2023 GSR SCOREBOARD

"Governance, Sustainability and Resilience progress by State-Owned Investors"

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1. Executive Summary

We are delighted to present the **2023 GSR Scoreboard**, the most comprehensive analysis on the Governance, Sustainability and Resilience ("GSR") practices and efforts of the world's major State-Owned Investors ("SOIs"), including Sovereign Wealth Funds ("SWFs") and Public Pension Funds ("PPFs").

The assessment tool was first introduced by **Global SWF** in 2020 to jointly address important aspects such as transparency and accountability, impact and responsible investing, and legitimacy and long-term survival. Four years later, the system is embraced as a key metric among sovereign and pension funds globally.

The scorecard is designed to be fully independent (as we are not commissioned by anyone to do it), quantifiable (assessing progress over time), and objective (based only on publicly available information). The scoring is based on 25 different elements: 10 related to governance, 10 to sustainability, and five to resilience, which are answered binarily (Yes / No) with equal weight and then converted into percentage points.

The 2023 edition seeks relevance and continuity: there have been no changes to the elements, to the methodology, or to the universe of funds (100 SWFs and 100 PPFs), although we have assessed a total of 15 new funds that have been established recently or have gained importance or activity in the past 12 months. For example, we include for the first time three SWFs recently established in Namibia, Israel, and Hong Kong.

The preliminary results were sent on May 15 to all 200 funds, which were given six weeks to provide any comment or additional information. We were pleased to see an increasing level of engagement, and over 30% of all the funds reached out to us trying to understand the system better and to improve their scores.

The results of the **2023 GSR Scoreboard** are remarkable. We have observed a very significant increase in the overall score across funds from 59% in 2022 to 63% this year. The improvement has been most apparent among sovereign funds, which are catching up quickly with pension funds; and around sustainability, as funds are increasing their impact activities and reporting them in a regular and meaningful way.

The regional diversity of the leaderboard is testament to the fairness of the assessment tool. The GSR Scoreboard is a great equalizer and sovereign investors demonstrate that best practices are not only found in Western markets and among the largest institutions.

The overall ranking is led by **Temasek**, the largest investor among those achieving a 100% score. Almost 50 years old, the Singaporean entity is highly regarded, sought after, and used as a model by governments across the world, and we are delighted to showcase their success in an extensive feature and interview on pages 20-25 of this report.

Together with the Asian investor, there are three other funds with full marks: **CDPQ**, which was the recipient of Global SWF's 2022 Fund of the Year award; **NZ Super**, which reported the best financial performance in the past decade; and **NSIA**, which has been an example of good governance, sustainability, and resilience since it replaced ECA in 2012.

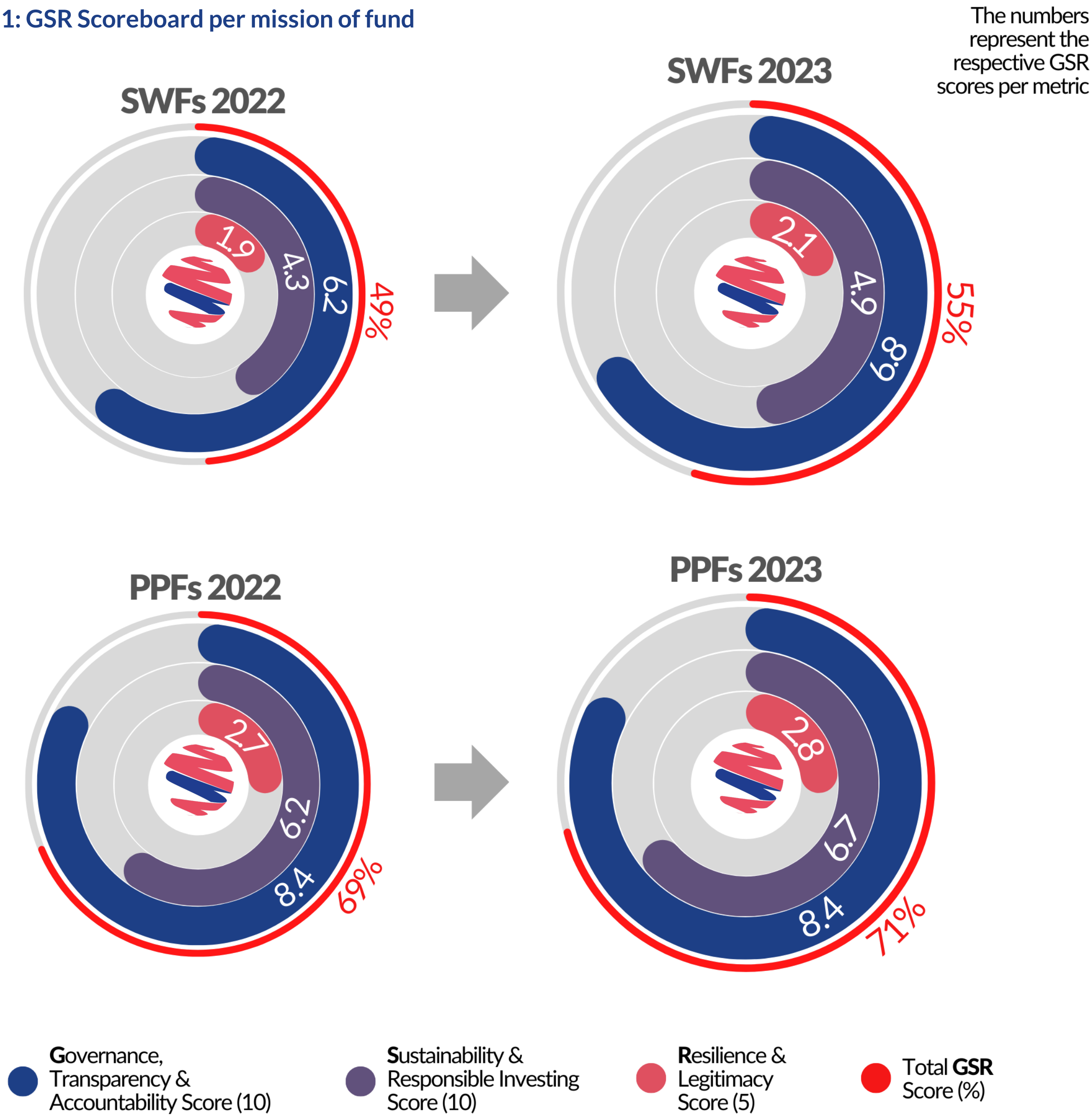
Following the leaders is a group of eight high-scoring institutions: two from North America (**CPP**, **BCI**), three from Europe (**PGGM**, **ISIF**, **COFIDES**), one from Asia (**GPF**), and two from Australia (**Future Fund** and **Aware Super**). The presence of a Nigerian SWF and a Thai pension fund in the leaderboard demonstrates that high scores – and best practices – can be achieved in very different contexts.

Table 1. 2023 GSR Leaderboard

Rank	SOI	HQs	AuM $b	G	S	R	GSR %
1	Temasek		298	10	10	5	100%
1	CDPQ		297	10	10	5	100%
1	NZ Super		39	10	10	5	100%
1	NSIA		2	10	10	5	100%
5	CPP		422	9	10	5	96%
5	PGGM		243	9	10	5	96%
5	Future Fund		168	10	9	5	96%
5	BCI		158	9	10	5	96%
5	Aware Super		99	9	10	5	96%
5	GPF		36	9	10	5	96%
5	ISIF		16	9	10	5	96%
5	COFIDES		4	10	10	4	96%

Source: GSR Scoreboard 2023 (blue ink, SWF, pink ink, PPF)

Figure 1: GSR Scoreboard per mission of fund



Sovereign wealth funds continue to improve their best practices: when we first completed this exercise in 2020, the average score of SWFs globally was 46% – today it is 55%, even with the entry of new funds that usually present worse results at inception. Sovereigns are improving their disclosure and their "G" element has risen dramatically. Despite the improvement, they are still failing the "S" and "R" elements with 4.9/10 and 2.1/5 respectively, but we believe this will change in the next few years as funds keep maturing.

Public pension funds continue to display better marks than sovereigns across the board. This year we have witnessed an amazing push for sustainability, with many pension funds issuing their first responsible investing reports and providing more information around ESG key metrics. The improvement in resilience was much more modest, given the performance of the 2022 financial markets that affected funding ratios greatly. We would expect their "R" element to improve in the short-term, as stronger policies bear fruit.

2. Market Update 1H 2023

The scenario in which State-Owned Investors are operating as of June 30, 2023 is quite different than what it was at 2022 year-end. Financial markets have recovered some of the lost ground, and the world's 13 largest indices are up on average *+10.8%* this year so far.

And it is not only listed equities – in public markets, bonds are up *+3.1%*, and hedge funds are up *+2.0%*. Measuring private markets is always trickier as it depends on how often investors value their portfolios, but the related benchmarks have also been positive with *+8.6%* for private equities. Real estate and infrastructure, on the other hand, are almost flat when compared to December 31, 2022.

Table 3. Intl Markets

Index	1H23
NASDAQ 100	*+36.8%*
S&P 500	*+14.0%*
Hang Seng	*-3.1%*
FTSE 100	*+0.6%*
DJIA	*+2.1%*
DAX 30	*+14.5%*
Russell 2000	*+5.6%*
CAC 40	*+12.5%*
Eurostoxx 50	*+14.9%*
Bovespa	*+6.3%*
NIFTY 50	*+4.8%*
Shanghai	*+3.5%*
Nikkei 225	*+27.2%*
Average 1H23	*+10.8%*

Table 2. Benchmark Returns per asset class

Class	Benchmark	FY18	FY19	FY20	FY21	FY22	1H23
Bonds	S&P 500 Bond	*-2.0%*	*+13.6%*	*+10.2%*	*-0.8%*	*-14.8%*	*+3.1%*
Stocks	S&P Global 1200	*-10.5%*	*+25.0%*	*+13.1%*	*+19.3%*	*-18.7%*	*+12.1%*
Real Estate	S&P 500 RE	*-5.6%*	*+24.9%*	*-5.2%*	*+42.5%*	*-28.4%*	*+0.5%*
Infrastructure	S&P Global Infra	*-13.2%*	*+21.8%*	*-8.7%*	*+8.4%*	*-3.7%*	*+0.7%*
Private Equity	S&P Listed PE	*-17.2%*	*+39.4%*	*+0.6%*	*+37.8%*	*-31.7%*	*+8.6%*
Hedge Funds	EH HFI	*-3.3%*	*+9.8%*	*+14.0%*	*+10.5%*	*-4.9%*	*+2.0%*

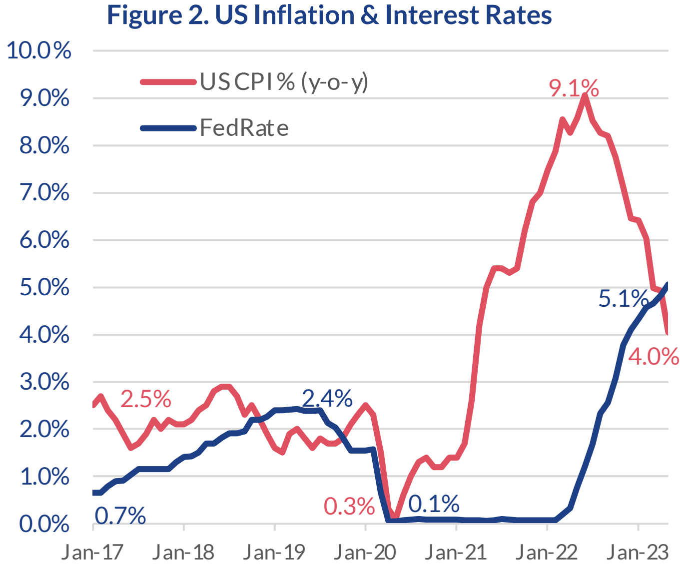
Sources: Yahoo Finance, S&P's, Eurekahedge, Global SWF analysis

The world's largest economy, the USA, saw a *+1.3%* increase in real GDP in the first quarter of 2023, down from *+2.6%* in the fourth quarter of 2022. Importantly for investors, the US inflation rate has come down from 9.1% (highest level since 1981) to 4.0% in the past 12 months, thanks to an aggressive interest rate hike to 5.1% by the Fed. The war in Ukraine is still ongoing, which keeps commodity prices relatively elevated.

The average price per barrel of Brent oil during the first half of 2023 was US$ 80, which, even if lower than the US$ 99 in 2022, is still advantageous for those SWFs hailing from commodity-rich economies. The latest breakeven prices forecasted by the IMF show that Qatar and the UAE will enjoy the largest windfalls this year, while Saudi, Kuwait and Oman will run modest surpluses, and Bahrain will still bear a significant deficit.

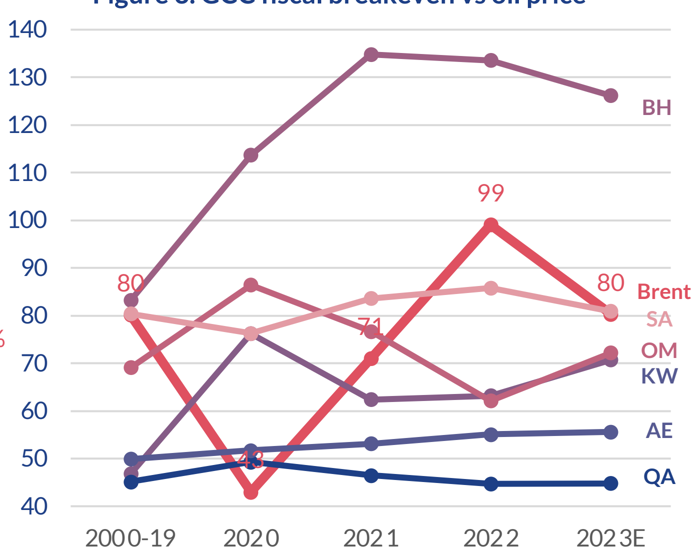
In the meantime, the tensions between the US and China are becoming increasingly apparent and several SOIs, including Canadian funds, have stopped their China investment programs and offices altogether.

Figure 2. US Inflation & Interest Rates



Sources: Federal Reserve, US BLI, Global SWF analysis

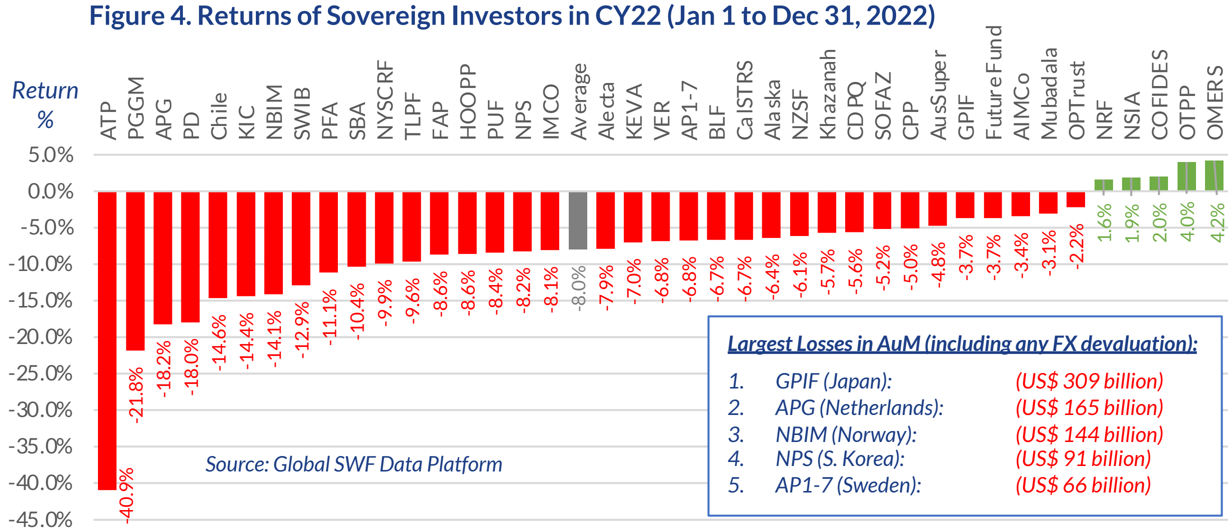
Figure 3. GCC fiscal breakeven vs oil price



Sources: Yahoo Finance, IMF, Global SWF analysis

In this context, sovereign investors suffered very significant losses in calendar year 2022. We offered an estimate and trailing numbers in our 2023 Annual Report issued on Jan 1, and are now in position of sharing the final numbers as reported by most funds. The average return for sovereign investors in CY22 was ***-8.0%***.

Figure 4. Returns of Sovereign Investors in CY22 (Jan 1 to Dec 31, 2022)

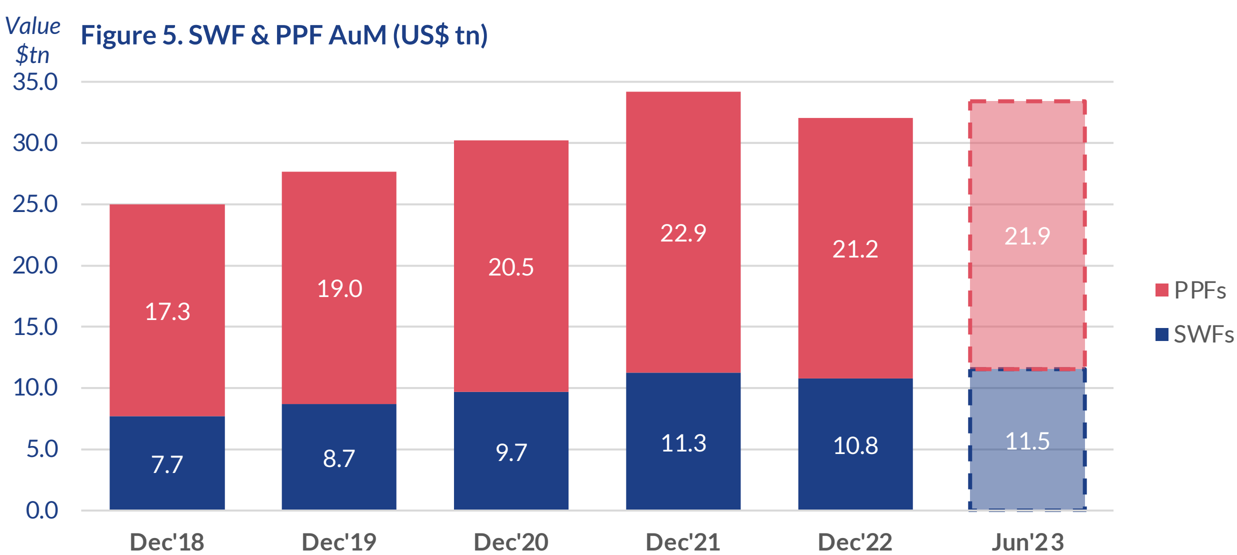


Source: Global SWF Data Platform

That said, some of these institutions are recovering well in 2023, and Q1 returns have been quite positive so far, e.g., NBIM (*+5.9%*), NZ Super (*+5.2*), CPP (*+3.6%*), Future Fund (*+3.4%*) and Alaska PFC (*+2.6%*). We expect Q2 returns to be equally positive, given the returns of the benchmarks reflected on page 6.

The significant losses endured by sovereign and pension funds during 2022 meant that, for the very first time in history, their assets under management (AuM) decreased year-on-year. However, the fall of SWFs was partly cushioned by the windfall received by some of the oil-fueled institutions. Together with the recovery in financial markets, **Global SWF** estimates that as of June 30, 2023, the AuM of SWFs is back at 2021 levels, and will be assisted further by the newly established SWFs reflected on page 9. On the contrary, pension funds are recovering at a slower pace and prospects are slightly more negative for the second half of 2023.

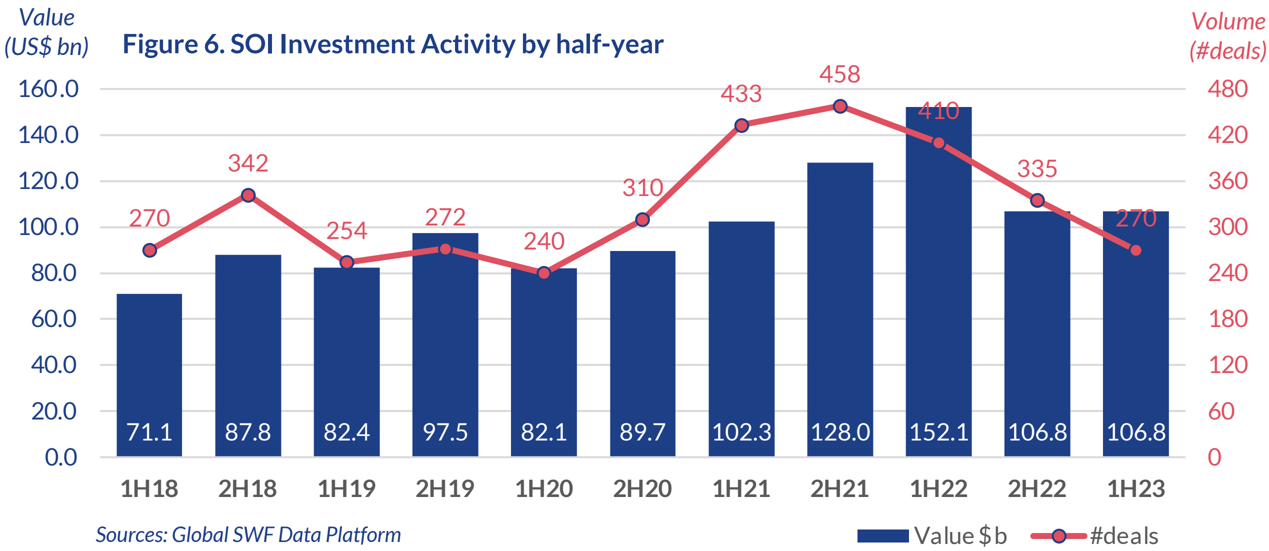
Figure 5. SWF & PPF AuM (US$ tn)



Source: Global SWF Data Platform

The investment activity of the first half of 2023 shows the concerns and caution of SWFs and PPFs in the current macro and geopolitical environment. Sovereign Investors deployed **US$ 106.8 billion**, exactly the same than in the second half of 2022, but only in **270 deals**. Investments are fewer, but larger on average.

Figure 6. SOI Investment Activity by half-year

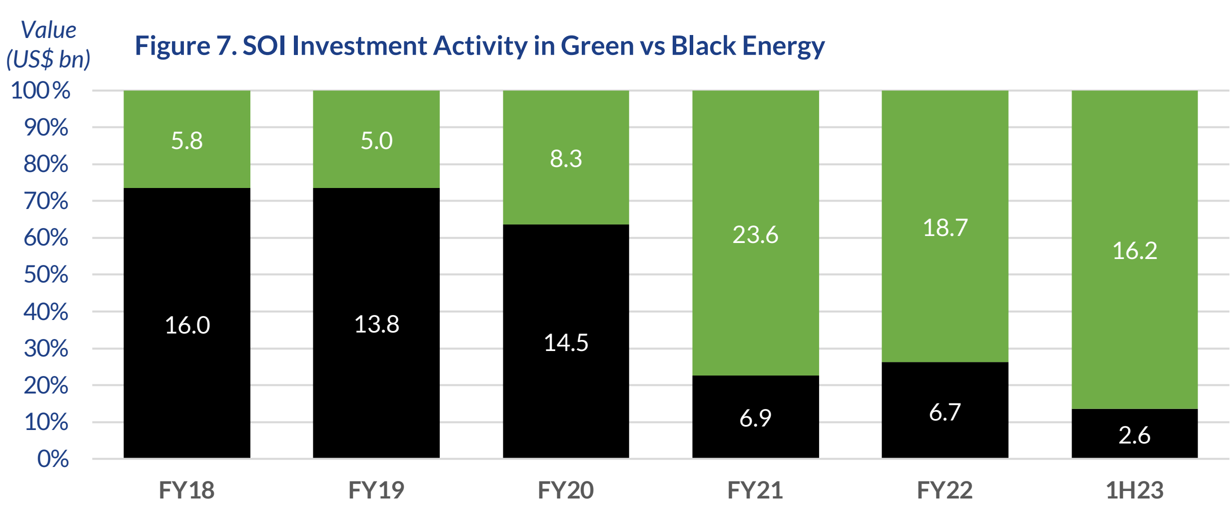


Sources: Global SWF Data Platform

As sovereign investors shy away from venture capital and smaller commitments, some of the key trends we have observed for the past year or so are the renewed interest in hedge funds as an uncorrelated strategy, and a peak in the commitments and direct investments in private markets, especially in private credit.

The pressure on achieving sustainability goals at organization level is also having an impact in the investment preferences of sovereign investors. In 2021 and 2022, we saw for the first time investments in "green assets" (mostly renewable energy) beating investments in "black assets" (mostly, oil and gas and mining). This trend has stayed the same during the first half of 2023, which saw significant activity. Some of the largest deals included **GIC**'s and **Temasek**'s investment in Australia's energy retailer Origin, Saudi **NDF**'s investment in the world's largest green hydrogen production facility, **Mubadala Capital**'s commitment to renewable fuel in Brazil, and **NBIM**'s acquisition of a 49% stake in Iberdrola's Spanish renewables portfolio.

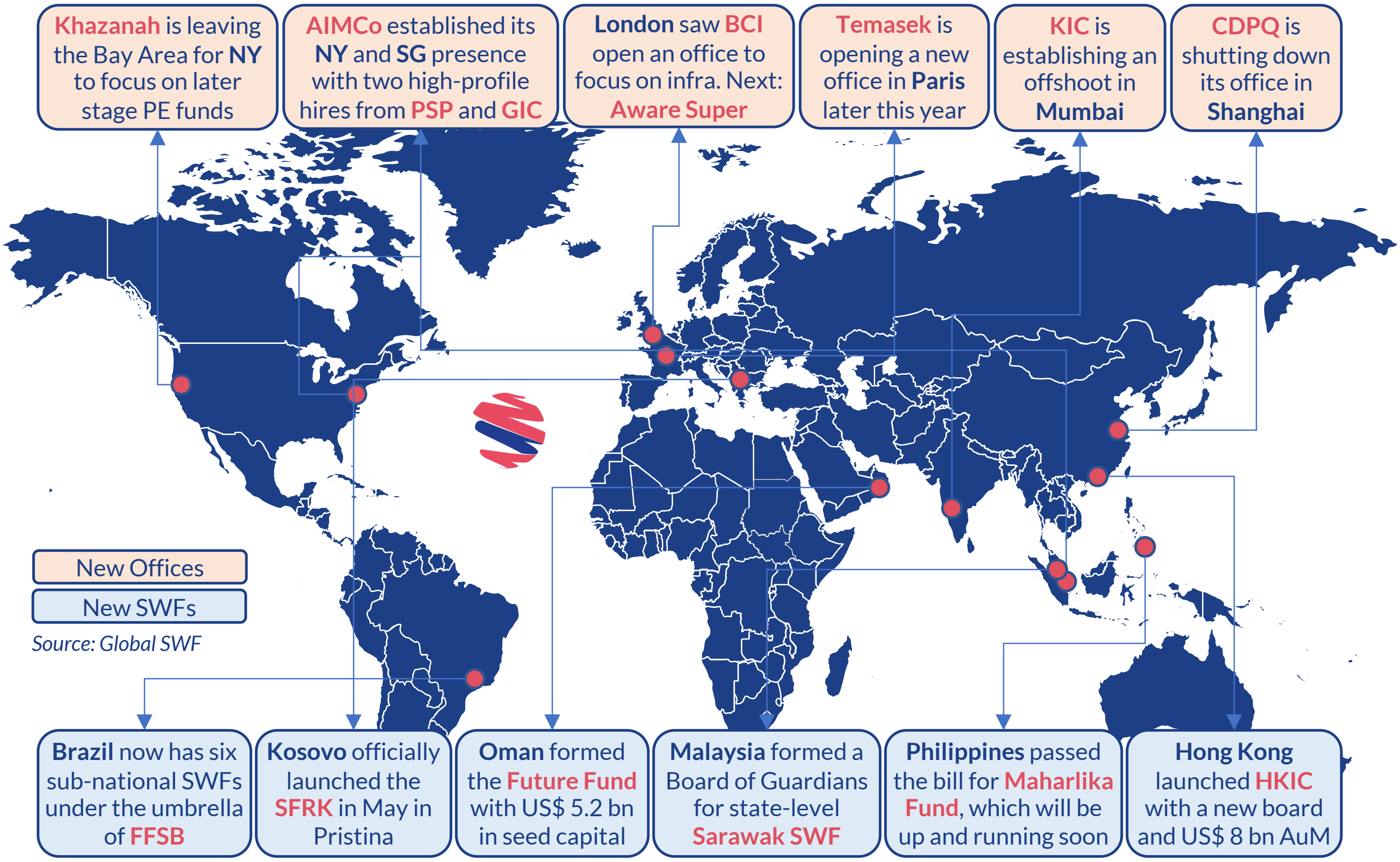
Figure 7. SOI Investment Activity in Green vs Black Energy



Source: Global SWF Data Platform

Apart from returns, changes in AuM, and investments, there have been other activities worth mentioning including the establishment of new sovereign funds and offices all around the world:

Figure 8. New SWFs and Offices Overseas during H1 2023



Source: Global SWF

Besides new SWFs and offices, Sovereign Investors continue to have a significant churn ratio at the leadership level. During the first six months of the year we have seen 13 changes in CEOs, as follows:

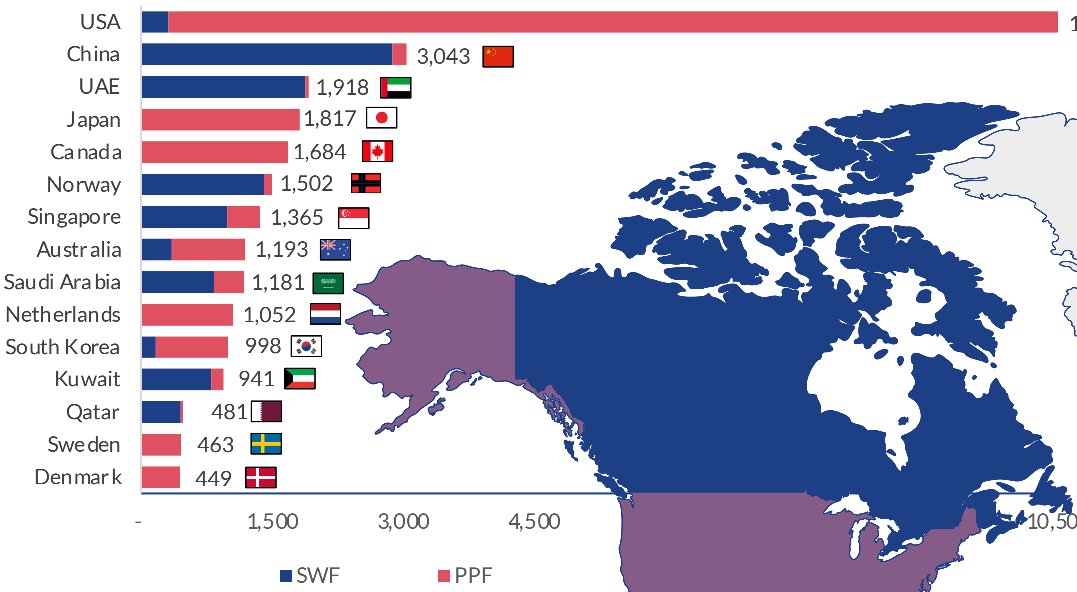
Table 4: Change in CEOs among Sovereign Investors during H1 2023

#	Fund	Country	Date	Outgoing CEO	Reason	Incoming CEO
1	GPSSA		Jan-23	Mohamed Al Hameli	Not renewed	Faras Al Ramahi
2	MGI		Jan-23	Herald Bonnici	Not renewed	Jesmond Gatt
3	EIH		Jan-23	Mamo Mihretu	Voluntary	Abdurehman Eid Tahir
4	Alecta		Apr-23	Magnus Billing	Removed	Peder Hasslev
5	ICF		Apr-23	Yoram Ariav	New Fund	Lena Krupalnik
6	Mumtalakat		May-23	Khalid Al Rumaihi	Not renewed	Abdulla Al Khalifa
7	FONSIS		May-23	Papa Demba Diallo	Voluntary	Abdoulaye Diouf Sarr
8	PSPF		May-23	Chou Chih-hung	New Structure	Morgan Chen
9	NIIF		May-23	Sujoy Bose	Voluntary	Rajiv Dhar (interim)
10	LTH		May-23	Amrin Awaluddin	Not renewed	Hamadah Othman
11	CBUS		June-23	Justin Arter	Retired	Kristian Fok
12	PensionDanmark		Oct-23	Torben M. Pedersen	Retired	Peter S. Mørch
13	NZ Super		Dec-23	Matt Whineray	Voluntary	TBC

Source: Global SWF Data Platform

3. GSR results by region & country

Figure 9. Top 15 Countries by SOIs ($b)



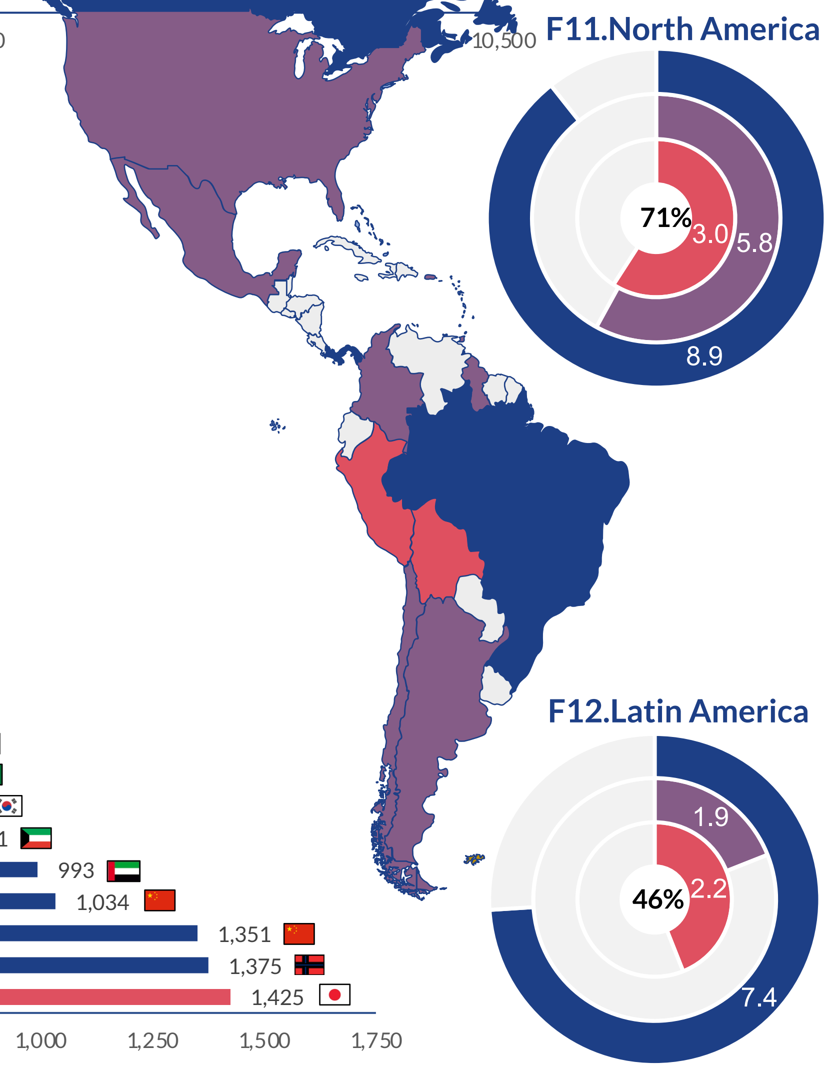
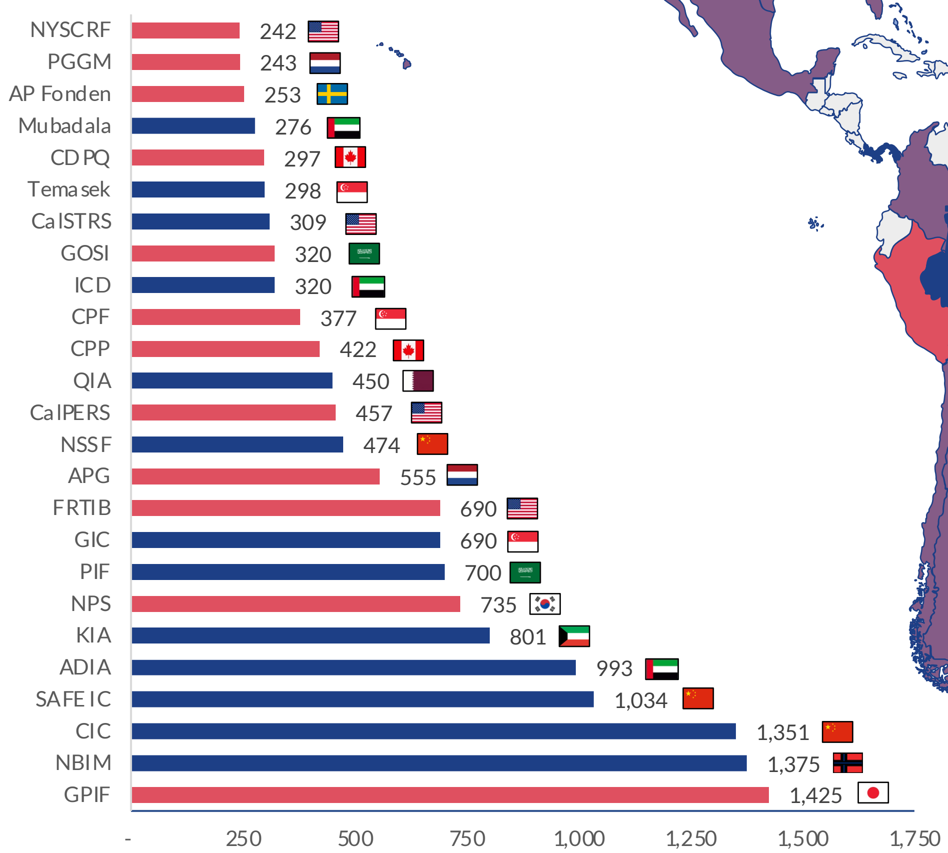
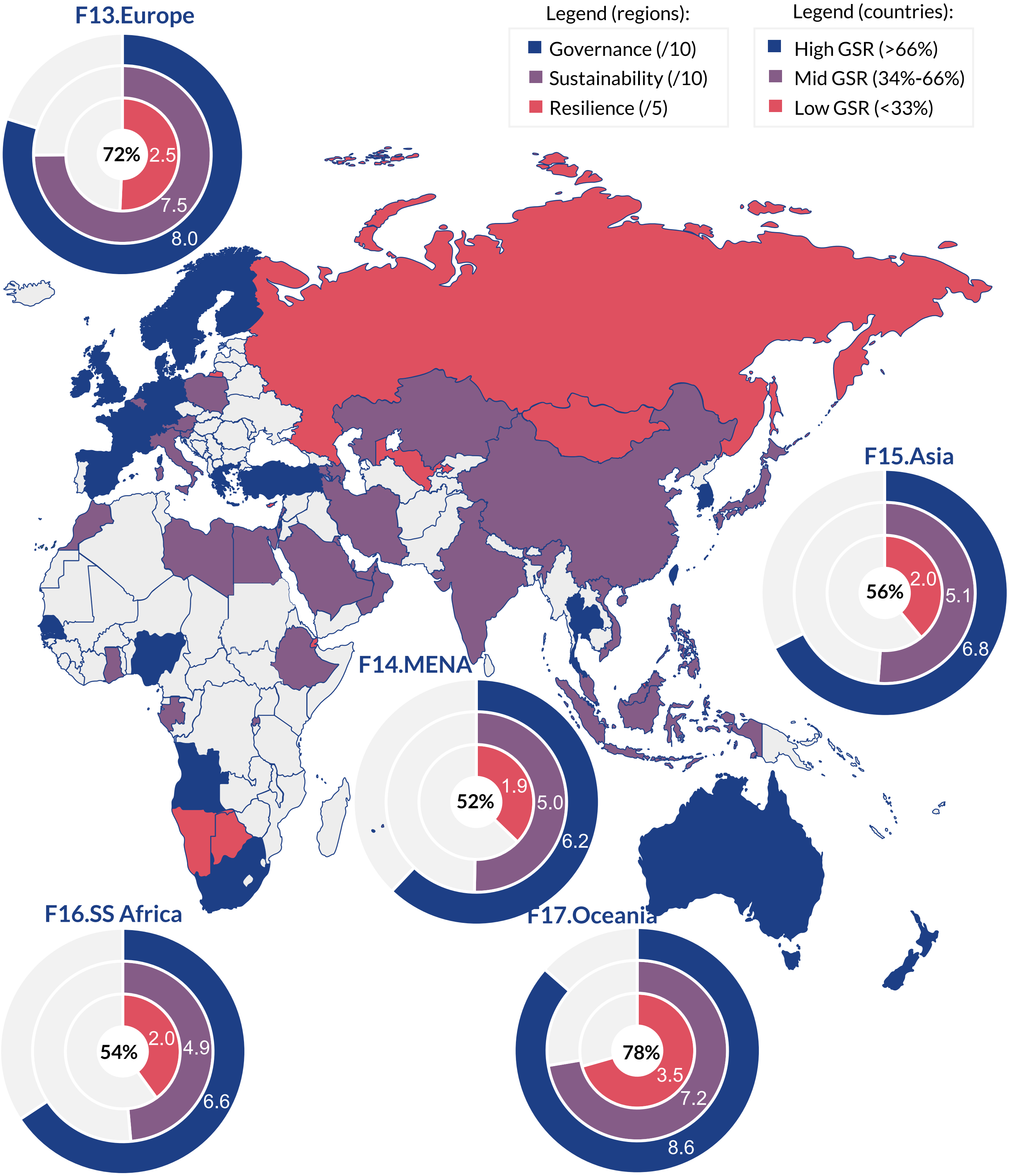


Figure 10. Top 25 SOIs ($bn)



Source: Global SWF Data Platform


F13.Europe
72%
2.5
7.5
8.0
Legend (regions):
Governance (/10)
Sustainability (/10)
Resilience (/5)
Legend (countries):
High GSR (>66%)
Mid GSR (34%-66%)
Low GSR (<33%)
F15.Asia
56%
2.0
5.1
6.8
F14.MENA
52%
1.9
5.0
6.2
F16.SS Africa
54%
2.0
4.9
6.6
F17.Oceania
78%
3.5
7.2
8.6

3.1. Correlation with ratings

In this fourth edition of the GSR Scoreboard, we rate 200 SOIs hailing from 81 different countries. By consolidating the data at national level, we can look at the countries that run their funds in the best manner.

The top tier list, with a GSR of over 66% (depicted in blue in the map of pages 8-9), includes countries in the Americas (Canada, Panama, Brazil), Europe (Spain, Ireland, Luxembourg, Sweden, Norway, the Netherlands, Denmark, France, Greece, Germany, the UK, Finland, and Switzerland), Middle East (Turkey, Palestine), Africa (Angola, Nigeria, Senegal and South Africa), and Developed Asia & Pacific (New Zealand, Australia, Thailand, South Korea, Singapore, and Taiwan). The elite club does not include the USA, which falls short in both sustainability and resilience, Belgium, Italy, or Japan.

Credit Ratings:

We tested the relevance and correlation between the national-level GSR scores and the credit ratings for the sovereign debt, as measured by the three top agencies: Standard & Poor's, Moody's, and Fitch.

The ratings are converted into numbers and averaged for all countries. Ten territories are not rated by any agency: Palestine, Nauru, Libya, Iran, Timor-Leste, Guyana, Kiribati, Djibouti, Monaco, and Brunei.

The resulting list of numeric ratings indicates a moderate positive linear relationship between the GSR scores and the average credit ratings, at 0.45.

Table 6: Numeric equivalence of Credit Ratings

S&P / Fitch	Moody's	Rating	S&P / Fitch	Moody's	Rating
AAA	Aaa	*100*	BB+	Ba1	*50*
AA+	Aa1	*95*	BB	Ba2	*45*
AA	Aa2	*90*	BB-	Ba3	*40*
AA-	Aa3	*85*	B+	B1	*35*
A+	A1	*80*	B	B2	*30*
A	A2	*75*	B-	B3	*25*
A-	A3	*70*	CCC	Caa1	*20*
BBB+	Baa1	*65*	CC	Caa2	*15*
BBB	Baa2	*60*	C	Caa3	*10*
BBB-	Baa3	*55*	D	Caa	*5*

Source: Ferri, Liu & Majnoni; Basel Guidelines on Rating-Agency Assessments

Corruption Perceptions Index (CPI):

Transparency International (a German non-profit founded in 1993 by former employees of the World Bank) publishes an annual index that ranks 180 countries and territories according to the perceived levels of their public sector corruption.

From our sample, five territories are not rated by the CPI: Palestine, Nauru, Kiribati, Monaco and Brunei. The correlation with the GSR is slightly stronger at 0.51.

Table 5. Countries per GSR, Ratings, CPI, FH & NGRI

#	Territory	# SOIs	GSR	Ratings	CPI	FH	NRGI
1	New Zealand	1	**100%**	95%	87%	99%	n.a.
1	Nigeria	1	**100%**	27%	24%	43%	53%
3	Spain	1	**96%**	70%	60%	90%	n.a.
3	Ireland	1	**96%**	87%	77%	97%	n.a.
5	Luxembourg	1	**92%**	100%	77%	97%	n.a.
5	Sweden	2	**92%**	100%	83%	100%	n.a.
7	Norway	3	**89%**	100%	84%	100%	86%
8	Netherlands	4	**88%**	100%	80%	97%	n.a.
9	Canada	11	**87%**	98%	74%	98%	75%
10	Denmark	5	**86%**	100%	90%	97%	n.a.
11	Panama	1	**84%**	58%	36%	83%	n.a.
12	France	3	**83%**	88%	72%	89%	n.a.
13	Australia	13	**82%**	100%	75%	95%	71%
14	Angola	1	**80%**	22%	33%	28%	35%
14	Greece	1	**80%**	47%	52%	86%	n.a.
14	South Africa	1	**80%**	42%	43%	79%	n.a.
17	Germany	3	**76%**	100%	79%	94%	n.a.
17	Thailand	2	**76%**	65%	36%	30%	n.a.
17	South Korea	4	**76%**	88%	63%	83%	n.a.
20	Singapore	3	**71%**	100%	83%	47%	n.a.
20	UK	3	**71%**	87%	73%	93%	77%
20	Finland	3	**71%**	95%	87%	100%	n.a.
20	Switzerland	3	**71%**	100%	82%	96%	n.a.
24	Brazil	1	**68%**	42%	38%	72%	71%
24	Turkey	1	**68%**	28%	36%	32%	n.a.
24	Taiwan	1	**68%**	90%	68%	94%	n.a.
24	Palestine	1	**68%**	n.a.	n.a.	17%	n.a.
24	Senegal	1	**68%**	38%	43%	68%	79%
29	USA	34	**65%**	98%	69%	83%	74%
30	Nauru	1	**64%**	n.a.	n.a.	77%	n.a.
30	Belgium	1	**64%**	87%	73%	96%	n.a.
30	Libya	1	**64%**	n.a.	17%	10%	18%
33	India	3	**63%**	55%	40%	66%	70%
34	Malaysia	5	**61%**	68%	47%	53%	56%
34	Armenia	1	**60%**	38%	46%	54%	n.a.
34	Italy	1	**60%**	58%	56%	90%	n.a.
34	Oman	1	**60%**	40%	44%	24%	50%
34	Poland	1	**60%**	72%	55%	81%	n.a.
39	Japan	5	**58%**	78%	73%	96%	n.a.
40	Chile	1	**56%**	75%	67%	94%	81%
40	Bahrain	2	**56%**	33%	44%	12%	39%
40	Slovenia	1	**56%**	77%	56%	95%	n.a.

#	Territory	# SOIs	GSR	Ratings	CPI	FH	NRGI
40	Qatar	2	**56%**	85%	58%	25%	45%
40	Kazakhstan	3	**56%**	57%	36%	23%	56%
40	Egypt	1	**56%**	28%	30%	18%	39%
46	Rwanda	2	**54%**	33%	51%	23%	n.a.
46	Azerbaijan	2	**54%**	48%	23%	9%	56%
48	Mexico	1	**52%**	60%	31%	60%	65%
48	Iran	1	**52%**	n.a.	25%	12%	38%
48	Austria	1	**52%**	95%	71%	93%	n.a.
48	Morocco	2	**52%**	52%	38%	37%	49%
52	Saudi Arabia	4	**51%**	80%	51%	8%	n.a.
53	UAE	9	**49%**	88%	67%	18%	42%
54	Timor-Leste	1	**48%**	n.a.	42%	72%	49%
54	Ghana	2	**48%**	20%	43%	80%	74%
54	Indonesia	2	**48%**	60%	34%	58%	68%
54	Philippines	1	**48%**	62%	33%	58%	58%
54	Mauritius	1	**48%**	60%	50%	85%	n.a.
54	Kuwait	2	**48%**	85%	42%	37%	54%
60	T. &Tobago	1	**44%**	53%	42%	82%	64%
60	Gabon	1	**44%**	23%	29%	20%	36%
62	China	6	**41%**	80%	45%	9%	55%
63	Guyana	1	**40%**	n.a.	40%	73%	56%
63	Colombia	1	**40%**	53%	39%	70%	76%
63	Israel	2	**40%**	82%	63%	77%	n.a.
63	Kiribati	1	**40%**	n.a.	n.a.	91%	n.a.
67	Ethiopia	1	**36%**	20%	38%	21%	40%
67	Argentina	1	**36%**	15%	38%	85%	57%
67	Vietnam	1	**36%**	43%	42%	19%	48%
70	Botswana	1	**32%**	68%	60%	72%	n.a.
70	Djibouti	1	**32%**	n.a.	30%	24%	n.a.
72	Namibia	1	**28%**	40%	49%	77%	n.a.
72	Bolivia	1	**28%**	27%	31%	66%	54%
74	Russia	2	**24%**	5%	28%	16%	45%
74	Uzbekistan	1	**24%**	38%	31%	12%	29%
76	Malta	1	**20%**	75%	51%	89%	n.a.
77	Monaco	1	**16%**	n.a.	n.a.	84%	n.a.
78	Cyprus	1	**12%**	53%	52%	92%	n.a.
78	Mongolia	1	**12%**	28%	33%	84%	70%
78	Peru	1	**12%**	65%	36%	70%	75%
81	Brunei	1	**8%**	n.a.	n.a.	28%	n.a.
	Total	**200**	**63%**	**64%**	**52%**	**63%**	**57%**

Sources: Ratings Agencies, CPI, FH, NRGI, Global SWF analysis

Freedom House (FH) Index:

Freedom House (a DC-based non-profit founded in 1941) monitors the state of freedom and democracy around the world and rates people's access to political rights and civil liberties in 210 territories annually.

This is the most comprehensive index, and it rates all 81 countries in our study. However, the correlation with the GSR is lower at 0.30.

Table 7: Correlation with GSR scores

Element	Ratings	CPI	FH	NRGI
G	0.38	0.42	0.34	0.23
S	0.37	0.44	0.16	0.06
R	0.42	0.41	0.33	0.23
GSR	**0.45**	**0.51**	**0.30**	**0.20**

Sources: Global SWF analysis

Countries with several funds are more likely to be in the middle of the table, as not all of them are managed in the same manner, especially when SWFs are mixed with PPFs.

The bottom part of the table includes countries that have in our sample only one sovereign investor, which has performed poorly. Some of them include recently created funds such as Namibia's **Welwitschia Fund**, Djibouti's **FSD**, and Cyprus' **NIF**, and others are stabilization funds with very little information, such as Botswana's **Pula**, Peru's **FEF**, and Mongolia's **FHF-FSF**.

The exception to this rule is Russia. The two Russian SWFs have found themselves subject to strong sanctions, which has affected their transparency and operations. **NWF** has resumed publishing its monthly stats through the Ministry of Finance, but **RDIF** has now limited the information available in its website and is no longer a member of the IFSWF for Santiago Principles.

Natural Resources Governance Institute (NRGI) Index:

NRGI is a NY-based non-profit established in 2013 through the merger of the Revenue Watch Institute and the Natural Resource Charter, which looks at whether countries rich in natural resources (O&G and mining) promote good governance and a sustainable and inclusive development. NRGI's index assigns a score per nation; and there are 41 countries with both an NRGI index and a GSR score, and the correlation between those two parameters is the lowest one, at 0.20.

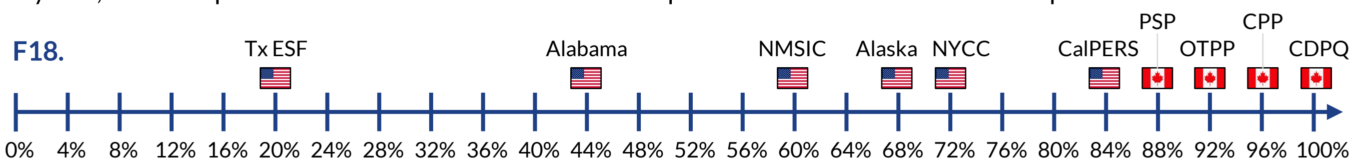
A low correlation of a GSR score with these indices can be actually good news as it signals the ability of investment institutions – such as Nigeria's **NSIA** and Thailand's **GPF** – to thrive in challenging environments.

This year we analyze the results geographically, by illustrating the position of 10 major funds per region:

North America (45 funds, 71% average score):

Canadian pension funds are generally better than their US peers when it comes to GSR overall scores (87% vs 65% in 2023). US retirement systems maintain high levels of governance and transparency; however, responsible investing has not been a priority, and most pension systems are significantly underfunded. The exception, as shown on page 30, is **NYS CRF**, which is fully funded and has a score of 88%, similar to **PSP** in Canada. The "Maple 8" are best in class and had a remarkable average GSR of 93% in 2023, led by **CDPQ**. The inclusion of more US funds in the past two exercises has driven down the overall performance of North American funds from 75% in 2021 to 71% in 2023, and it is difficult to see how this may change in the next few years, unless improved returns in the financial markets push the assets valuations back up.

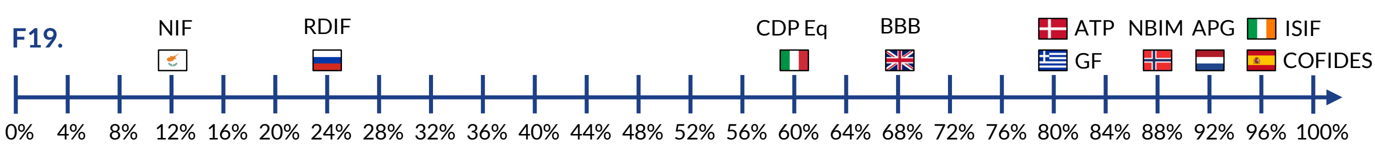
F18.



Europe (43 funds, 72% average score):

In Europe there is a high disparity in results given the heterogeneity of countries, types of SWFs and pension systems. Among sovereign funds, best practices are found in Ireland (**ISIF**), Spain (**COFIDES**) and France (**Bpifrance**), three strategic funds that need good scores in front of their potential partners. Norway's **NBIM**, considered the pinnacle of transparency in the industry, is slightly penalized for not having a domestic agenda, which its sister organization **FTF** looks after. European pension funds maintain an impressive 86% average score (much higher than those in the US) and are led by the Netherlands (**PGGM**, **APG**), Sweden (**AP-Fonden**, **Alecta**), and Denmark (**PFA**, **PensionDanmark**). Overall, the average score of the state-owned investors in the continent, including the UK, has increased from 67% in 2021 to 72% in 2023.

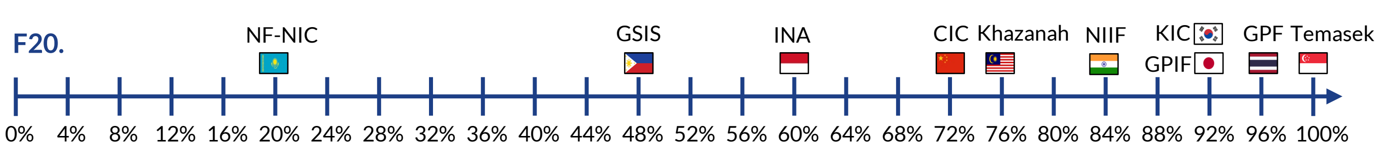
F19.



Asia (42 funds, 55% average score):

We have witnessed a great improvement among Asian investors in the past three years, from 47% in 2020 to 55% today. The change is more noticeable in governance, where some funds are becoming more transparent and engaging; and in sustainability, where some funds are publishing their first annual ESG reports. **Temasek** leads the charge this year with a perfect score, followed by Thailand's **GPF**, Japan's **GPIF** (which is as transparent as Norway) and both Korean funds, **KIC** and **NPS**. The rest of Asia is quite diverse, with some strategic funds such as India's **NIIF** and Indonesia's **INA** remaining quite open and sustainability-driven as they attract capital to their respective nations, and some savings funds such as China's **SAFE Investment Company** (and its subsidiaries), Kazakhstan's **NIC** and Brunei's **BIA** keeping their disclosure levels to the minimum.

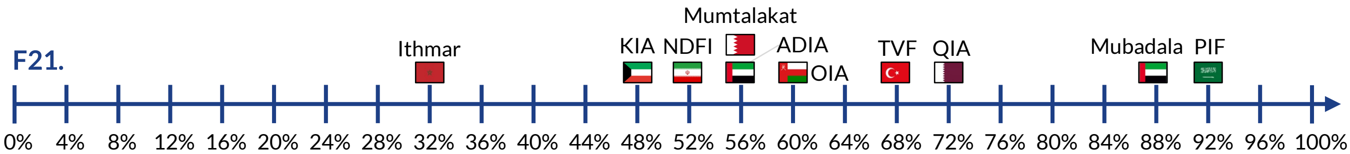
F20.



MENA (29 funds, 52% average score):

Middle Eastern funds experienced the best improvement of GSR scores globally, from 32% in 2020 to 52% in 2023, despite the recent addition of some smaller funds. Institutions like Saudi's **PIF**, Abu Dhabi's **Mubadala** and **ADQ**, Qatar's **QIA**, and Bahrain's **Mumtalakat** have embraced the rating tool and taken the opportunity to improve practices and achieve a stronger alignment with international standards. Others, like **ADIA** and **KIA**, continue not to engage and have stayed with the same scores, 56% and 48%, respectively.

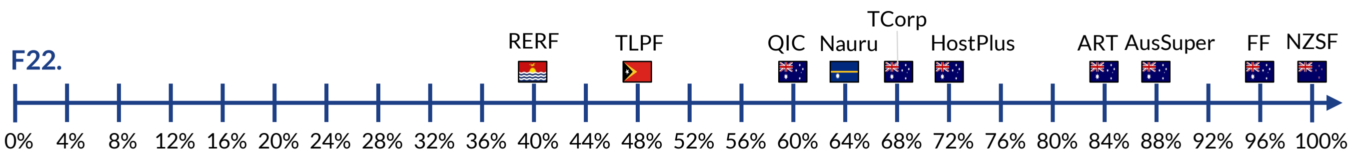
F21.



Oceania (17 funds, 78% average score):

Oceania is, once again, the region with the highest average score: 78%. Superannuation funds, including SWFs designed to complement such schemes such as **NZ Super** and **Future Fund**, are very active and successful investors that maintain robust governance and resilience. Among state-level managers, Victoria's **VFMC** (VFF, ESSSuper) is well ahead of New South Wales' **TCorp** (NGF, StateSuper) and Queensland's **QIC**. The consolidation of the industry (**ART**, **Aware Super**) will continue to create larger funds with better GSR scores.

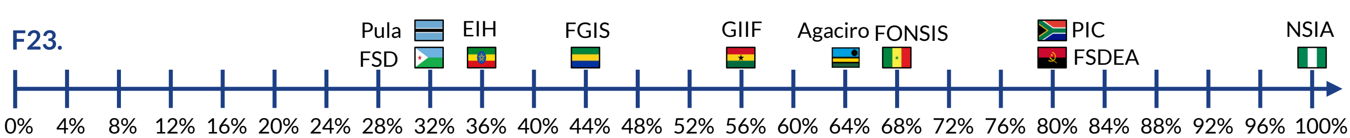
F22.



Sub-Saharan Africa (14 funds, 54% average score):

Sub-Saharan African funds are also getting much better at governance, sustainability, and resilience. Nigeria's **NSIA** achieved a perfect score in 2023 thanks to its recently published and very detailed impact reporting. South Africa's **PIC** (manager of pension scheme GEPF) and Angola's **FSDEA** are great examples of funds that have endured serious challenges but are today in better shape. The rest of the continent is a mix, and funds will need to offer stronger assurances to attract more foreign investment to their economies.

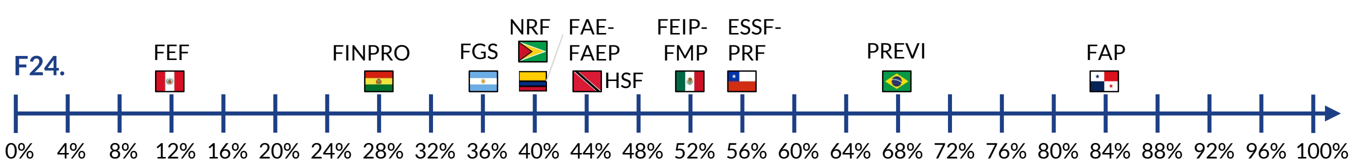
F23.



Latin America (10 funds, 46% average score):

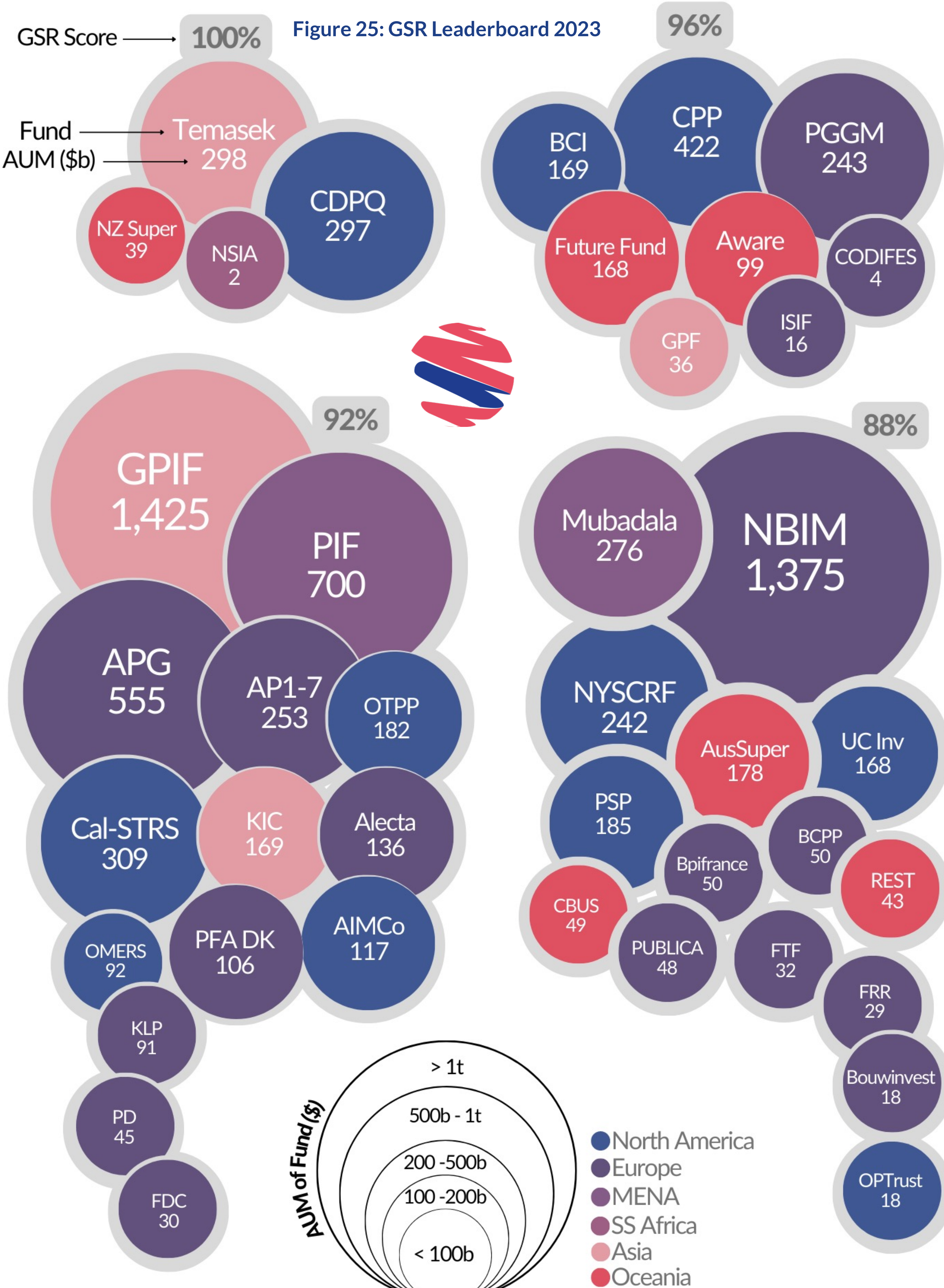
Lastly, Latin America continues to be the worst region in terms of GSR – and continues to worsen, from 51% in 2020 to 46% today. The reason is that most institutions are focused on stabilization purposes (as opposed to Africa's strategic funds) and they tend to be less accountable and sustainability-focused. That said, they have proven certain level of resilience and most funds that were heavily withdrawn during Covid-19 (Mexico's **FEIP**, Colombia's **FAE-FAEP**, Peru's **FEF**, Chile's **ESSF-PRF** and T&T's **HSF**) are back on their feet.

F24.



4. GSR by Sovereign Investor

Figure 25: GSR Leaderboard 2023



This year's scoreboard is led by four SOIs: a state investor from Asia (Temasek), a pension manager from North America (CDPQ), a superannuation fund from Oceania (NZ Super), and a sovereign fund from Africa (NSIA), all with 100%.

The extended leaderboard on page 16 features 12 sovereign funds and 29 pension funds with scores between 88% and 100%. Most of the funds in this selected group hail from developed markets: 17 from Europe, 11 from North America and 9 from Developed Asia and Pacific. Only four funds are from emerging markets: NSIA from Nigeria, GPF from Thailand, PIF from Saudi Arabia, and Mubadala from the UAE.

The 41 leaders manage a total of US$ 8.7 tn in capital, over a third of the capital assessed this year. They lead the way in terms of best practices, with an average 9.2/10 G score, an average 9.5/10 S score, and an average 4.3/5 R score.

We note significant progress beyond the leaders: among the funds that were rated in both 2022 and 2023, 69 of them got higher marks, 94 stayed the same and only 22 got lower marks. SOIs with the largest improvements include the following:

- Saudi's PIF (+32%) is managing to make its unparalleled growth sustainable by pursuing best practices. Its annual report is a rare display of transparency, including audit accounts, evolution of AuM, asset allocation, returns and assets; and its chairman announced a "net zero by 2050" commitment in November 2022.
- Oman's OIA (+28%) is also pursuing operational excellence and identity following the merger of two different organizations and portfolios, SGRF and OIF, in 2020. Its latest annual report sheds light on major investments and exits, portfolio strategy and governance; and it is forming a new framework to align with SDGs.
- Armenia's ANIF (+28%) is a great example of a new fund that is enhancing governance and sustainability and addressing resilience factors as it matures. The Central Asian fund did not renew its MoU with RDIF and closed its Moscow office to open one in Abu Dhabi and establish more formal work with UAE entities.
- Abu Dhabi's ADQ (+24%) recently published a new and detailed website as well as its first sustainability report with plenty of details and metrics. Ahead of COP28, which will be celebrated in the UAE in December 2023, the newest Abu Dhabi SWF wants to set an example by aligning national priorities with SDGs.
- Egypt's TSFE (+24%) is following the example of its Eastern neighbors and pursuing specific sustainable policies that align with responsible investment frameworks. Its website now offers a window into the fund's regulations, including the SWF Law, and actions, such as its multi-sector investments and contribution to Egypt's GDP.

Disclaimer about the GSR scoreboard:

Global SWF's GSR scoreboard should not be considered an endorsement of certain sovereign entities over others, and it is not necessarily a reflection of current or future events. Some funds may have ticked certain boxes but that does not make them more trustworthy, stable, or successful. For example, Sweden's Alecta may be in the leader group with 92% but was quick to dismiss its CEO after certain investment losses, which goes to show accountability but also lack of resilience to regular cycles. The Netherlands' APG and PGGM may enjoy full marks in resilience, but they endured some extraordinary losses in 2022. And Kuwait's KIA and PIFSS may maintain a 48% score but also had a turbulent year with political shakeups and executive layoffs. Sadly, government-related investors will always have a degree of uncertainty, and GSR scores are not necessarily indicative of future results or success.

Table 8: Differences 22/23

Fund	Country	Diff
PIF	Saudi	+32%
OIA	Oman	+28%
ANIF	Armenia	+28%
ADQ	UAE	+24%
TVF	Turkey	+24%
TSFE	Egypt	+24%
EIH	Ethiopia	+24%
Kokkyoren	Japan	+24%
Growthfund	Greece	+20%
Palestine	Palestine	+20%
GPF	Thailand	+20%
PUBLICA	CH	+20%
NSIA	Nigeria	+16%
Baiterek	KZ	+16%
BLF	Taiwan	+16%
FEIP-FMP	Mexico	+16%
COFIDES	Spain	+16%
VFMC	Australia	+16%
QIA	Qatar	+16%
OMERS	Canada	+12%
NYS TRS	USA	+12%
NIIF	India	+12%
Khazanah	Malaysia	+12%
FONSIS	Senegal	+12%
SFPIM	Belgium	+12%
GOSI	Saudi	+12%
EIA	UAE	+12%
Pula Fund	Botswana	+12%
KIC	S. Korea	+8%
TCorp	Australia	+8%
SAFE IC	China	+8%
Aramco PF	Saudi	+8%
NWF	Russia	+8%
Aware	Australia	+8%
ART	Australia	+8%
HESTA	Australia	+8%
CDG	Morocco	+8%
Penn PSERS	USA	+8%
Solidium Oy	Finland	+8%
Amitim	Israel	+8%
Temasek	Singapore	+4%
CDPQ	Canada	+4%
NZ Super	N. Zealand	+4%
Mubadala	UAE	+4%
AusSuper	Australia	+4%
LACERA	USA	+4%
PNB	Malaysia	+4%
BVV	Germany	+4%
ND RIO	USA	+4%
Agaciro	Rwanda	+4%
ICD	UAE	+4%
LIA	Libya	+4%
NCRS	USA	+4%
MI ORS	USA	+4%
SSO	Thailand	+4%
Mumtalakat	Bahrain	+4%
MassPRIM	USA	+4%
FRC	Monaco	+4%
KWAN	Malaysia	+4%
FHF-FSF	Mongolia	+4%
GSIS	PN	+4%
TL PF	TL	+4%
NSSF	China	+4%
ADPF	UAE	+4%
AIH	Azerbaijan	+4%
FSD	Djibouti	+4%
UFRD	UZ	+4%
CIC	China	+4%
NYC Compt	USA	+4%
KWAP	Malaysia	+4%
CDP Equity	Italy	+4%

Source: GSR 2022 & 2023

4.1. Correlation with returns

Institutional investors are increasingly aware of the importance of embracing good governance, green policies, and strong resilience in their daily operations as investment organizations.

We recently went through our annual update of investment returns. Comparing returns across SOIs is never easy and it usually takes a lot of assumptions and disclaimers. Yet, most funds have now reported their FY22 results, and we have looked at the average returns for the past decade, which we consider a fair cycle. Of the overall sample, we could calculate the returns for 94 SOIs, with the following, usual caveats:

- SOIs have different fiscal years and those reporting in March and June have historically had a disadvantage;
- Some funds only report returns on a rolling basis, so we relay on our estimates for the 10-year returns; and
- FY13-FY22 was a great decade for investing and favored the funds with a higher weight in US equities.

Intuitively, stabilization funds and strategic funds report lower averages, while savings funds and pension funds have better results, given their risk appetite and asset allocation. The average return for a SOI in that period was 6.6%, with NZ Super (12.1%) and CPP investments (10.9%) leading the pack.

In this context, we have studied the relationship between high standards around governance, sustainability and resilience, and superior financial returns, with the following results:

- **G scores vs Returns:** 0.38 correlation. This is the strongest positive relationship and suggests that robust transparency and accountability can lead to good financial returns. Of those with a perfect G score, only Panama's FAP and Azerbaijan's SOFAZ averaged less than 3% return due to their weight in fixed income.

- **S scores vs Returns:** 0.19 correlation. Several studies have suggested that responsible investing leads to superior returns and, indeed, we can observe a positive albeit weaker relationship. Some US pension funds including Ohio STRS, Michigan ORS, and MassPRIM have returns over 9% despite having a poor S score.

- **R scores vs Returns: -**0.03 correlation. Our data shows practically no relationship between resilience and financial performance. Some resilient funds like ISIF have lower returns due to their specific investment profile, while some others with a bad R score like Finland's Solidium present strong financial returns.

- **GSR scores vs Returns:** 0.24 correlation. The overall coefficient has slightly increased from last year's 0.22 despite changing the length of the annualized returns from six to 10 years. The results could be stronger, but there are many other conditions in play, such as the mission, investment profile, and manager's alpha.

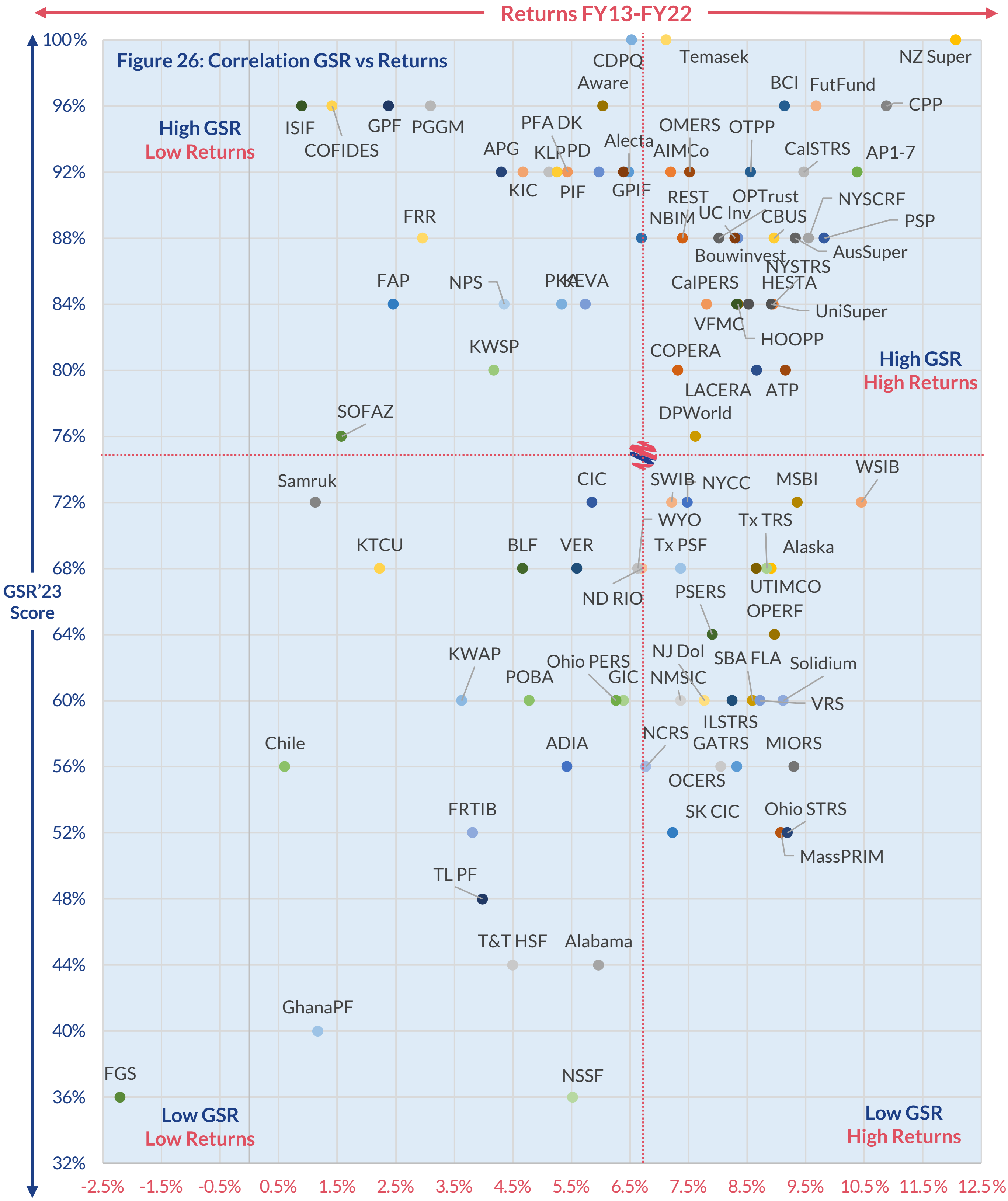
    - SOIs with high GSR scores and high returns: NZ Super, CPP and Future Fund, among others
    - SOIs with high GSR scores but low returns: ISIF, COFIDES and GPF, among others
    - SOIs with low GSR scores but high returns: WSIB, Alaska PFC and Virginia RS, among others
    - SOIs with low GSR scores and low returns: NSSF, GHF+GSF and FGS, among others

Table 9. GSR Scores and Returns of SOIs per mission

	#funds	GSR'23*	Return FY13-22	Correlation
Stabilization Funds	6	53%	1.8%	0.18
Savings Funds	17	69%	7.1%	0.59
Strategic Funds	8	81%	5.0%	-0.47
Sovereign Wealth Funds	31	69%	5.5%	0.25
Public Pension Funds	63	78%	7.1%	0.13
State-Owned Investors	**94**	**75%**	**6.6%**	**0.24**

Source: Global SWF's GSR Scoreboard 2023

** The average GSR scores reflected here refer to the SOIs whose returns where available only, and could therefore differ from the average GSR scores for the full universe*



*Source: Global SWF analysis. * Single-year returns estimated from reported rolling returns*

4.2. GSR Leader 2023: Temasek

The leader of this year's assessment is **Temasek Holdings**. For the past three years, the Singaporean State-Owned Investor has consistently ranked among those with best practices globally, and this year it scored 100% of the GSR elements with its website providing more clarity around its organizational structure.

Temasek sets very high **governance**, transparency, and accountability standards: it discloses information it is not required to, such as total assets and financial returns; it pays taxes overseas; and it is held accountable for its financial performance.

Temasek is also a trailblazer when it comes to **sustainability** and responsible investing: it has been carbon neutral for the past three years and is committed to reach net zero emissions by 2050; it has expanded its ESG integration to include climate risk; and it has adopted an aggressive internal carbon price (US$ 50 per tCO_2e).

Lastly, **Temasek** is clearly focused on **resilience** and long-term survival: its 2030 strategy revolves around the concept of building a resilient, forward looking portfolio; it aims at not only surviving but thriving in uncertain times; and it relies on three major engines of long-term growth: investments, partnerships, and development.

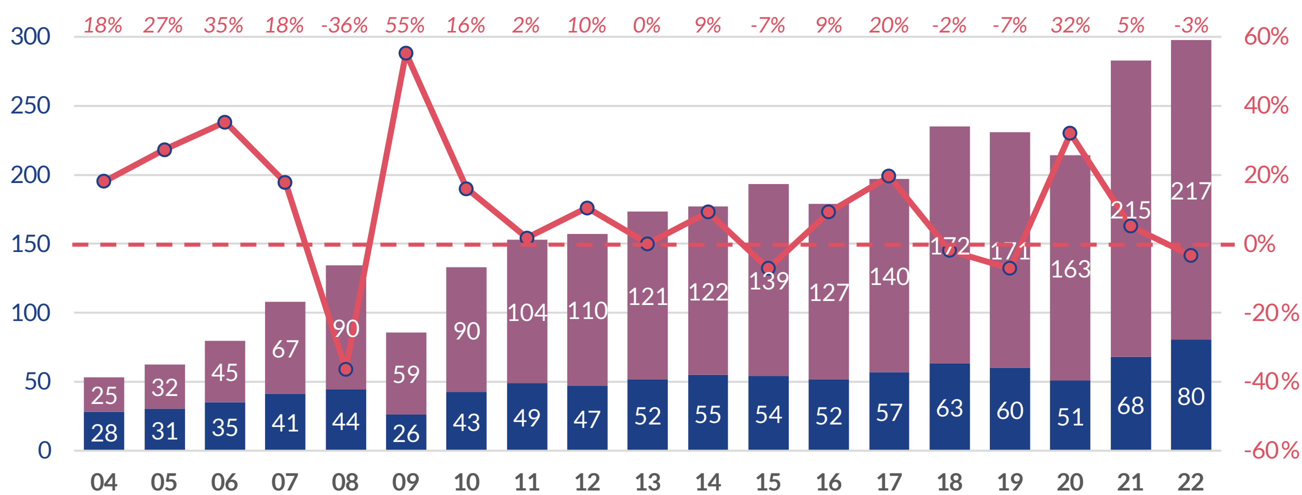
We had the pleasure of sitting down with Eu Jin Chua, Managing Director of Institutional Relations, to discuss the GSR scoreboard's elements, the keys for **Temasek**'s success, and the future ambitions of the institution.

[GSWF] In the past decade, Temasek's 10-year total shareholder return was 7%, beating some other major institutions that are pure financial investors. What would you say Temasek's main success factors are?
*[T] **Temasek**'s journey began in 1974 when it was incorporated with a S$ 354 million (US$ 0.3 billion) portfolio, which included companies that the Singapore Government used to hold directly. There was to be a clear division of governance between the Government as a policymaker and regulator, and **Temasek** as a commercial investor and owner.*

*In the 1980s and 1990s, **Temasek** started being an active investor. We grew with Singapore in our early years, as some of our portfolio companies ventured beyond Singapore and scaled to be globally competitive. In 2002, Temasek stepped out to build a second wing of growth with a transforming Asia as it evolved to be a global investor. We opened our first overseas offices in Mumbai in 2004, then in Beijing, before venturing further to open offices in the Americas and Europe.*

*We have also increased our exposure outside Asia to capture global opportunities for innovation, shifting our portfolio exposure by adding more exposure to developed markets in the process. Our exposure to developed markets is 65%, and our growth markets exposure is 35% as at 31 March 2022, compared to 55% and 45% respectively in 2011. As the global landscape becomes more complex and uncertain, **Temasek** seeks to build a resilient and forward looking portfolio.*

Figure 27. Temasek's Net Portfolio Value (NPV) and One-Year TSR FY04-22 (US$)



Source: Temasek's reports (portfolio exposure by underlying assets), Global SWF analysis using S$-US$ Exchange Rate as at 31 March of the respective years

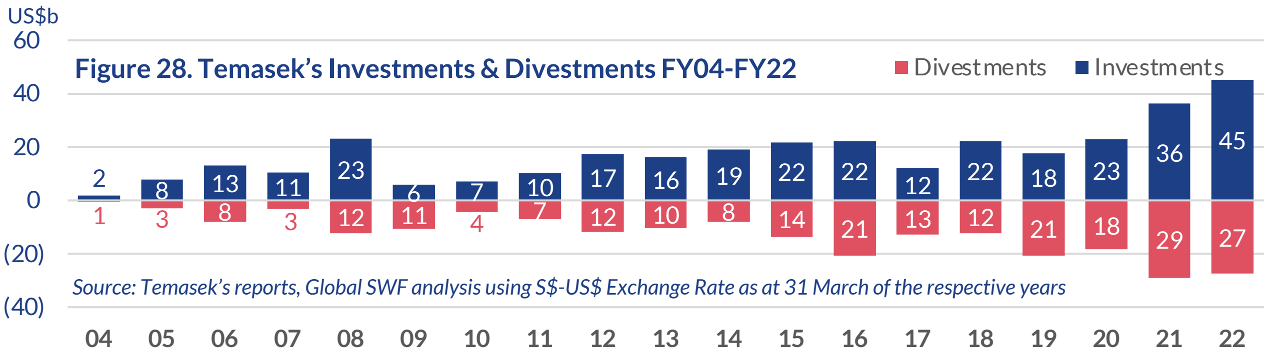
[GSWF] Temasek is a unique investor: an active seller, with US$ 173 billion divested in the past decade, and focused on industries and trends, rather than asset classes. Can you walk us through your portfolio mix?
[T] We seek opportunities to deploy catalytic capital to address global challenges, especially in areas aligned with long term structural trends. And so, there's no top-down allocation to sectors. The four structural trends that shape our long term portfolio construction are – Digitization, Future of Consumption, Sustainable Living, and Longer Lifespans.

***Digitization** and **Sustainable Living** are megatrends with a pervasive impact across many sectors as well as on the business models of emerging and established businesses. **Future of Consumption** and **Longer Lifespans** reflect structural shifts in consumption patterns and growing needs of longevity arising from our population growth and longer expected lifespans. These trends have grown from 13% of our portfolio in 2016 to 30% of our portfolio as at 31 March 2022.*

*By portfolio exposure, **Financial Services** (23%), **Transportation & Industrials** (22%), and **Telecommunications, Media & Technology** (18%) are our three largest sectors. Guided by our view that opportunities in sectors are converging, we will continue to focus on **Consumer, Media & Technology**, **Life Sciences & Agri-Food** and **Non-bank Financial Services**. Together, these sectors constituted 33% of our overall portfolio in 2022, a significant increase from a 5% share in 2011.*

***Temasek** backs innovations and technologies at pre-commercialized stages to be at the leading edge in relevant areas of Artificial Intelligence, Blockchain, Cybersecurity, and Deep Tech, and engages closely with portfolio companies on their efforts in assessing potential disruption risks and identifying transformation opportunities arising from these trends.*

Figure 28. Temasek's Investments & Divestments FY04-FY22



Source: Temasek's reports, Global SWF analysis using S$-US$ Exchange Rate as at 31 March of the respective years

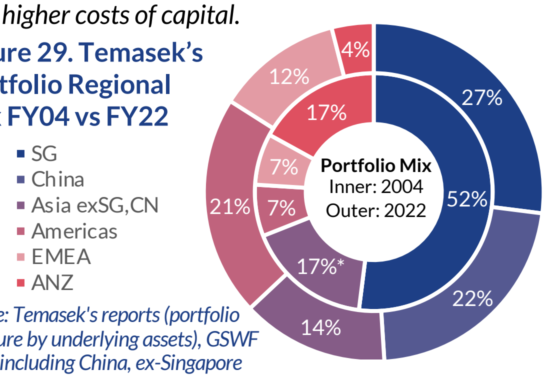
[GSWF] Your international portfolio is very balanced, with 22% in China and 21% in the US. How do you see the current tensions and developments, and how does Temasek look at geopolitical risk?
[T] We are in a world of persistent inflation, restrictive macro policy and lower growth. Intensifying geopolitical tensions have impinged on the globalization of trade, investment, and technology. We have seen a renewed and urgent focus on national security, including energy and commodity sufficiency, data ownership, and techno-nationalism. The supply disruptions during COVID have added further impetus to the rethink of supply chains, especially for critical products.

*Both the China and US markets are important investment destinations for **Temasek**. We do not have top-down target allocations for geographies. Geographical risks are factored in when we conduct bottom-up intrinsic value tests for each new investment, with expected returns evaluated against a risk-adjusted cost of capital that is derived using the capital asset pricing model. Investments in riskier sectors or markets will have higher costs of capital.*

*Against this macroeconomic backdrop, **Temasek**'s **2030 strategy** has become even more relevant – comprising:*

1. *Building a **resilient**, forward looking portfolio,*
2. *Putting **sustainability** at the core of all that we do,*
3. *Developing **new competencies** in the horizontal enablers of Artificial Intelligence, Blockchain, Cybersecurity, Data & Digital and Sustainable Solutions, and*
4. *Continuing to **evolve** our organization.*

Figure 29. Temasek's Portfolio Regional Mix FY04 vs FY22



Source: Temasek's reports (portfolio exposure by underlying assets), GSWF
** Asia including China, ex-Singapore*

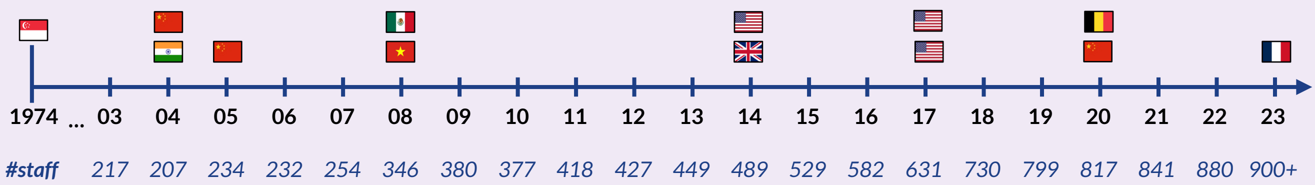
[GSWF] Since you joined Temasek, you have seen the number of staff grow from 254 in 2007 to 900 today. Do you think personnel will or should keep growing at the same pace as the portfolio?
[T] Our staff strength has been growing in tandem with our portfolio as we expand globally and build a future-ready organization. We have about ***900 people of 33 nationalities across 12 offices in 8 countries****. Over the years, we have branched out to establish a presence in key centers around the world — first, in China and India, then Vietnam. As we identified the trends that guide portfolio construction, we expanded beyond Asia, to the Americas and Europe.*

The core of this global footprint is our people. We believe that everybody must be driven by purpose, because that will determine our steps for this decade and beyond. Our purpose, ***So Every Generation Prospers****, serves to guide us in this complex and ambiguous world.* ***Temasek*** *is always a work in progress, but our people have courage, conviction, tenacity, and purpose as generational stewards to work towards the prosperity of our current and future generations.*

Our international offices are part of our 2030 strategy to grow our organization, talent, and capabilities. In today's complex world, this is critical to help address the numerous issues that we face – from ***geopolitical tensions*** *to the* ***macro environment****. Our offices overseas work closely together to expand* ***Temasek****'s presence and access to opportunities, in addition to tapping on the expertise of sector teams and* ***Temasek****'s network of portfolio companies and platforms.*

Our newest office will be in ***Paris****, which together with* ***London*** *and* ***Brussels****, will help us enhance access to deal flow, partnerships, and talent pool across both the European Union and the broader Europe, Middle East and Africa region.*

Figure 30. Temasek's Offices CY03-CY22 and Headcount FY03-FY22 *Source: Temasek's reports, Global SWF analysis*



[GSWF] Over the years, governments around the world have tried to replicate the "Temasek model". What would be your advice to other Sovereigns reading this report and trying to follow Temasek's footsteps?
[T] What has worked for ***Temasek*** *may not necessarily work for all sovereign owned investors. We can, however, explain why and how we were set up to give you an insight into what were in the minds of our founding fathers.*

Temasek *was established as a* ***commercial investment company*** *in 1974, because the Government felt that it was necessary to separate governance from business management. The objective of such an investment company, owning and managing these assets, was to allow the government to focus on its core role of policymaking and regulations.*

Neither President of Singapore nor the Government are involved in our investment, divestment, or business decisions, and they do not guarantee our obligations. Instead, the Government holds the Board ***accountable*** *for our performance by assessing* ***Temasek****'s long term returns.*

Similarly, we hold the boards and management of our portfolio companies accountable for their activities but do not interfere in their day-to-day management and business decisions. As an ***engaged shareholder****, we keep abreast of industry developments that impact on our portfolio companies and track their performance. We regularly engage their leadership to understand their strategies and responses to changing operating environments, and longer term trends.*

Over the years, our portfolio has shaped alongside the existing risks and opportunities and the longer term trends. Additionally, our ***T2030 strategy*** *sets our course as we navigate an increasingly complex world towards our goals of being a Purpose-Driven Organization, providing Catalytic Capital, and growing as a Networked Organization.*

Temasek *was established to contribute towards a better world through its investments, uphold good governance, and grow our initial portfolio for future generations. These principles remain as relevant today as they did in the early 1970s and are defined in three roles: an* ***active investor and shareholder****; a* ***forward looking institution****; and a* ***trusted steward****.*

[GSWF] Let’s now look at the three different aspects of the GSR Scoreboard for Temasek:

Governance (“G”):

Eu Jin Chua, Managing Director of Institutional Relations at Temasek

[GSWF] Temasek's contribution under the NIR framework forms part of the overall NIRC, which is estimated to be US$ 17.3 billion (S$ 23.5 billion) in FY23. Does the success of “Singapore Inc.” reside in the separation of powers between MAS, GIC, Temasek and CPFB?
[T] “Singapore Inc.” is a popular way to describe Singapore’s success and often in a complimentary manner. But I can only comment on Temasek (and turn you to the other organizations, each of whom have their distinct missions).

The Government’s relationship with Temasek is that of a shareholder and investee company, just like any other shareholder of a company. The Singapore Government is not involved in Temasek’s investment, divestment, or any other business or operational decisions. Temasek declares dividends annually in accordance with our dividend policy. Our Board sets our dividend policy, balancing the sustainable distribution of profits as dividends to our shareholder with the retention of profits for reinvestment to generate future returns. As a commercial company, Temasek also pays taxes.

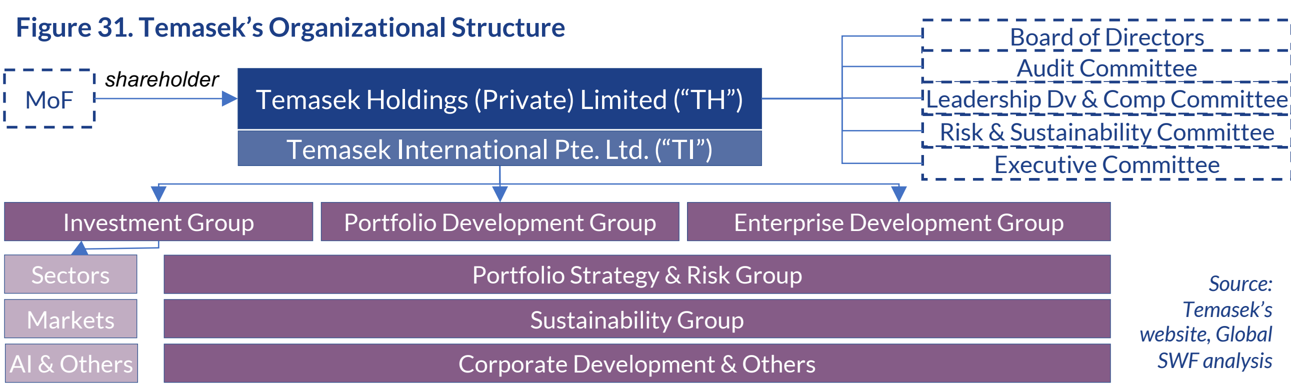
*Temasek also contributes to the annual Government budget through the **Net Investment Return (NIR) Contribution**. The NIR framework allows the Government to spend up to 50% of the expected long-term real returns on the net assets invested by MAS, GIC and Temasek. To be clear, NIR is not an outflow for Temasek and the NIR framework does not determine the amount of dividends we declare to our shareholder.*

[GSWF] Can you please explain the differences between Temasek Holdings and Temasek International, and what it means to have a common CEO since 2021? *[T] Dilhan holds the roles of Executive Director & CEO of Temasek Holdings (appointed in 2021), and CEO of Temasek International (appointed in 2019).*

- *Incorporated in 1974, **Temasek Holdings (TH)** is wholly owned by the Singapore Government through the Minister for Finance. The principal activity of TH is that of an investment holding company.*
- ***Temasek International (TI)**, a wholly-owned subsidiary of TH, was created a decade ago as the commercial arm of Temasek to drive the investor role of Temasek as a long term owner and active investor.*

As Executive Director & CEO of TH, Dilhan is responsible for the Stewardship role of Temasek, particularly in respect of Temasek’s Constitutional responsibilities to safeguard its own past reserves, as a Fifth Schedule entity. This is complementary to his role as CEO of TI, as an active investor, and overseeing the operations of the firm as well as the organization of its talent and resources to deliver sustainable value over the long term for Temasek.

Figure 31. Temasek’s Organizational Structure



Source: Temasek’s website, Global SWF analysis

Sustainability ("S"):

[GSWF] Temasek is clearly one of the most active Sovereign Investors when it comes to Sustainability and Net Zero commitments – and yet, it has shied away from membership organizations. Is this by design?
[T] Our commitment to sustainability is deeply rooted in our purpose. We value the roles various global organizations and industry alliances play in defining and advancing best practices. We remain in regular dialogue with them and their members, regardless of our memberships, so that we can play a constructive role as a private sector participant. Our approaches to embedding climate and sustainability in our investments take reference from various global frameworks and are designed to ensure relevance in the context of our characteristics as a long term asset owner of our portfolio.

*We have introduced an expanded approach to include climate analysis in our **ESG integration framework**. The analysis is mandatory for all new investments that are evaluated and examine climate impact from several perspectives:*

- *Potential **investee company's contribution** to climate change through its carbon footprint;*
- *Impact of climate change from **physical and transition risk** perspectives; and*
- *Any potential new opportunities arising from **technology innovations** as well as evolving customer needs.*

*We also apply an **internal carbon price**, currently US$ 50 per tCO2e in our investment evaluations to account for the potential exposure to transition risk. The intention is to increase this progressively to US$ 100 by the end of this decade.*

Table 10. Temasek's Annual Environmental Footprint

Metric	Unit	18A	19A	20A	21A	22A	30T	50T
Scope 1 emissions from co. vehicles	'000 tCO2e	n.a.	n.a.	n.a.	n.a.	0.0	n.a.	n.a.
Scope 2 emissions from electricity	'000 tCO2e	2.5	2.3	2.5	2.3	2.3	n.a.	n.a.
Scope 3 emissions (travel, events, etc.)	'000 tCO2e	33.7	27.4	21.1	1.2	4.1	n.a.	n.a.
Total absolute emissions (gross)	**'000 tCO2e**	**36.2**	**29.7**	**23.6**	**3.5**	**6.5**	**n.a.**	**n.a.**
Purchased carbon offsets	'000 tCO2e	n.a.	n.a.	-23.6	-3.5	-6.5	n.a.	n.a.
Total absolute emissions (net)	**'000 tCO2e**	**36.2**	**29.7**	**neutral**	**neutral**	**neutral**	**n.a.**	**n.a.**
Water consumption	'000 m3	9.6	11.3	7.7	2.8	3.4	n.a.	n.a.
Paper consumption	mn pieces	5.3	4.9	3.7	1.0	0.9	n.a.	n.a.
Energy consumption	mn kWh	5.7	5.2	5.7	5.4	5.5	n.a.	n.a.
Employee Carbon Intensity	tCO2e / employee	49.6	37.2	28.8	4.2	7.4	n.a.	n.a.
Portfolio Carbon Intensity	tCO2e / S$m value	n.a.	n.a.	130	103	81	n.a.	n.a.
Total portfolio emissions	**million tCO2e**	**n.a.**	**n.a.**	**30**	**30**	**26**	**11**	**0**

Source: Temasek Review 2022. A = Actual, T = Target

[GSWF] Your journey to Net Zero is very ambitious and the reduction in carbon emissions in FY20-FY22 was likely helped by Covid-19. Do you think it will stay that way now that global travels are back?
*[T] As a company we have maintained carbon neutrality for the third year running in 2022. Our 2030 target is to reduce the net carbon emissions attributable to our portfolio to half the 2010 levels, with the ambition to achieve net zero emissions by 2050. To progress towards our climate targets, we have identified three pathways: (i) we invest in **climate-aligned opportunities**; (ii) we enable **carbon-negative solutions**, such as technologies for Carbon Capture, Utilization, and Storage and nature-based solutions; and (iii) we encourage and support **ongoing decarbonization efforts** in businesses.*

With the resumption of economic activity post the COVID-19 period, we expect higher emissions levels for the firm and for some portfolio companies. Emissions trajectories will not be linear, but similar to our financial returns, we prioritize the long-term over the short-term. The biggest lever we can have with our capital is to deploy it purposefully, in order to accelerate climate solutions and thereby catalyze positive real-world impact.

Resilience ("R"):

[GSWF] We are often questioned how we define Resilience in the context of Sovereign Investors. Can you please share how Temasek looks at resilience and at new, potential "black swan" events?
[T] Resilience is what will allow us to not only survive but ***thrive in uncertain times****. As such, we need to focus on resilient growth as a key strategy and have holistic conversations around it.*

The first key is ***financial strength****. To have a resilient company and a resilient business model, a company must have a strong balance sheet, a strong core business, and an intense focus on positioning for growth – organically and inorganically. And for this, every company needs 3 things: the right strategy, the right capital structure with strong capital management, and the right organization and people focusing on talent and capabilities and continuous improvement. Companies need to be in the business of* ***continuous transformation****. We will need to constantly look ahead and anticipate not just what is down the road, but what lies around the corner. One clear manifestation of this is the impact of* ***generative AI*** *on our businesses. Digitization and automation are therefore key business imperatives.*

Another key to resilience lies in ***developing our workers****, who are the heartbeat of our companies. We must proactively engage them if we want our companies to be future-ready. How effectively we can accelerate our climate journeys is also another factor to achieving resilience. Some ways we have done so have been indicated in our response above.*

The last key to resilience is ***partnerships****. In an increasingly uncertain world, we cannot weather challenges alone. Instead, we value an ecosystem approach where we scale capital, expertise, and access to opportunities through strategic partnerships. At* ***Temasek****, everything we do is underpinned by how we operate as a networked organization.*

[GSWF] Can you please provide some examples of how your investment, partnership and development engines make you a more resilient and forward-looking organization?
[T] As we navigate an increasingly complex world, we have been looking beyond direct investments to build a resilient and forward looking portfolio through our three engines: investment, partnership, and development.

Our ***Investment Engine*** *will continue to deploy catalytic capital in structural trends and partnering our portfolio companies as they reposition for the future. We have reshaped our portfolio in many ways to become more resilient and better weather shocks over the last decade. For example, we invested significantly in* ***Tech, Life Sciences, Non-bank Financial Services, Consumer and Agri-Food****; grew our global footprint and increased our exposure to* ***US*** *and* ***Europe****; and embraced innovation and captured emerging opportunities by looking into unlisted and* ***early-stage*** *opportunities.*

Our ***Partnership Engine*** *comprises our Solutions Platforms and Asset Management Business. We look to strategic partnerships to catalyze growth and build scalability. Some examples of our partnerships include our joint venture with* ***BlackRock*** *called* ***Decarbonization Partners****, which will focus on late-stage venture capital and early growth private equity investing, targeting proven, next-generation renewable and mobility technology and solutions. We are also a founding partner of the* ***Brookfield Global Transition Fund*** *that is helping to accelerate the global transition to a net zero economy by investing in the transformation of carbon-intensive industries and development of clean energy sources.*

Our ***Development Engine*** *will build future growth sectors and leading enterprises through upstream innovation and R&D to identify disruptive technologies and new sources of differentiation to create the next generation of leading companies:*

- *We set up* ***ClavystBio*** *via* ***CLA*** *to invest in life sciences companies and develop an innovation district in Singapore;*
- *We have cultivated strategic partnerships with deep tech investor to help us gain insights on deep tech and scientific research which could disrupt existing businesses or offer exponential growth potential in the future, e.g.,* ***Breakthrough Energy Ventures (BEV)****, which has made several co-investments with* ***Temasek*** *to expedite the commercialization of promising technologies capable of addressing climate change challenges on a global scale; and*
- *Lastly, we also have* ***Sydrogen Energy****, a JV launched with* ***Nanofilm*** *that aims to tap on opportunities in the hydrogen economy; accelerate the proliferation of hydrogen energy, a sustainable fuel source; and develop innovative solutions to enable commercial adoption.*

Governance: 10 elements (*into brackets, % of SOIs that scored every element*)

#1 – Mission & vision: Does the Fund clearly state its mission, objective, or purpose? (*100%*)
This is the easiest element to address. The purpose is at the core of the fund's existence, and most SOIs state their objectives on their website. Those that do not maintain a website do it through other public means. This was one of the very few points scored by Cyprus' NIF, Peru's FEF, or Mongolia's FHF-FSF.

#2 – Deposit & withdrawal rules: Does the Fund clearly state how it is funded and possibly withdrawn? (*79%*)
#2 for SWFs: Do we know how the fund gets its capital from and how is it possibly withdrawn?
#2 for PPFs: Is there a statement for the contributions and distributions made to pensioners?
This element is aligned to question #23 but seeks transparency rather than resilience. This matter represented the biggest improvement for sovereign wealth funds (+19% when compared to 2022), given the new disclosures provided in their triennial IFSWF self-assessments and/or in their websites and annual reports.

#3 – External manager reputation: Is there a robust process to select external managers, if any? (*51%*)
This question seeks transparency in the selection of external parties to avoid recent cases such as Malaysia's 1MDB with PetroSaudi, and Angola's FSDEA with Quantum Global. Some sovereign funds act as de-facto managers on behalf of their governments and this question may not be fully applicable to them.

#4 – Internal & external governance: Does the Fund provide clarity of its governance structure? (*92%*)
This is the second most addressed element: who are the main stakeholders and how are the Board of Directors / Trustees and the leadership formed? The CEOs of Abu Dhabi's ADIA, and Bahrain's FGR and Mumtalakat are members of their respective royal families, which may not be perceived as a best practice elsewhere.

#5 – Investment strategy & criteria: What kind of assets does the Fund seek to invest in? (*89%*)
The investment strategy is a common question to be answered to, and some State-Owned Investors would go as far as listing specific criteria a business should meet to be funded. Only 16 SWFs – mostly strategic funds – and six pension funds fail to mention what kind of stocks or assets they are looking for.

#6 – Structure & operational data: How is the Fund structured as an investment organization? (*56%*)
We are often challenged by the inclusion of this question and the rationale of asking for an organizational chart. However, we believe it says a lot about how the institution is run and structured and is an important question for the stakeholders. Canada's BCI and CPP, Ireland's ISIF and Australia's Aware Super only failed on this point.

#7 – Annual accounts audited: Are financial statements audited and in the public domain? (*71%*)
We could find and read the audited statements of 82% of the pension funds assessed – however, the ratio is much lower among sovereign funds, and 41 of them fail to have their financials publicly available. These may be signed off by the State Auditor or by a major accounting firm, but their citizenry cannot access them.

#8 – AuM figure public: Does the Fund provide clarity on how much capital it manages? (*89%*)
22 sovereign investors do not share the size of their balance sheet with their citizenry, half of which are in the MENA region: UAE's ADIA, ADPF, ADQ, EIA, GPSSA, and SAM; Kuwait's KIA and PIFSS; Qatar's QIA; Saudi Arabia's NDF; and Morocco's Ithmar.

"Of the 29 sovereign investors covered in the MENA region, 11 do not disclose their AuM, and 23 do not report returns."

#9 – Details of investment portfolio: Does the Fund provide clarity on what assets it currently holds? (*69%*)
An increasing number of State-Owned Investors offer an insight into their major portfolio investments. A few provide a comprehensive account of every holding, including their market value. These include Japan's GPIF, New Zealand's NZ Super, Norway's NBIM (except for real estate), and USA's CalPERS.

#10 – Annual vs LT return: Is the most recent year's return provided? (*67%*)
This question highlights the heterogeneity of the industry, as every investor reports results in a different way. We ask for single-year investment return. Malaysia's Khazanah, Abu Dhabi's Mubadala, and Saudi's PIF ticked this box for the first time, while ADIA, GIC, OIA, and PIC continue to provide multi-year rolling returns only.

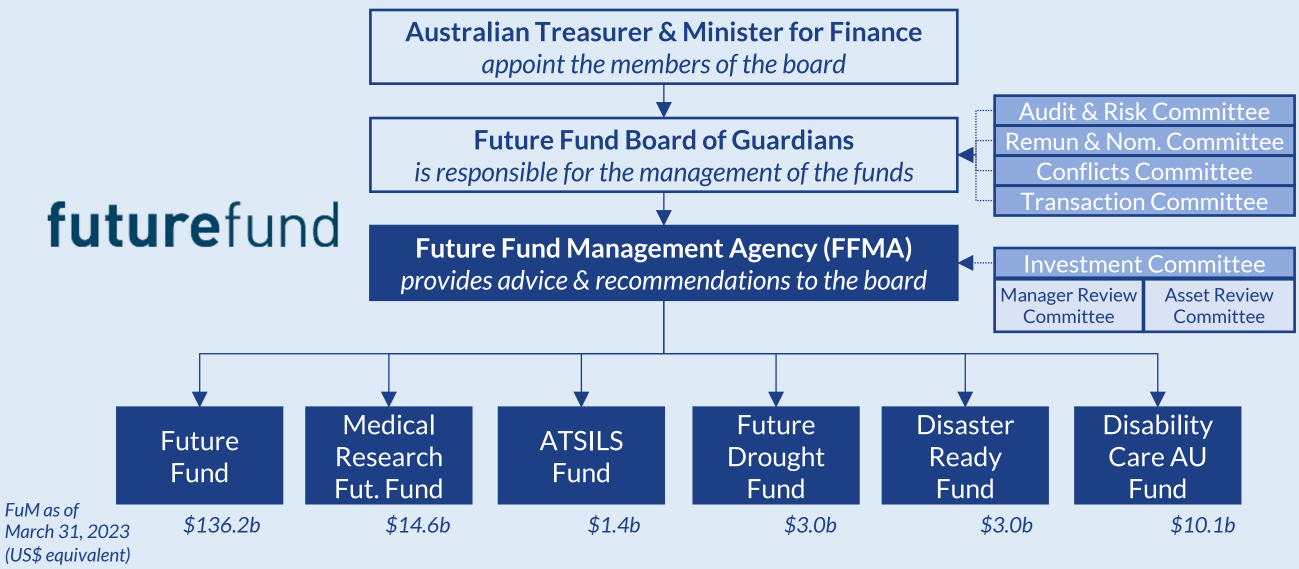
Champions in Governance: Future Fund

Australia **Future Fund** was established by the Act 2006 to "*make provision for unfunded superannuation liabilities that will become payable during a period when an ageing population is likely to place significant pressure on the Commonwealth's finances.*" The fund was seeded with part of the proceeds of the privatization of Telstra, as well as a 17% stake in the telecommunications company, part of which was divested between 2009 and 2011.

The initial idea was to keep injecting capital in the fund, while setting the first drawdowns for 2020-21. No additional money was contributed and the withdrawals were postponed to 2027-28, ensuring the coverage of all unfunded liabilities and cementing the **Future Fund** as a self-sustaining savings fund. Over the years, the Board of Guardians was also given the responsibility of managing other pools of capital in addition to the Future Fund, and they have different risk profiles, asset allocation and drawdown schedule.

The autonomy of **Future Fund** is ensured by a robust governance framework, which is rare among SWFs. The Board of Guardians is accountable for the oversight of the funds, while the Management Agency is responsible for providing advice and recommendations to the Guardians. The six board members are appointed by the Treasurer and responsible Ministers based on their expertise in investments and corporate governance.

Figure 32: Future Fund's Governance Structure



Source: Future Fund Act 2006, 15 Year Report, 2021/22 Annual Report, Portfolio Updates, website, and Global SWF analysis

"Our strong statutory governance framework gives us investment independence from government, while the clarity of our risk and return objectives drives a sharp focus on what we need to achieve. Together these elements have been - and remain - really important to the Future Fund's investment and organizational success.

Over the last few years though, we have also recognized that the world is changing and that the processes and thinking that have served us well in the past need to evolve. We've retested our assumptions, refreshed our investment thinking, used new data and insights to contribute to decision-making and created new levers to help us manage risk and access alpha."

Will Hetherton, Head of Corporate Affairs at Future Fund

Sustainability: 10 elements (*into brackets, % of SOIs that scored every element*)

#11 – Ethical standards & policies: Does the Fund have a code of conduct or conflict of interest policy? (*71%*)
We seek a formal and developed policy around ethics, conduct or conflicts of interest; or an investment exclusion list, which funds like Sweden's **AP Fonden** and Australia's **Future Fund** maintain, guided by ethical concerns. Many SOIs list their values along with their mission and vision, but do not provide any further detail.

#12 – Stewardship team in place: Does the Fund employ a dedicated team for Responsible Investing? (*49%*)
One would think that sustainability is in every investor's mind these days – but the answers to this question say otherwise: a total of 62 SWFs and 40 PPFs of our sample do not employ a single ESG-dedicated professional. Some would still claim that sustainability factors are integrated into their investment decision process.

#13 – Economic mission: Does the Fund seek economic advancement? (*49%*)
This question is intrinsically linked to question #19, as most strategic funds pursue not only financial returns but also the development of the host economy. Funds can also have an economic mission overseas, as is the case of China's **CADF** in several African countries, including Ethiopia, Ghana, Kenya, Zambia, and South Africa.

#14 – Economic impact & measure: Are ESG key metrics or figures provided? (*42%*)
Funds with economic goals should report appropriate KPIs, and these are normally included in an annual ESG report. Even those that do not yet issue ESG reports can report metrics regularly, e.g., Saudi's **PIF** (employment and GDP contribution), and Turkey's **TVF** (financial, human value, natural, intellectual, and social value).

#15 – ESG annual report: Does the Fund produce an annual ESG report? (*38%*)
This question seeks a standalone responsible investing report, or a meaningful section in the annual report, published on a regular basis. Only 38% of the sample – 23 SWFs and 53 PPFs – meet the requirement today. Furthermore, some ESG reports could use more specific KPIs and progress, and less generic literature.

"Only 55% of sovereign investors report risk management policies with ESG risk factors, only 49% have ESG teams, and only 38% report ESG activities regularly"

#16 – Alignment with SDGs: Is the Fund a UNPRI signatory member or does it align with the SDGs? (*50%*)
Only 33% of the SOIs, including 13 SWFs and 53 PPFs, are signatory members of the UN Principles for Responsible Investing (PRI) and 34 other institutions align with the Sustainable Development Goals (SDGs). Morocco's **Ithmar** was delisted as a signatory member in 2020 for failing to meet the minimum requirements.

#17 – Partnership & memberships: Does the Fund collaborate with international investors or bodies? (*63%*)
This question goes beyond membership of international bodies and seeks partnerships and/or co-investments with other State-Owned Investors. Once funds start pursuing those, they are generally more transparent and accountable. This number is rapidly increasing as MoUs and investment clubs flourish worldwide.

#18 – Emerging markets / managers: Does the Fund invest in emerging markets and/or managers? (*79%*)
A significant number of State-Owned Investors hail from an emerging economy and invest at home, others are from the developed world and invest in growth markets, and a third group invests via emerging managers. The latter is increasingly common among US PPFs, including **NYS CRF** (US$ 9.5 bn) and **Texas TRS** (US$ 5.9 bn).

#19 – Role in domestic economy: Does the Fund invest in the domestic economy and businesses? (*84%*)
The days when SWFs were defined as solely foreign assets holders are long over. Today, 74 of the Top 100 SWFs invest domestically, and some of them do so exclusively. Some of the largest SWFs that continue to invest overseas exclusively are Norway's **NBIM**, Abu Dhabi's **ADIA**, Singapore's **GIC** and South Korea's **KIC**.

#20 – ESG risk management: Does the Fund accept and address climate change and other ESG risks? (*55%*)
Decarbonizing and climate issues are not the only ESG-related challenges, and SOIs must acknowledge non-financial risks before addressing them. Only 55% of the Top 200 funds talk of climate or ESG in a broader sense in their risk management policies. PPFs are much more likely (68%) to address such risks than SWFs (41%).

Champions in Sustainability: Public Investment Fund (PIF)

In November 2022, Saudi Arabia's Public Investment Fund (PIF) became the first SWF in the Middle East and one of the first ones globally to announce aims to achieve net-zero emissions by year 2050. But this was nothing really new, as PIF had been working on sustainable initiatives since 2017.

Figure 33: PIF's Sustainable Initiatives

Creation of 79 companies in 13 strategic sectors, and 500,000+ direct and indirect jobs (**2023***)

Target contribution of US$ 320 bn to non-oil GDP, 60% of local content and 1.8m jobs (**2025**)

Ambition to reach around US$ 2 tn in AuM and approx. 7% contribution to non-oil GDP annually (**2030**)

Establishment of the Regional Voluntary Carbon Market Company (**RVCMC**)

Dedication to environmentally-responsible solutions: **Giga Projects**

Two issuances of **green bonds** (total of US$ 8.5 bn between Oct'22-Feb'23)

Commitment to **net zero by 2050** through circular carbon economy

Published a **Green Finance Framework** with projects eligible for green financing

*Source: PIF's Strategy 2021-25, Annual Report, and Global SWF analysis. * At the time of publishing this article*

Two examples can illustrate the efforts of PIF around future sustainability trends. The first one is electric vehicles (EV), one of the main targets for decarbonization and economic diversification. PIF invested over US$ 1billion in Lucid Motors, and the company last year announced it is building a factory in Saudi Arabia. Today, Lucid is listed in Nasdaq and PIF's 61% stake is valued at c. US$ 8 billion. In addition, the SWF announced in November 2022 the launch of Saudi Arabia's first electric vehicle brand, Ceer, in a joint venture with and based Hon Hai Precision Industry Company (Foxconn). The first Ceer models are scheduled to roll off the production line in 2025 and the brand is projected to contribute US$ 8 billion to Saudi GDP by 2034, creating 30,000 jobs.

Additionally, PIF is mandated to develop 70% of Saudi Arabia's renewable energy capacity by 2030, and an example of the significant progress that is being made towards this is the investment of over US$ 6 billion by PIF and its partners in five solar power projects, with a cumulative capacity of approximately 8 gigawatts. These investments will support Saudi Arabia's target of a 50% renewable energy mix by 2030.

"The report reinforces PIF's status as one of the world's leading impactful and responsible investors, with world-class governance and sustainability practices.

PIF has led the way in supporting the clean energy transition globally. It has held the largest ever voluntary carbon credit auctions globally with 3.6m credits sold to international companies. PIF was also the first sovereign wealth fund to issue green bonds, including the first-ever century green bond, with a combined value of $8.5 billion; and the first fund in the region to commit to targeting net zero by 2050.

PIF continues to invest in a cleaner and more resilient economy, driving sustainable growth within domestically and globally."

Chad Richard, Head of Strategy Development & Innovation at PIF

Resilience: 5 elements (*into brackets, % of SOIs that scored every element*)

#21 – Risk Management policy: Does the Fund have a robust risk management framework in place? (*69%*)
Having a risk management policy and having it available for the citizenry seems like a reasonable ask. And, indeed, most institutions talk about risk management in their websites, but only 61% of sovereign funds and 76% of pension funds elaborate their risk approach in detail in their websites or annual reports.

#22 – Strategic asset allocation: Is there proper thought behind the asset allocation of the Fund? (*66%*)
Having a robust asset allocation is key to define levels of liquidity and ensure resilience in times of uncertainty. Some strategic funds including Spain's **COFIDES**, France's **Bpifrance**, Greece's **Growthfund**, and India's **NIIF** provide a view per industries but not per asset classes, liquidity, or types of securities.

#23 – Policy for withdrawals: Is there a mechanism to avoid the depletion of the Fund in the long term? (*28%*)

#23 for SWFs: Is there a specific mechanism to avoid depletion?

#23 for PPFs: Is the funding status disclosed and if so, is it 100% or above?

Not surprisingly, this question is the most difficult to respond to and justify by Sovereign Investors. For SWFs, we seek a withdrawal mechanism with certain limits or conditions, and only 35% meet the criteria. For PPFs, we ask for the pension scheme to report a fully funded status (100%+), which is the case for only 20% of them.

#24 – BCM / Crisis team in place: Does the Fund employ a dedicated Operational Risk team? (50%)
Covid-19 highlighted the need for State-Owned Investors to not only be successful investors, but also be run seamlessly as robust and resilient organizations. We here seek a dedicated team around operational risk or business continuity management (BCM), which happens in less than half of the cases: 39 SWFs and 60 PPFs.

#25 – Speed & discipline: Is the Fund generally well placed for its long-term survival? (*33%*)
This answer is the only one with a certain degree of judgement, based on our insights into the funds' operations and finances. Some of them may have ticked most of the previous boxes and adapted to unexpected crises, but we still have not found enough evidence or are skeptical of their ability to survive in the long-term.

"The 2022 financial markets debacle brought serious issues to several sovereign and pension funds, which need to work to ensure they are bullet-proof, resilient investment organizations"

Table 11. Examples of underfunded and overfunded pension funds

Fund	HQs	AuM $b	Funding		Fund	HQs	AuM $b	Funding
VER		21	22%		Alecta		136	169%
NJ DoI *		85	59%		LAPP (AIMCo)		48	124%
CalPERS		457	72%		BPFBouw		68	129%
CalSTRS		309	73%		HOOPP		77	117%
Texas TRS		184	79%		ATP Groep		97	117%
NYC Compt *		242	81%		ABP (APG)		503	117%
SBA Florida *		178	83%		PZFW (PGGM)		238	109%
OPB (IMCO)		26	94%		OTPP		182	106%
OMERS		92	95%		NYS CRF*		242	103%
NYS TRS		132	99%		Aware Super (DB)		99	110%

Source: Pensions' latest actuarial valuation, Global SWF analysis.
** Weighted average of all managed plans*

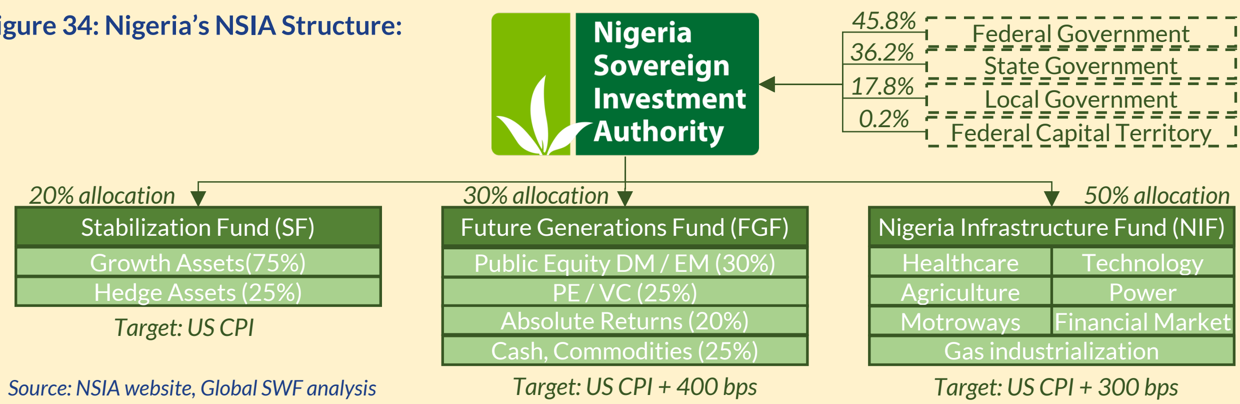
Champions in Resilience: Nigeria's NSIA

Nigeria does not necessarily come to mind when it comes to solvency, and credit rating agencies classify its sovereign debt as B-/B2 (see page 12). However, the Nigeria Sovereign Investment Authority (NSIA) has been an example of best practices since it was set up in 2012. Its predecessor, a stabilization fund called Excess Crude Account (ECA) had peaked at US$ 20 billion in 2007 but was rapidly withdrawn by the different cabinets.

To avoid the pitfalls of ECA, the NSIA was designed as a three-tier umbrella with stabilization, savings and infrastructure development missions. The Stabilization Fund, with 20% of the AuM since inception, aims to provide budget support in times of economic stress; the Future Generations Fund, with 30% of the allocation (40% until 2018), saves for future generations of Nigerians; while the Nigeria Infrastructure Fund, with 50% of the allocation (40% until 2018), invests in catalytic domestic infrastructure. They all have different horizons, target returns, asset allocation and style (SF and FGF are external and global; NIF is internal and domestic).

More importantly, the three funds are ring-fenced and have different fiscal rules. In October 2020, the Federal Government of Nigeria requested NSIA's first withdrawal of capital, in the sum of US$ 150 million (43% of SF's balance), to help contain the impact of Covid-19 and low oil prices in the country's fiscal position. Prior to this withdrawal, the NSIA received a total of US$ 1.8 billion core capital contribution from the Government. In 2021, the Presidential Infrastructure Development Fund (PIDF), a fund managed by the NSIA on behalf of the government, injected US$ 312 million in repatriated assets. NSIA recorded a net core capital injection of US$ 100 million in 2020 while US$ 160 million came from retained earnings. These developments accounted for a growth in AuM of US$ 260 million between 2019 and 2020.

Figure 34: Nigeria's NSIA Structure:



Source: NSIA website, Global SWF analysis

Other SWFs without such delineated funds suffered larger withdrawals and longer consequences. Under the leadership of Aminu Umar-Sadiq, who assumed the role of CEO in October 2022, NSIA continues to uphold the fund allocation and investment approach, and it amplified the diversified assets strategy, which has insulated the institution from headwinds over many market cycles.

"NSIA has consistently navigated several cycles of global economic uncertainties, volatile markets, and geopolitical complexities. The Authority has embraced a proactive approach to resilience by diversifying its strategic asset allocation, incorporating a systemic risk mitigation strategy, and rolling out a successful domestic infrastructure program cutting across a plethora of sectors.

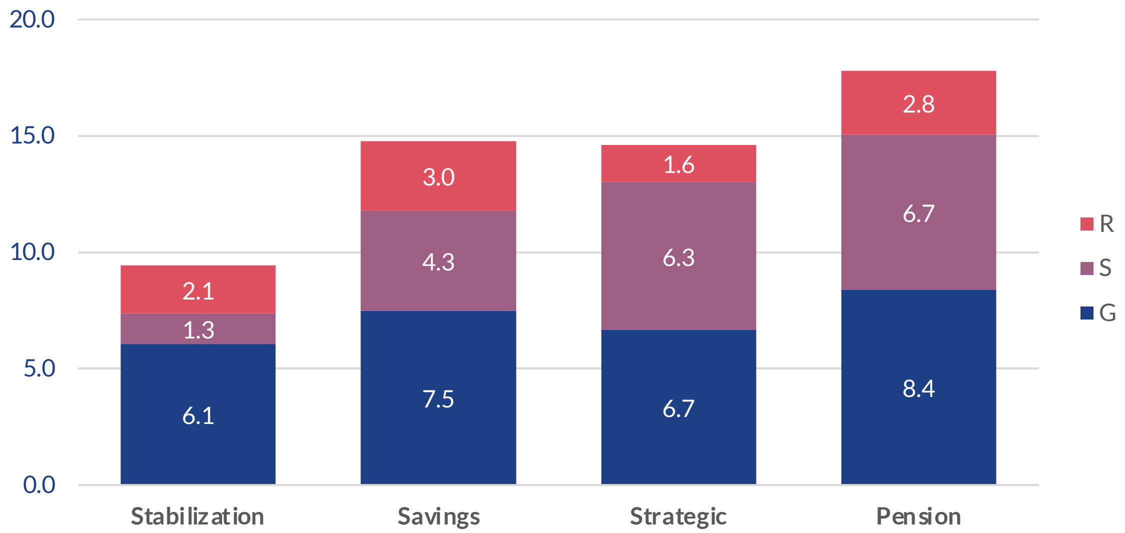
Over the years, NSIA has also prioritized the integration of environmental, social, and governance (ESG) principles in its operations, investments and those of its subsidiaries and affiliates; thus, not only safeguarding its assets for future generations but also contributing to the country's developmental and energy transition goals. With a steadfast focus on transparency, accountability, and sustainability, NSIA continues to be a partner of choice, upholding its mandate of supporting economic stability and growing Nigeria's wealth."

Aminu Umar-Sadiq, MD & CEO at Nigeria Sovereign Investment Authority

6. GSR results by other criteria

Per mission: As highlighted before in this report, pension funds are much better run than sovereign funds when it comes to best practices in general. Among SWFs, those tasked with a savings mission score better in governance and resilience, while strategic funds fare better in sustainability because of their domestic goals. Stabilization funds are designed to be used during crises and may be vulnerable to depletion in the long-term.

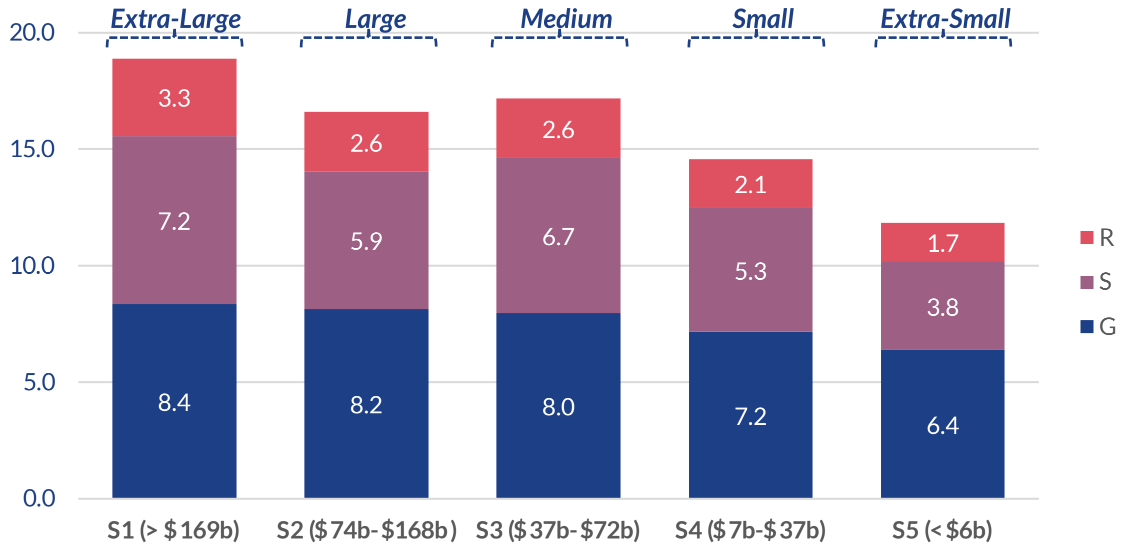
Figure 35: GSR score per mission



Source: Global SWF's GSR Scoreboard 2023

Per size: We previously stated that the largest funds are not necessarily the most successful in terms of financial returns, but when it comes to GSR, size ensures robustness: the 40 extra-large funds, with AuM over US$ 169 bn perform better than the rest, especially around resilience. The large and medium funds perform similarly well, while those below US$ 37 bn in AuM fail the test in terms of long-term survival.

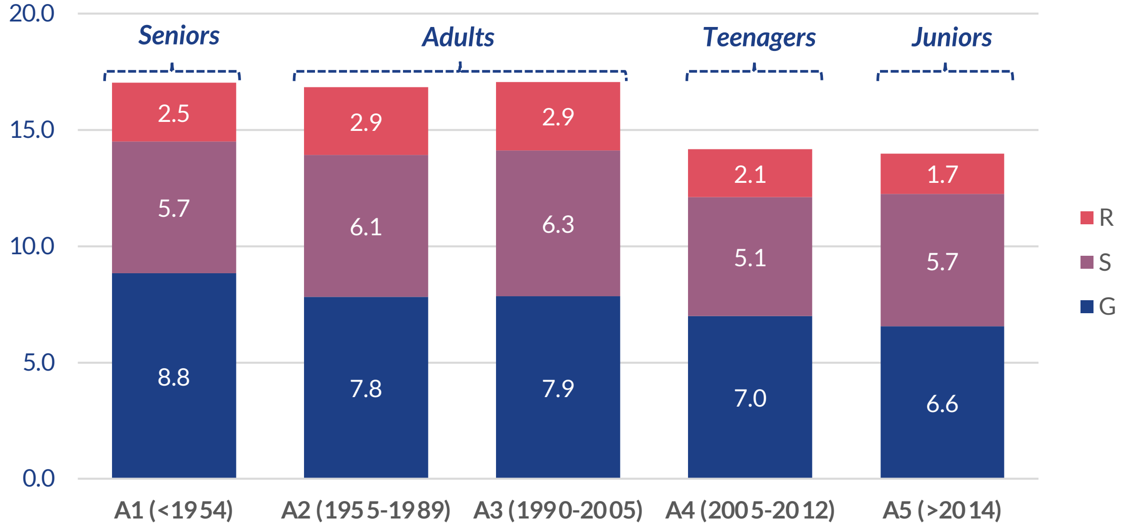
Figure 36: GSR score per size of fund



Source: Global SWF's GSR Scoreboard 2023

Per age: The oldest group of sovereign investors, which we can call senior funds aged over 68 years old, present the best performance around governance. The adult funds with ages between 18 and 67 have the best sustainability and resilience scores. The teenager funds have passed the "G" and "S" exams by now but need more work on legitimacy, while the junior funds under 10 years are still finding their feet.

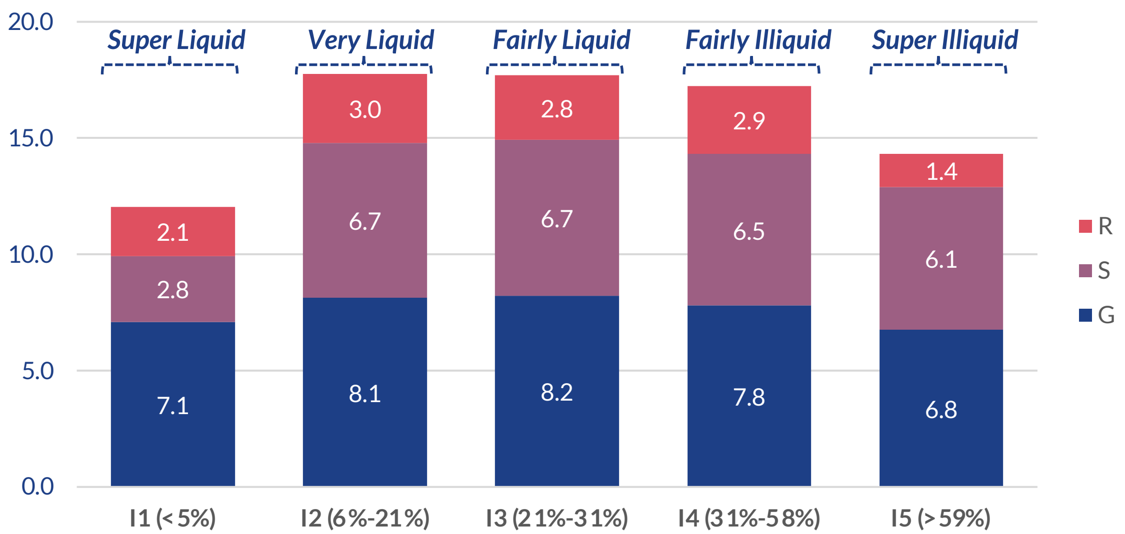
Figure 37: GSR score per age of fund



Source: Global SWF's GSR Scoreboard 2023

Per liquidity: As in previous years, we demonstrate that too much liquidity or illiquidity is not good. "Super liquid" funds lack progress on responsible investment and resilience, while those that are "super illiquid" address sustainability but not legitimacy issues. The SOIs with the best practices GSR-wise are those that have invested between 69% and 94% in public markets, and between 6% and 31% in private markets.

Figure 38: GSR score per illiquidity of fund



Source: Global SWF's GSR Scoreboard 2023

App. 1: 2023 GSR Scoring Matrix

T12.

Governance – 10 elements (#1 #2 #3 #4 #5 #6 #7 #8 #9 #10) · Sustainability – 10 elements (#11 #12 #13 #14 #15 #16 #17 #18 #19 #20) · Resilience – 5 elements (#21 #22 #23 #24 #25)

Fund	HQ	G (10)	S (10)	R (5)	GSR (25)	GSR (%)	Diff 2022
ADIA	AE	6	4	4	14	56%	0%
ADPF	AE	4	3	1	8	32%	4%
ADQ	AE	3	10	1	14	56%	24%
Agaciro	RW	9	5	2	16	64%	4%
AIH	AZ	4	4	0	8	32%	4%
AIMCo	CA	8	10	5	23	92%	0%
Alabama	US	7	1	3	11	44%	0%
Alaska PFC	US	9	4	4	17	68%	0%
Alecta	SE	9	10	4	23	92%	n.a.
Amitim	IL	8	2	2	12	48%	8%
ANIF	AM	7	8	0	15	60%	28%
AP1-7	SE	10	9	4	23	92%	0%
APG	NL	8	10	5	23	92%	0%
Aramco PF	SA	3	1	1	5	20%	8%
ART	AU	8	9	4	21	84%	8%
ATP	DK	9	8	3	20	80%	-4%
AusSuper	AU	9	9	4	22	88%	4%
Aware	AU	9	10	5	24	96%	8%
Baiterek	KZ	8	10	1	19	76%	16%
BBB IP	UK	7	8	2	17	68%	0%
BCI	CA	9	10	5	24	96%	0%
BCPP	UK	9	10	3	22	88%	0%
BIA	BN	2	0	0	2	8%	0%
BLF	TW	8	7	2	17	68%	16%
Bouwinvest	NL	8	10	4	22	88%	0%
Bpifrance	FR	9	10	3	22	88%	0%
BVK	DE	9	9	1	19	76%	0%
BVK Zurich	CH	8	8	1	17	68%	-12%
BVV	DE	8	7	2	17	68%	4%
CADF	CN	4	5	0	9	36%	-4%
CalPERS	US	10	8	3	21	84%	0%
CalSTRS	US	10	10	3	23	92%	0%
CBUS	AU	9	10	3	22	88%	-4%
CDC	FR	8	9	1	18	72%	-4%
CDG	MA	7	10	1	18	72%	8%
CDP Eq	IT	7	6	2	15	60%	4%
CDPQ	CA	10	10	5	25	100%	4%
Chikoren	JP	7	5	3	15	60%	0%
Chile	CL	9	1	4	14	56%	0%
CIC	CN	9	5	4	18	72%	4%
Citizen's Fu	IL	6	0	2	8	32%	n.a.
COFIDES	ES	10	10	4	24	96%	16%
Compenswi	CH	7	4	3	14	56%	0%
COPERA	US	10	8	2	20	80%	-4%
CPF	SG	9	1	3	13	52%	0%
CPP	CA	9	10	5	24	96%	0%
CSC	AU	10	6	3	19	76%	0%
DPW	AE	7	10	2	19	76%	0%
EIA	AE	3	3	2	8	32%	12%
EIH	ET	6	3	0	9	36%	24%
EPFO	IN	9	4	1	14	56%	0%
ESSS / BPJS	ID	5	3	1	9	36%	0%
FAE+FAEP	CO	8	0	2	10	40%	0%
FAP	PA	10	6	5	21	84%	0%
FDC	LU	10	9	4	23	92%	0%
FEF	PE	3	0	0	3	12%	0%
FEIP+FMP	MX	9	1	3	13	52%	16%
FGIS	GA	6	5	0	11	44%	-4%
FGRF	BH	10	2	2	14	56%	n.a.
FGS	AR	6	2	1	9	36%	0%
FHF-FSF	MN	3	0	0	3	12%	4%
FINPRO	BO	4	3	0	7	28%	0%
FONSIS	SN	6	10	1	17	68%	12%
FRC	MC	3	1	0	4	16%	4%
FRR	FR	10	8	4	22	88%	0%
FRTIB	US	8	2	3	13	52%	-4%
FSD	DJ	4	4	0	8	32%	4%
FSDEA	AO	10	5	5	20	80%	0%
FTF	NO	9	8	5	22	88%	0%
Future Fun	AU	10	9	5	24	96%	0%
Georgia TRS	US	9	4	1	14	56%	0%
GHF+GSF	GH	7	0	3	10	40%	0%
GIC	SG	6	5	4	15	60%	0%
GIIF	GH	6	6	2	14	56%	n.a.
GOSI	SA	8	4	3	15	60%	12%
GPF	TH	9	10	5	24	96%	20%
GPIF	JP	10	9	4	23	92%	0%
GPSSA	AE	3	1	1	5	20%	n.a.
Growthfund	GR	9	9	2	20	80%	20%
GRSIA	QA	7	2	1	10	40%	n.a.
GSIS	PH	6	5	1	12	48%	4%
HESTA	AU	9	9	3	21	84%	8%
HKIC	CN	4	2	0	6	24%	n.a.
HOOPP	CA	7	9	5	21	84%	0%
HostPlus	AU	9	6	3	18	72%	0%
HSF	TT	7	0	4	11	44%	0%
ICD	AE	7	5	2	14	56%	4%
ILSTRS	US	9	4	2	15	60%	0%
IMCO	CA	8	9	3	20	80%	0%
INA	ID	7	7	1	15	60%	0%
ISIF	IE	9	10	5	24	96%	0%
Ithmar	MA	4	4	0	8	32%	-4%
KENFO	DE	10	8	3	21	84%	0%
KEVA	FI	9	9	3	21	84%	0%
Khazanah	M	8	8	3	19	76%	12%
KIA	KW	5	5	2	12	48%	0%
KIC	KR	9	9	5	23	92%	8%
KLP	NO	9	10	4	23	92%	0%
Kokkoren	JP	8	3	2	13	52%	24%
KTCU	KR	6	7	4	17	68%	-12%

		Governance – 10 elements										G	Sustainability – 10 elements										S	Resilience – 5 elements					R	GSR	GSR	Diff
Fund	HQ	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	(10)	#11	#12	#13	#14	#15	#16	#17	#18	#19	#20	(10)	#21	#22	#23	#24	#25	(5)	(25)	(%)	2022
KWAN	M											3											0						0	3	12%	4%
KWAP	M											5											8						2	15	60%	4%
KWSP	M											9											8						3	20	80%	-4%
LACERA	US											10											7						3	20	80%	4%
LIA	L											7											5						4	16	64%	4%
MassPRIM	US											10											2						1	13	52%	4%
MGI	MG											3											2						0	5	20%	n.a.
MIC	MU											6											4						2	12	48%	n.a.
MIORS	US											9											3						2	14	56%	4%
MN	NL											8											8						3	19	76%	-4%
MPFA	CN											9											3						3	15	60%	-4%
MSBI	US											8											9						1	18	72%	0%
Mubadala	AE											10											8						4	22	88%	4%
Mumtalakat	BH											7											5						2	14	56%	4%
Nauru	NR											9											3						4	16	64%	0%
NBIM	NO											9											8						5	22	88%	0%
NCRS	US											9											3						2	14	56%	4%
ND RIO	US											10											4						3	17	68%	4%
NDF	SA											5											3						0	8	32%	-8%
NDFI	IR											8											4						1	13	52%	0%
NF+NIC	KZ											3											1						1	5	20%	-16%
NIF	C											3											0						0	3	12%	0%
NIIF	IN											8											10						3	21	84%	12%
NJ DoI	US											9											5						1	15	60%	0%
NLGPS	UK											6											7						1	14	56%	0%
NMSIC	US											9											5						1	15	60%	0%
NPS	KR											9											8						4	21	84%	0%
NPST	IN											8											2						2	12	48%	-4%
NRF	G											9											0						1	10	40%	-4%
NSIA	NG											10											10						5	25	100%	16%
NSSF	CN											6											2						1	9	36%	4%
NWF	RU											5											1						0	6	24%	8%
NCC	US											8											8						2	18	72%	4%
NSCRF	US											10											10						2	22	88%	0%
NSTRS	US											10											7						4	21	84%	12%
NZ Super	NZ											10											10						5	25	100%	4%
OBAG	AT											6											6						1	13	52%	n.a.
OCERS	US											10											3						1	14	56%	0%
Ohio PERS	US											10											3						2	15	60%	0%
Ohio STRS	US											9											3						1	13	52%	0%
OIA	OM											7											6						2	15	60%	28%
OMERS	CA											9											10						4	23	92%	12%
OPERF	US											9											4						3	16	64%	0%
OPTrust	CA											8											9						5	22	88%	0%
OTPP	CA											9											9						5	23	92%	0%
Palestine	PS											7											8						2	17	68%	20%
PD	DK											10											9						4	23	92%	0%
PFA DK	DK											9											10						4	23	92%	n.a.
PFA JP	JP											7											5						1	13	52%	0%
PFR	PO											7											6						2	15	60%	n.a.
PGGM	NL											9											10						5	24	96%	0%
PIC	ZA											7											9						4	20	80%	0%
PIF	SA											9											9						5	23	92%	32%
PIFSS	KW											5											6						1	12	48%	-8%
PKA	DK											9											10						2	21	84%	0%
PMAC	JP											7											1						0	8	32%	0%
PNB	M											8											8						3	19	76%	4%
POBA	KR											9											3						3	15	60%	0%
PREVI	BR											9											6						2	17	68%	0%
PSERS	US											10											3						3	16	64%	8%
PSP	CA											8											10						4	22	88%	0%
PUBLICA	CH											9											10						3	22	88%	20%
PulaFund	BW											5											1						2	8	32%	12%
QIA	QA											6											8						4	18	72%	16%
QIC	AU											6											7						2	15	60%	-4%
RDIF	RU											3											3						0	6	24%	-4%
RERF	KI											7											0						3	10	40%	0%
REST	AU											9											10						3	22	88%	0%
RSSB	RW											5											5						1	11	44%	n.a.
SAFE IC	CN											3											2						0	5	20%	8%
SAM	AE											4											3						0	7	28%	0%
SamPension	DK											10											7						3	20	80%	0%
Samruk	KZ											7											10						1	18	72%	0%
SBA Florida	US											10											3						2	15	60%	-4%
SCIC	VN											5											4						0	9	36%	0%
SFPIM	BE											8											8						0	16	64%	12%
SK CIC	CA											8											4						1	13	52%	0%
SOFAZ	AZ											10											5						4	19	76%	0%
Solidium	FI											9											5						1	15	60%	8%
SSH	SI											8											5						1	14	56%	n.a.
SSO	TH											8											4						2	14	56%	4%
SWIB	US											10											3						5	18	72%	0%
TCorp	AU											6											8						3	17	68%	8%
Temasek	SG											10											10						5	25	100%	4%
Texas ESF	US											3											1						1	5	20%	0%
Texas PSF	US											9											3						5	17	68%	0%
Texas TRS	US											9											5						3	17	68%	-4%
TL PF	TL											9											0						3	12	48%	4%
TSFE	EG											6											6						2	14	56%	24%
TVF	TR											8											9						0	17	68%	24%
UC Inv	US											10											8						4	22	88%	0%
UFRD	UZ											2											4						0	6	24%	4%
UniSuper	AU											9											9						3	21	84%	0%
UTIMCO	US											9											3						5	17	68%	0%
VER	FI											8											7						2	17	68%	0%
VFMC	AU											9											8						4	21	84%	16%
Virginia RS	US											9											4						2	15	60%	0%
Welwitschi.	NA											5											1						1	7	28%	n.a.
WSIB	US											8											8						2	18	72%	0%
WO	US											10											3						4	17	68%	0%
		100%	79%	51%	92%	89%	56%	71%	89%	69%	67%	7.6	71%	49%	49%	42%	38%	50%	63%	79%	84%	55%	5.8	69%	66%	28%	50%	33%	2.4	15.8	63%	4%

App. 2: Ranking of SWFs (by GSR)

T13.

#	SWF	HQ	Est.	AuM $b	GSR'23
1	Temasek		1974	298	100%
1	NZ Super		2001	39	100%
1	NSIA		2011	3	100%
4	Future Fund		2006	168	96%
4	ISIF		2014	16	96%
4	COFIDES		1988	4	96%
7	PIF		1971	700	92%
7	KIC		2005	169	92%
9	NBIM		1997	1,375	88%
9	Mubadala		2002	276	88%
9	Bpifrance		2008	50	88%
9	FTF		2006	32	88%
13	VFMC		1994	50	84%
13	KENFO		2017	27	84%
13	NIIF		2015	4	84%
13	FAP		2012	1	84%
17	GrowthFund		2016	7	80%
17	FSDEA		2012	3	80%
19	PNB		1978	81	76%
19	SOFAZ		1999	45	76%
19	DP World		2005	42	76%
19	Khazanah		1993	30	76%
19	Baiterek		2014	22	76%
24	CIC		2007	1,351	72%
24	QIA		2005	450	72%
24	Samruk-Kazyna		2008	71	72%
27	TVF		2017	171	68%
27	Alaska PFC		1976	77	68%
27	TCorp		1983	66	68%
27	UTIMCO		1876	66	68%
27	Texas PSF		1854	56	68%
27	WYO		1974	24	68%
27	ND RIO		1989	17	68%
27	BBB IP		2014	4	68%
27	Palestine		2003	1	68%
27	FONSIS		2012	0	68%
37	LIA		2006	68	64%
37	SFPIM		2006	2	64%
37	Agaciro		2012	0	64%
37	Nauru		2015	0	64%
41	GIC		1981	690	60%
41	QIC		1991	67	60%
41	OIA		2020	42	60%
41	NM SIC		1958	37	60%
41	PFR		2016	21	60%
41	CDP Equity		2011	13	60%
41	INA		2020	8	60%
41	Solidium		1991	8	60%
41	ANIF		2019	1	60%
50	ADIA		1967	993	56%
50	ICD		2006	320	56%
50	ADQ		2018	157	56%
50	Mumtalakat		2006	19	56%
50	ESSF-PRF		2006	14	56%
50	SSH		1993	12	56%
50	TSFE		2018	2	56%
50	FGR		2006	1	56%
50	GIIF		2016	0	56%
59	NDFI		2011	150	52%
59	OBAG		1967	33	52%
59	SK CIC		1947	16	52%
59	FEIP+FMP		2000	2	52%
63	KIA		1953	801	48%
63	TL PF		2005	17	48%
63	MIC		2020	1	48%
66	T&T HSF		2000	5	44%
66	Alabama TF		1985	3	44%
66	FGIS		2012	2	44%
69	FAE+FAEP		1995	3	40%
69	NRF		2019	2	40%
69	GHF+GSF		2011	1	40%
69	RERF		1956	1	40%
73	NSSF		2000	474	36%
73	EIH		2022	46	36%
73	CADF		2007	10	36%
73	SCIC		2006	2	36%
77	NDF		2017	132	32%
77	EIA		2007	91	32%
77	AIH		2021	22	32%
77	Pula Fund		1994	3	32%
77	Ithmar		2011	2	32%
77	ICF		2022	0	32%
77	FSD		2020	0	32%
84	SAM		2008	2	28%
84	FINPRO		2015	0	28%
84	Welwitschia		2022	0	28%
87	NWF		2008	148	24%
87	RDIF		2011	28	24%
87	UFRD		2006	23	24%
87	HKIC		2023	8	24%
91	SAFE IC		1997	1,034	20%
91	NF-NIC		2000	59	20%
91	Texas ESF		2014	10	20%
91	MGI		2015	2	20%
95	FRC		1962	6	16%
96	FEF		1999	5	12%
96	KWAN		1988	3	12%
96	NIF		2019	1	12%
96	FHF-FSF		2010	0	12%
100	BIA		1983	55	8%
	Other SWFs		*75*	*60*	*-*
	Total SWFs		**175**	**11,540**	**55%**

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

Ranking of PPFs (by GSR)

T14.

#	PPF	HQ	Est.	AuM $b	GSR'23
1	CDPQ		1965	297	100%
2	CPP		1997	422	96%
2	PGGM		1969	243	96%
2	BCI		1999	169	96%
2	Aware Super		2020	99	96%
2	GPF		1997	36	96%
7	GPIF		2006	1,425	92%
7	APG		1922	555	92%
7	CalSTRS		1913	309	92%
7	AP Fonden		2001	253	92%
7	OTPP		1917	182	92%
7	Alecta		1917	136	92%
7	AIMCo		1976	117	92%
7	PFA DK		1917	106	92%
7	OMERS		1962	92	92%
7	KLP		1949	91	92%
7	PensionDanmark		1993	45	92%
7	FDC		2004	30	92%
19	NYSCRF		1983	242	88%
19	PSP		1999	185	88%
19	AusSuper		2006	178	88%
19	UC Inv.		1933	168	88%
19	BCPP		2018	50	88%
19	CBUS		1984	49	88%
19	PUBLICA		2001	48	88%
19	REST		1988	43	88%
19	FRR		2001	29	88%
19	OPTrust		1995	18	88%
19	Bouwinvest		2002	18	88%
30	NPS		1988	735	84%
30	CalPERS		1932	457	84%
30	ART		2022	148	84%
30	NYS TRS		1913	132	84%
30	HOOPP		1960	77	84%
30	UniSuper		2000	70	84%
30	KEVA		1988	66	84%
30	PKA		1954	61	84%
30	HESTA		1999	46	84%
39	KWSP		1951	208	80%
39	PIC		2015	176	80%
39	ATP Groep		1964	97	80%
39	LACERA		1937	68	80%
39	COPERA		1931	66	80%
39	IMCO		2016	54	80%
39	SamPension		1999	46	80%
46	MN		2014	207	76%
46	BVK		1995	122	76%
46	CSC		1976	41	76%
49	NYC Compt		1920	242	72%
49	CDC		1816	175	72%

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

#	PPF	HQ	Est.	AuM $b	GSR'23
49	WSIB		2005	147	72%
49	MSBI		1981	124	72%
49	SWIB		1951	123	72%
49	HostPlus		2021	64	72%
49	CDG		1959	35	72%
56	BLF		2014	195	68%
56	Texas TRS		1937	184	68%
56	PREVI		1904	45	68%
56	BVK Zurich		1926	45	68%
56	KTCU		1971	44	68%
56	BVV		1909	39	68%
56	VER		1990	21	68%
63	Oregon PERF		1946	95	64%
63	Penn PSERS		1917	76	64%
65	GOSI		1958	320	60%
65	SBA Florida		1943	178	60%
65	MPFA		1995	143	60%
65	Ohio PERS		1935	127	60%
65	Virginia RS		1942	101	60%
65	NJ DoI		1950	85	60%
65	Chikyoren		1984	81	60%
65	Illinois STRS		1939	62	60%
65	KWAP		2007	38	60%
65	POBA		1952	16	60%
75	EPFO		1952	194	56%
75	NCRS		1941	111	56%
75	MIORS		1942	95	56%
75	Georgia TRS		1943	87	56%
75	NLGPS		2019	76	56%
75	SSO		1990	66	56%
75	Compenswiss		1948	38	56%
75	OCERS		1945	23	56%
83	FRTIB		1986	690	52%
83	CPF		1955	377	52%
83	PFA JP		1967	113	52%
83	MassPRIM		1983	95	52%
83	Ohio STF		1919	83	52%
83	Kokkyoren		2017	71	52%
89	PIFSS		1955	137	48%
89	Amitim		2011	98	48%
89	NPST		2008	97	48%
89	GSIS		1936	30	48%
93	RSSB		2010	2	44%
94	GRSIA		2002	31	40%
95	FGS		2008	52	36%
95	ESSS		1977	35	36%
97	PMAC		1954	26	32%
97	ADPF		2000	25	32%
99	Aramco PF		2017	23	20%
99	GPSSA		1999	8	20%
	*Other PPFs **		191	7,871	-
	Total PPFs		**291**	**21,871**	**71%**

** Others include US Federal funds OASDI, MRF and CSRDF*

Ranking of CBs (by reserves)

T15.

#	CB	HQ	Est.	AuM $b	Currency
1	PBoC		1948	3,307	CNY
2	BoJ		1882	1,223	JPY
3	ECB		1998	1,150	EUR
4	SNB		1907	935	CHF
5	CBR		1990	630	RUB
6	RBI		1935	563	INR
7	CBC		1924	555	TWD
8	HKMA		1993	514	HKD
9	BoK		1950	463	KRW
10	BCBr		1964	403	BRL
11	MAS		1971	388	SGD
12	SAMA		1952	326	SAR
13	DB		1957	293	EUR
14	Fed		1913	244	USD
15	BdF		1800	240	EUR
16	BdI		1893	223	EUR
17	BoT		1942	217	THB
18	Banxico		1925	205	MXN
19	BoI		1954	195	ILS
20	BoE		1694	176	GBP
21	NBP		1945	167	PLN
22	CBIraq		1947	140	IQD
23	CNB		1993	139	CZK
24	BI		1953	137	IDR
25	CBUAE		1980	133	AED
26	TCMB		1931	129	TRY
27	BNM		1959	112	MYR
28	SBV		1951	109	VND
29	BoC		1935	107	CAD
30	BSP		1993	100	PHP
31	BdE		1782	94	EUR
32	CBL		1956	78	LYD
33	BCRP		1922	72	PEN
34	NBK		1993	68	KZT
35	BNR		1880	66	RON
36	NB		1816	65	NOK
37	SRB		1668	64	SEK
38	SARB		1921	61	ZAR
39	BoA		1962	60	DZD
40	DNB		1814	58	EUR
41	BanRep		1923	57	COP
42	RBA		1959	56	AUD
43	CBK		1969	48	KWD
44	BCRA		1935	45	ARS
45	QCB		1973	42	QAR
46	CBIran		1960	42	IRR
47	BNB		1879	41	BGN
48	NBB		1850	41	EUR
49	Bcentral		1925	37	CLP
50	CBN		1958	37	NGN

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

#	CB	HQ	Est.	AuM $b	Currency
51	MNB		1924	36	HUF
52	CBU		1991	36	UZS
53	BB		1971	34	BDT
54	OENB		1816	33	EUR
55	BKAM		1959	33	MAD
56	Bportugal		1846	33	EUR
57	NBU		1839	28	UAH
58	BdL		1964	27	LBP
59	AMCM		1999	26	MOP
60	DN		1818	26	DKK
61	NBSr		1884	26	RSD
62	HNB		1990	24	EUR
63	BanGuat		1945	20	GTQ
64	CBJ		1964	20	JOD
65	CBO		1974	20	OMR
66	NBC		1954	18	KHR
67	CBE		1961	17	EGP
68	BCU		1967	15	UYU
69	CBKy		1966	15	KES
70	RBNZ		1934	15	NZD
71	BCRD		1947	14	DOP
72	BCEAO		1959	14	XOF
73	BNA		1926	14	AOA
74	CBIreland		1943	13	EUR
75	SP		1811	11	EUR
76	TtE		1927	11	EUR
77	NBSl		1993	10	EUR
78	BoG		1957	10	GHS
79	BCV		1939	10	VES
80	NRB		1956	10	NPR
81	BEAC		1972	10	XAF
82	BCP		1952	10	PYG
83	CBAR		1992	9	AZN
84	BCE		1927	8	USD
85	NBRB		1990	8	BYN
86	BCH		1950	8	HNL
87	BdM		1975	8	MZN
88	SBP		1947	8	PKR
89	BoM		1967	8	MUR
90	BCT		1958	8	TND
91	BCCR		1950	7	CRC
92	CBTT		1964	7	TTD
93	SBI		1961	6	ISK
94	BeS		1992	6	ALL
95	LiB		1990	6	EUR
96	LaB		1993	5	EUR
97	CBB		2006	5	BHD
98	BCBo		1928	5	BOB
99	MB		1991	4	MNT
100	ECCB		1983	2	XCD
	Other CBs		76	105	
	Total CBs		**176**	**15,519**	

The SWF Academy

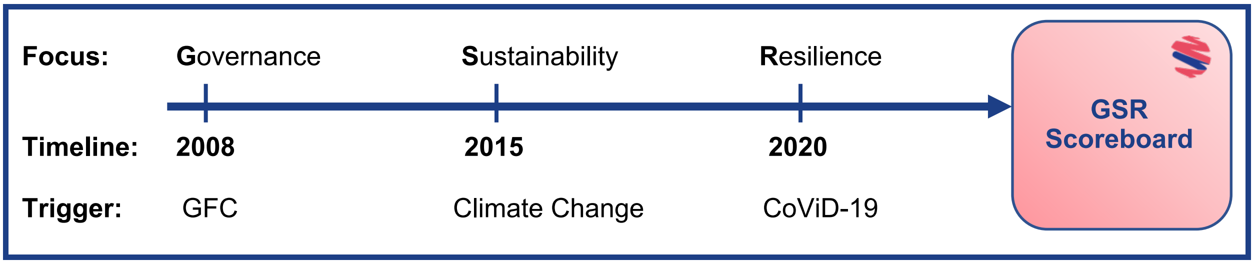
A partnership between London Business School and Global SWF to nurture the future leaders of the world's top Sovereign Investors

Upcoming Cohorts:
Spring 2024, London

London Business School

Global SWF launched the GSR Scoreboard in 2020 as a new market reference for the governance, sustainability and resilience efforts undertaken (or the lack thereof) by State-Owned Investors. A series of events in the global markets over the past 15 years has stimulated these discussions and a switch in focus; however, we believe that these three themes are not mutually exclusive and must be considered jointly.

Figure 39: Timeline and triggers for the GSR Scoreboard



Source: Global SWF's GSR Scoreboard

In recent years, academic experts and practitioners have attempted to quantify the intentions and actions of asset owners on these fronts. Mr. Edwin Truman, now a senior fellow at HKS and considered by many as the "father of the SWF industry", developed a scoreboard measuring the transparency and accountability of state investors that is widely accepted and has been published since 2007. In 2021, Mr. Truman published the latest update of his scoreboard, finding a strong correlation between his results and the 2020 GSR Scoreboard[1].

Global SWF's tool is, by design and unlike other systems, rigorous (published every July 1 based on public information only), quantitative (based on 25 points) and, most importantly, independent (funds do not pay to be assessed). It serves as a reality check for asset owners, enabling them to compare themselves with peers and improve their practices, and it allows other market participants to look at their partners objectively. It is only through such comprehensive and routine analysis that we can identify the virtues – and vices – of SOIs.

The Rating System:

The GSR Scoreboard is comprised of 25 different elements, 10 of them related to Governance issues, 10 of them related to Sustainability issues, and five related to Resilience issues. These questions are answered binarily (Yes / No) with equal weight based on publicly available information only, and the results are then converted into a percentage scale for each of the funds. The study is applied to a universe of the world's Top 100 SWFs and Top 100 PPFs ("**Global SWF**'s **Top 200**"), generating 5,000 data points, and repeated annually.

Table 16. GSR Scoreboard Elements

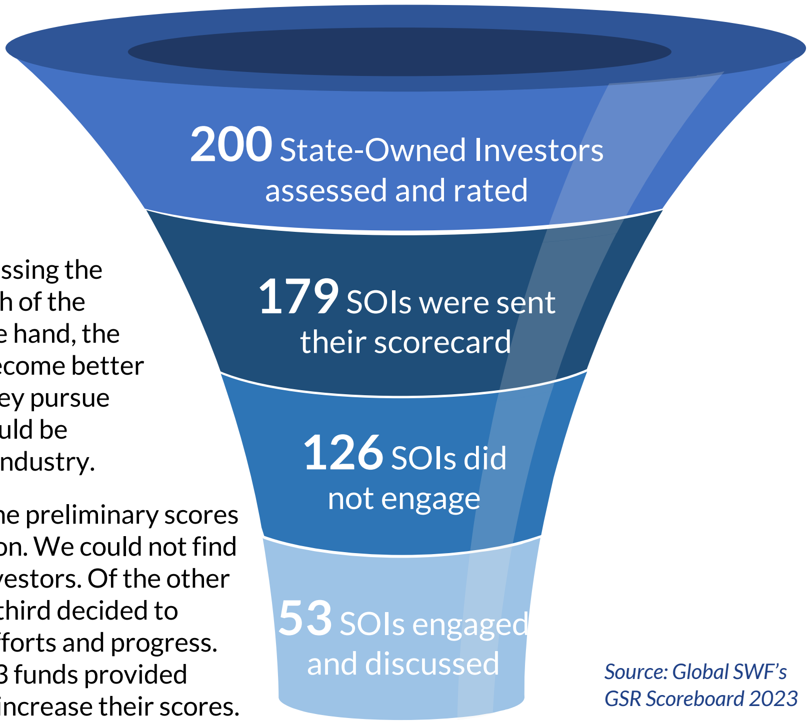
Governance – 10 elements	Sustainability – 10 elements	Resilience – 5 elements
1. Mission & vision	11. Ethical standards & policies	21. Risk Management policy
2. Deposit & withdrawal rules	12. Stewardship team in place	22. Strategic asset allocation
3. External manager reputation	13. Economic mission	23. Policy for withdrawals
4. Internal & Ext. Governance	14. Economic impact & measure	24. BCM/Crisis teams in place
5. Investment strategy / criteria	15. ESG annual report	25. Speed & Discipline
6. Structure and operational data	16. Alignment with SDGs	
7. Annual accounts audited	17. Partnership & memberships	
8. AuM figure public	18. Emerging markets/managers	
9. Details of investment portfolio	19. Role in domestic economy	
10. Annual vs LT return	20. ESG risk management	

Source: Global SWF's GSR Scoreboard

[1] *See Marie, Mazarei and Truman (2021), "Sovereign Wealth Funds are growing more slowly, and Governance issues remain", PIIE (link)*

Response and Acceptance of GSR:

Figure 40: Interaction with SOIs as part of the GSR 2022



Source: Global SWF's GSR Scoreboard 2023

Since 2022, we have communicated the preliminary results to the sovereign investors themselves with at least a month in advance. This is something we avoided in 2020 and 2021, as the assessments are based on publicly available information only, and we did not want to be influenced or to be sent any private documentation.

However, we realized that discussing the system and what we were seeking in each of the elements would be a win-win. On the one hand, the funds would follow best practices and become better governed, sustainable and resilient as they pursue higher scores. On the other hand, we would be contributing to the advancement of the industry.

We therefore decided to send the preliminary scores to all SOIs a month prior to the publication. We could not find contact information for 21 of the 200 investors. Of the other 179 funds that were sent their scores, a third decided to engage, comment and/or discuss their efforts and progress. As part of that dialogue, most of those 53 funds provided additional information and were able to increase their scores.

Some executives insisted in debating whether or not their employer fell under the category of "State-Owned Investor", failing to see the scoreboard as a chance of improving as, simply, an investment organization. Others did not respond – among them, the very large and important **ADIA**, **GIC**, **GPIF**, **KIA** and **NPS**.

Yet, we had a positive experience interacting with more than 50 SOIs, developing closer relationships, discovering information that could have been missed in the collation of the 5,000 individual datapoints, and helping them publish additional information. We invite other State-Owned Investors to reach out to us and to take advantage of this increasingly important tool of analysis, as we keep fine-tuning it in the years to come.

The authors of this report would like to thank and acknowledge the contribution of interns **Ms. Adhrika Nair** in Doha and **Ms. Pratyusha Joshi** in Boston, for their exceptional work in understanding the system, in mining data, and in assessing the world's Top 100 sovereign funds and Top 100 pension funds, respectively.

In addition to the practical implications, the GSR Scoreboard has rapidly become a central part of the **academic research** around governance, sustainability and other best practices of Sovereign Wealth Funds. Since 2021, the system has been mentioned and its results studied in articles published in the world's top academic journals, including:

- Bortolotti, Loss, van Zwieten, "The times are they a-changin'? Tracking SWFs' sustainable investing", JIBP 2023 (link)
- El-Sholkamy, Rahman, "Harnessing SWFs in Emerging Economies toward Sustainability", Cambridge 2022 (link)
- Dahlan, Lastra, Rochette, "Research Handbook on Energy, Law and Ethics", EE 2022 (link)
- Marie, Mazarei, Truman, "SWFs Are Growing More Slowly, and Governance Issues Remain", PIIE 2021 (link)
- Wurster, Schlosser, "SWFs as Sustainability Instruments? Disclosure of Sustainability Criteria", MDPI 2021 (link)
- Smith, "The fragile state of Globalization", Laburnum 2021 (link)
- Megginson, Lopez, Malik, "The Rise of State-Owned Investors: SWFs and PPFs", ARFE 2021 (link)

Global SWF studies 642 State-Owned Investors ("SOIs"), including 176 Central Banks ("CBs"), 175 Sovereign Wealth Funds ("SWFs") and 291 Public Pension Funds ("PPFs"), which jointly manage US$ 48.9 trillion in assets as of June 30, 2023. Today, the industry is highly complex, with mixed forms of legal structure, ownership and portfolios, and we define five major groups of institutional investors, official institutions or asset owners:

- **Central Banks:** We have recently added Central Banks and their reserves portfolios to our remit, avoiding any potential duplication with SWFs. For example, we consider **SAMA** and **HKMA** the central banks of Saudi Arabia and Hong Kong, respectively; we separate China's **PBoC** (CB) from **SAFE Investment Company** (SWF), and also distinguish between the reserves managed by the **NBK** and sovereign funds **NF** and **NIC**.

- **SWF-Stabilization Funds:** this is the smallest group of SWFs 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 liquid funds that allocate on average 93% of their capital into stocks and bonds. Examples include Azerbaijan's **SOFAZ**, Chile's **ESSF**, and Botswana's **Pula Fund**.

- **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 25% to private markets, and with a combined AuM of US$ 7.2 trillion, they represent some of the world's largest investors in listed equities, real assets and private markets. Examples include Norway's **NBIM**, Abu Dhabi's **ADIA**, 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. We distinguish two major sub-segments: holding companies tasked with managing stakes in national champions (e.g., Kazakhstan's **Samruk-Kazyna**); and catalyzing funds tasked with attracting FDI (e.g., Indonesia's **INA**).

- **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 Japan's **GPIF**, Canada's **CPP**, 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 their peers, including Singapore's **Temasek**, Greece's **Growthfund**, or Australia's **QIC**.

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 a few pension plans; and Netherlands' **APG** invests on behalf of **ABP** and other pension schemes.

Out of the 642 SOIs, we define a **Top 300** list, which can be found in Appendix 2 and allows us to focus our efforts on the most active and sizeable institutional investors. This sample serves us as a fair representation of the heterogenous SOI universe. In 2023, we added Central Banks to our in-depth coverage and capabilities.

Methodology:

All the data is proprietary and is formed from public sources and estimates based on our knowledge and insights. Of the **Top 300**, only 22 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 their size based on allocation and portfolios.

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.

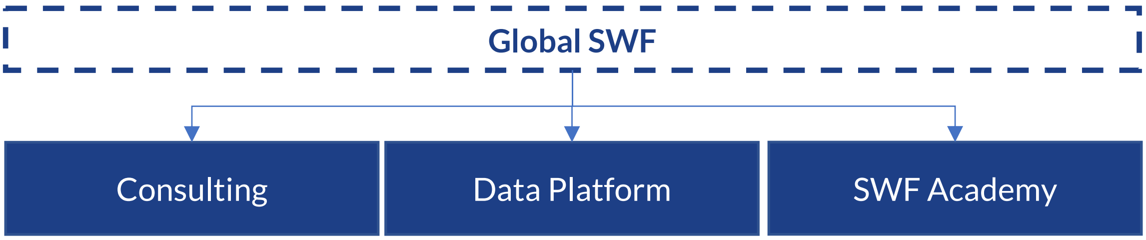
Lastly, we are contemporaneous in our approach and report information the minute it happens. The present report, released on July 1, 2023, and collecting activity up to June 30, 2023, serves as a proof.

Appendix 4: About Us

Global SWF is an industry specialist 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 offers a range of solutions to any market player acting in the industry, namely:

- **Consulting Services**, assisting with the establishment of new funds and with peer benchmarking exercises.
- **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.

Our core team sits in New York, London and Singapore, and we have a network of interns, partners and advisors in Wyoming, Boston, Toronto, Coventry, Dublin, Frankfurt, Lagos, Abu Dhabi, Dubai, Doha, and Melbourne.



F41.Global SWF Team: