	12.2	2007	Private Equity; Private Credit
10	NYS CRF		NA	PPF	268	3.3%	8.8	1983	Alternative Credit
11	AusSuper		OC	PPF	176	5.0%	8.8	2006	Mid Risk Portfolios; Private Credit
12	OMERS		NA	PPF	92	9.3%	8.6	1962	Fixed Income & Treasuries
13	ADIA		ME	SWF	829	1.0%	8.3	1967	Private Credit & Special Situations
14	APG		EU	PPF	727	1.0%	7.3	1922	Alternative Credit
15	SWIB		NA	PPF	120	6.0%	7.2	1951	Private Markets; Private Credit
16	NJ Dol		NA	PPF	99	7.0%	6.9	1950	Income
17	Arizona SRS		NA	PPF	42	14.5%	6.1	1953	Fixed Income & Treasuries
18	BCI		NA	PPF	158	3.5%	5.5	1999	Fixed Income & Treasuries
19	Penn PSERS		NA	PPF	73	7.5%	5.4	1917	Alternative Credit
20	Aware		OC	PPF	112	4.0%	4.5	2020	Credit Income
21	Future Fund		OC	SWF	178	2.3%	4.1	2006	Public Markets; Private Credit
22	TN CRS		NA	PPF	65	6.2%	4.0	1972	Private Equity; Private Credit
23	NPS		AS	PPF	776	0.5%	3.9	1988	Fixed Income & Treasuries
24	Illinois STRS		NA	PPF	64	5.0%	3.2	1939	Alternative Credit
25	SC PEBA		NA	PPF	40	7.7%	3.1	1945	Alternative Credit
26	MI ORS		NA	PPF	95	3.2%	3.0	1942	Real Return
27	VFMC		OC	SWF	53	5.6%	3.0	1994	Credit & Fixed Income
28	Temasek		AS	SWF	283	1.0%	2.8	1974	Credit & Hybrid Solutions
29	AIMCo		NA	PPF	103	2.6%	2.7	1976	Fixed Income & Treasuries
30	PDanmark		EU	PPF	50	5.0%	2.5	1993	Private Equity; Private Credit
31	Mubadala		ME	SWF	243	1.0%	2.4	1984	Credit (Mb Capital), Special Sits (ADIC)
32	OTPP		NA	PPF	184	1.3%	2.4	1917	Alternative Credit
33	KWSP		AS	PPF	237	1.0%	2.4	1951	Capital Markets, Credit
34	KIA		ME	SWF	693	0.3%	2.1	1953	Alternative Credit
35	Texas TRS		NA	PPF	202	1.0%	2.0	1937	Private Equity; Private Credit
36	KIC		AS	SWF	201	1.0%	2.0	2005	Absolute Returns
37	LACERA		NA	PPF	73	2.6%	1.9	1937	Private Equity; Private Credit
38	QIA		ME	SWF	366	0.5%	1.8	2005	Private Equity; Private Credit
39	Alaska PFC		NA	SWF	81	2.1%	1.7	1976	Alternative Credit
40	HOOPP		NA	PPF	82	2.0%	1.6	1960	Private Equity; Private Credit
41	AP1-7		EU	PPF	306	0.5%	1.5	2001	Private Equity; Private Credit (AP2)
42	ART		OC	PPF	152	1.0%	1.5	2022	Private Capital; Private Credit
43	MD SRA		NA	PPF	55	2.7%	1.5	1941	Alternative Credit
44	MSBI		NA	PPF	129	1.1%	1.5	1981	Private Markets
45	PIF		ME	SWF	480	0.3%	1.4	1971	International Private Equity; Private Credit
46	MassPRIM		NA	PPF	101	1.4%	1.4	1983	Fixed Income & Treasuries
47	QIC		OC	SWF	69	2.0%	1.4	1991	Infrastructure
48	WSIB		NA	PPF	181	0.7%	1.3	2005	Private Equity; Private Credit
49	NZ Super		OC	SWF	41	3.0%	1.2	2001	External Investments & Partnerships
50	NYS TRS		NA	PPF	148	0.7%	1.1	1913	Alternative Credit

Source: Global SWF, January 2022 Newsletter. * Private Credit portfolios are generally included in Fixed Income (page 57) or PE (page 61)



Top 50 SOIs Venture Capital (VC)*



Rank	Fund	HQ	Reg	Type	AuM \$b	VC %	VC \$b	Domestic	Description
1	PIF		ME	SWF	630	8%	51.4	0%	Including \$45b in Softbank Vision Fund
2	Mubadala		ME	SWF	284	7%	20.6	1%	Incl. \$15b in SVB, Mubadala Ventures
3	Temasek		AS	SWF	283	6%	17.2	15%	\$1.9b Vertex, rest Temasek in 226 deals
4	GIC		AS	SWF	799	1%	7.3	0%	85 investments in 17 different countries
5	OTPP		NA	PPF	190	3%	6.0	10%	Teachers' Venture Growth, focus on B+
6	CPP		NA	PPF	432	1%	5.4	1%	Growth Equity (15 staff Toronto & SFO)
7	Bpifrance		EU	SWF	51	10%	5.1	100%	Over 150 investments within France
8	Alaska PFC		NA	SWF	81	6%	4.7	78%	Mostly via funds, pioneer in biotech
9	Texas TRS		NA	PPF	202	2%	4.0	90%	Around 15% of the PE program, US funds
10	Future Fund		OC	SWF	187	2%	3.8	3%	Most via funds, in AU, US, UK and CN
11	QIA		ME	SWF	445	1%	3.5	0%	Increasingly active - 80% of it in past 3yr
12	ADQ		ME	SWF	108	3%	3.0	66%	Including DisruptAD, VC IN/TR, ADG
13	CIC		AS	SWF	1,222	0%	3.0	90%	Significant invest. in Ant, Didi, Grab, etc.
14	UTIMCO		NA	SWF	68	4%	2.7	80%	4% of the asset allocation, US funds
15	ADIA		ME	SWF	829	0%	2.5	0%	Direct invest. in US, CN, IN, ID and FR
16	NYSRCF		NA	PPF	280	1%	2.4	100%	Including NYS start-up investing program
17	AusSuper		OC	PPF	189	1%	2.2	50%	Incl. commitments in 19 funds in US, AU
18	UC Inv		NA	PPF	168	1%	2.1	60%	15% of the pension capital pool, US funds
19	OMERS		NA	PPF	95	2%	1.8	39%	OMERS Ventures: 90 invest. since 2011
20	CDP Equity		EU	SWF	5	33%	1.7	100%	CDP Venture Capital: 9 direct/indirect
21	BCI		NA	PPF	158	1%	1.6	50%	10% of the \$16b PE program
22	BBB IP		EU	SWF	4	35%	1.5	100%	Future Fund & British Patient Capital
23	Khazanah		AS	SWF	31	4%	1.4	0%	Mainly Palo Alto via Khazanah Americas
24	CDPQ		NA	PPF	329	0%	1.3	50%	\$64b in Tech, \$1.3b is in 20 start-ups
25	CalPERS		NA	PPF	456	0%	1.1	100%	Mostly funds, 2% of PE program, all US
26	PSP		NA	PPF	162	1%	1.0	13%	13 start-ups in the past 3 years
27	KIA		ME	SWF	693	0%	1.0	35%	Including Kuwait's NTEC & EnerTech
28	NPS		AS	PPF	725	0%	1.0	50%	Direct and funds, overseas and domestic
29	PIFSS		ME	PPF	134	1%	1.0	25%	PIFSS, Wafra and Capital Constellation
30	WSIB		NA	PPF	192	1%	1.0	70%	0.5% of the fund allocated to Innovation
31	OPERF		NA	PPF	98	1%	1.0	80%	VC commitments in \$26b PE portfolio
32	CalSTRS		NA	PPF	312	0%	0.9	80%	2% of PE program, mostly US funds
33	ATP		EU	PPF	144	1%	0.9	60%	Embedded in ATP PEP, the PE subsidiary
34	ISIF		EU	SWF	16	5%	0.8	90%	Irish start-ups, including JV with CIC
35	AP1-7		EU	PPF	325	0%	0.8	18%	AP6, direct and funds mostly in EU
36	AIMCo		NA	PPF	108	1%	0.8	50%	10% of the \$7.6b PE program
37	HOOPP		NA	PPF	90	1%	0.6	50%	10% of the \$6b PE program
38	KIC		AS	SWF	201	0%	0.5	0%	KIC Venture Growth (KVG), office SFO
39	APG		EU	PPF	720	0%	0.5	50%	Small VC program when compared to PE
40	RDIF		EU	SWF	28	2%	0.5	70%	Mostly in Russia and China via RCIF
41	ICD		ME	SWF	302	0%	0.5	0%	Scattered deals in US, Europe and India
42	BIA		AS	SWF	55	1%	0.5	0%	Mostly direct via Zamrud or BIA
43	NZ Super		OC	SWF	39	1%	0.5	60%	Including NZ Growth Capital Partners
44	KWAP		AS	PPF	37	1%	0.4	100%	Mostly via funds in Malaysia
45	NSSF		AS	SWF	452	0%	0.4	90%	Significant positions in Ant Financial, etc.
46	SWIB		NA	PPF	166	0%	0.3	80%	Funds / direct including 4490 Ventures
47	HESTA		OC	PPF	48	1%	0.3	50%	Six investments in Australia and overseas
48	Virginia RS		NA	PPF	104	0%	0.2	80%	1% of the \$16b program, mostly US funds
49	NIIF		AS	SWF	4	5%	0.2	100%	Completed first deal in 2022: Indian EV
50	OIA		ME	SWF	29	0%	0.1	0%	Completed first deal in 2022: US start-up

Source: Global SWF, August 2022 Newsletter. * Venture Capital portfolios are generally included in the Private Equity portfolios on page 61



Top 50 SOIs in Hedge Funds (HF)



Rank	Fund	HQ	Reg	Type	AuM \$b	HF %	HF \$b	Est.	Description
1	ADIA		ME	SWF	829	6.8%	56.7	1967	Diversifiers and Return Enhancers
2	CPP		NA	PPF	406	9.5%	38.4	1997	Capital Markets & Factor Investing
3	CIC		AS	SWF	1,303	2.6%	34.1	2007	Stable at 8% of overseas portfolio
4	KIA		ME	SWF	769	4.0%	30.7	1953	Part of \$100b+ Alts, run from KIO London
5	Future Fund		OC	SWF	167	17.0%	28.4	2006	Macro, Alt Risk, Global Alpha, Equitised
6	APG		EU	PPF	720	3.5%	25.2	1922	Managed by New Holland Capital
7	CalSTRS		NA	PPF	312	7.1%	22.0	1913	Trend Following, Systematic Risk, Macro
8	SAFE IC		AS	SWF	980	2.0%	19.6	1997	Mostly external and run from Hong Kong
9	Texas TRS		NA	PPF	202	8.0%	16.1	1937	5% Stable Value HF, 3% Directional HF
10	MIC (+ADIC)		ME	SWF	284	5.0%	14.1	1984	Estimated 10% ADIC, 1% Mubadala Capital
11	OTPP		NA	PPF	188	6.2%	11.7	1917	Mostly external - liquid, absolute return
12	PSP		NA	PPF	185	4.0%	11.4	1999	CM Alts including opportunistic and credit
13	QIA		ME	SWF	445	2.4%	10.6	2005	Active Equities division - Liquid Securities
14	BVK		EU	PPF	120	7.5%	9.0	1995	Alpha / alt risk premium, down from 10%
15	UTIMCO		NA	SWF	66	13.1%	8.6	1876	50% Stable Value, 50% Directional
16	UC Invest		NA	PPF	168	4.6%	7.7	1961	\$5.2b Retirement Fund, \$2.5b Endowment
17	MassPRIM		NA	PPF	96	8.0%	7.7	1983	Portfolio Completion & Direct Hedge Funds
18	GOSI		ME	PPF	250	3.0%	7.5	2022	Estimated, mostly external managed by HIC
19	NYSRCF		NA	PPF	246	3.0%	7.4	1983	Mostly ext managed, increasing allocation
20	NZ Super		OC	SWF	35	20.0%	6.9	2001	AQR, BLK, BW, Citadel, NB, 2Sigma, UBS
21	GIC		AS	SWF	690	1.0%	6.9	1981	Estimated, Integrated Strategies Group
22	PIFSS		ME	PPF	134	5.0%	6.7	1976	Estimated, managed by PIFSS and Wafra
23	Temasek		AS	SWF	298	2.0%	6.0	1974	Managed by subsidiary Sevia-SeaTown
24	EIA		ME	SWF	86	6.8%	5.9	2007	Estimated, under Global Invest. Portfolio
25	Texas PSF		NA	SWF	56	10.4%	5.8	1854	\$3.6b managed SBOE, \$2.1b managed SLB
26	KIC		AS	SWF	205	2.7%	5.5	2005	Since 2010, 5.7% annualized return
27	Alaska PFC		NA	SWF	78	6.7%	5.2	1976	93% internally managed, 18 managers
28	NPS		AS	PPF	678	0.8%	5.1	1988	12 external HF asset managers, all overseas
29	MI ORS		NA	PPF	95	5.0%	4.8	1942	Objective of T-bill+400 bp
30	KEVA		EU	PPF	73	6.4%	4.7	1988	Absolute return and opportunistic funds
31	OMERS		NA	PPF	95	4.8%	4.5	1962	Event driven, team hired from ATP
32	LACERA		NA	PPF	73	5.8%	4.2	1937	Mostly ext managed, increasing allocation
33	OPERF		NA	PPF	99	3.8%	3.8	1946	AQR, Blackrock, Bridgewater, GMO, Man
34	Virginia RS		NA	PPF	104	3.6%	3.7	1942	Dynamic Strategies and Risk-Based Invest.
35	VFMC		OC	SWF	50	7.4%	3.7	1994	To be increased up to 8.8%
36	IMCO		NA	PPF	62	6.0%	3.7	2016	Equity neutral, event-driven, macro, vols
37	NYC Compt		NA	PPF	240	1.4%	3.4	1920	24 HF managers, mostly for NYPD & NYFD
38	COPERA		NA	PPF	62	5.2%	3.2	1931	Within Alt portfolio under Defined Benefit
39	CDPQ		NA	PPF	304	1.1%	3.2	1965	Ext managers - down from \$4.3b in 2018
40	PIF		ME	SWF	620	0.5%	3.1	1971	Estimated, under International Investments
41	NJ Dol		NA	PPF	99	3.0%	3.0	1950	ARS, Credit, event driven, FoF, macro
42	LIA		ME	SWF	68	4.1%	2.8	2006	HSBC, Sculptor, Palladyne, etc. - decreasing
43	BIA		AS	SWF	55	5.0%	2.8	1983	Estimated, mostly externally managed
44	OPTTrust		NA	PPF	20	13.5%	2.7	1995	Pooled & HFs, down from \$4.4b in 2018
45	AIMCo		NA	PPF	108	2.5%	2.7	1976	Both externally and internally managed
46	HOOPP		NA	PPF	90	2.5%	2.2	1960	Alts: hedge funds and insurance funds
47	VER		EU	PPF	27	4.7%	1.3	1990	Diversifying, risk premium & derivatives
48	ADPF		ME	PPF	25	5.0%	1.3	2000	Estimated, mostly externally managed
49	ISIF		EU	SWF	16	7.0%	1.1	2014	Ext managed - BX, BW, GIM, and int alpha
50	NBK (+NIC)		AS	SWF	58	1.7%	1.0	2000	Estimated 10% NIC, 1% National Fund

Source: Global SWF, October 2022 Newsletter



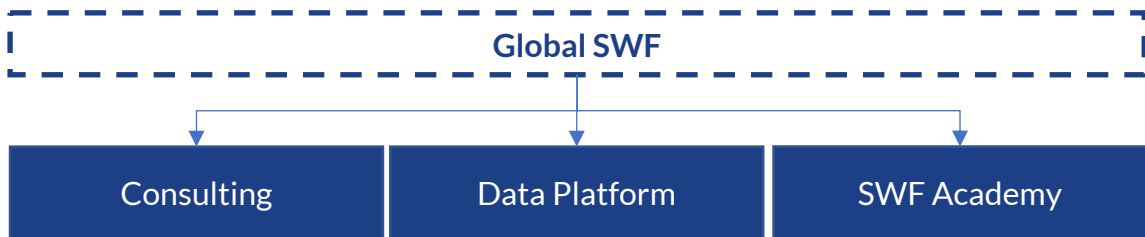
Appendix 4: About Us



Global SWF is a financial boutique that was launched in July 2018 to address a perceived lack of thorough coverage of State-Owned Investors (SOIs), and to promote a better understanding of, and connectivity into and between sovereign wealth and public pension funds. The company leverages unique insights and connections built over many years and functions as a one-stop shop for some of the most common SOI-related services, including:

- **Consulting Services**, helping governments establish or reformulate their investment and strategic funds.
- **Data & Research**, running the most comprehensive platform on SOIs' strategies, portfolios and executives.
- **SWF Academy**, co-running with LBS the world's only SWF-dedicated Executive Education program.

We firmly believe in the global aspect of our business and have teams, advisors and partners in New York, Boston, Miami, London, Frankfurt, Lagos, Riyadh, Abu Dhabi, Dubai, Singapore, Hong Kong, Beijing, and Melbourne.



Global SWF Team:

