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The Government Pension Fund Global's environment-related investment mandates

The Management Mandate for the Government Pension Fund Global (GPFG) requires Norges Bank to establish investment mandates that are environment-related. The market value of these investments should normally be in the range of 30-60 billion kroner. In its letter of 22 June 2018, the Ministry has asked for a review of the regulation and management of these mandates. The Bank's review is presented in this letter and builds on information published in letters of 18 September 2009, 3 February 2010, 12 March 2014, 21 November 2014 and 15 December 2017.

Background

In connection with the Storting's consideration of the Revised National Budget in 1999, it was decided to create a separate environmental portfolio within the fund (the Environmental Fund). The Environmental Fund was set up in 2001 and wound down in 2004 on account of weak performance and the introduction of ethical guidelines for the GPFG. Following a wide-ranging public review of the ethical guidelines in 2008, the Ministry recommended creating a special investment programme focusing on eco-friendly activities or technologies expected to have clear environmental benefits, cf. Report to the Storting No. 20 (2008-2009). At that time, the Ministry was considering defining a separate investment universe for environmental investments that also included unlisted equities and infrastructure.

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In the National Budget for 2010, it was decided, following the Bank's advice, that the Bank should establish separate environment-related mandates within the existing investment universe for the fund's investments. The environment-related investment mandates have since been managed within the same investment universe and constraints as the rest of the fund.[1] In the National Budget for 2010, the Ministry stated its intent for these environment-related investments to eventually amount to 20 billion kroner.[2] In 2012, the Ministry decided to specify a range for these investments in the Management Mandate. The range was initially set at between 20 and 30 billion kroner and has subsequently been increased twice.

Through the mandate requirement, the Ministry compels the Bank's investment management to be active, and the composition of the portfolio to deviate from the benchmark index. From the outset, it has been assumed that environment-related investments are to be based on the same required rate of return as for the fund's other investments. The Bank, the Ministry and Ang et. al (2014) have emphasised that the requirement for environment-related mandates places a restriction on the Bank's management that potentially limits its opportunities to generate excess return.[3]

Environment-related investments

The Management Mandate does not specify what constitutes an environment-related investment. In its letter of June 22, the Ministry asks the Bank to elaborate on the principles used in the specification of an environment-related company. It is not clear what constitutes an environment-related company. The potential universe for such investments comprises both large conglomerates with only a small share of environment-related activities and pure environmental companies in various sectors. The specification is therefore, to some extent, a matter of judgement.

In Report to the Storting No. 20 (2008-2009), the Ministry wrote: "The investments must be aimed at eco-friendly assets or technology that is expected to yield indisputable environmental benefits, such as climate-friendly energy, improving energy efficiency, carbon capture and storage, water technology, and the management of waste and pollution." In keeping with this, our environment-related equity investments have concentrated on companies in low-emission energy and alternative fuels, clean energy and energy efficiency technology, and technology and services for the management of natural resources. In the mandates we issue to managers, we require the companies included in the environment-related equity mandates to have at least 20 percent of their

[1] There has been little discussion of the investment universe for the environment-related mandates since 2009. Report to the Storting No. 21 (2014-2015) looked at whether the mandates should be focused on renewable energy. On the Bank's advice, the Ministry decided against this.
[2] At this time, the Ministry was also considering establishing a programme of investments in sustainable growth in emerging markets. The intended allocation of 20 billion kroner was originally to cover both programmes.
[3] For further information, see Report to the Storting No. 19 (2013-2014), Norges Bank's letter of 21 November 2014 and Ang, Brandt and Denison (2014) "Review of the Active Management of the Norwegian Government Pension Fund – Global".

business in these areas. It has also been decided that the environment-related mandates may not be invested in oil and gas producers, coal companies or mining companies.[4]

Management

From the outset, the environment-related mandates were managed both internally and externally. External management is more expensive than internal management.[5] To reduce management costs, the Bank decided earlier this year to discontinue the externally managed environment-related mandates. The environment-related mandates are now managed entirely in-house.

The environment-related mandates are currently invested in listed equities and green bonds.[6] At the end of the second quarter of 2018, the market value of these mandates was 54 billion kroner, broken down into 45 billion kroner in equities and 9 billion kroner in green bonds.[7] Even without the requirement for the Bank to establish environment-related mandates, a substantial share of the fund would still be invested in environment-related companies and green bonds. This is a result of the broad benchmark indices set by the Ministry. At the end of July, around 6 percent of the companies in the fund's benchmark index for equities were classified as environment-related,[8] and bonds in the Bloomberg Barclays MSCI Green Bond Index made up 0.3 percent of the fund's benchmark index for bonds. At the fund's current value, this corresponds to around 340 billion kroner.

The risk and return characteristics of the Bank's investments in green bonds do not differ significantly from the Bank's other bond investments with comparable credit and interest rate risk. The environment-related equity mandates, on the other hand, have underperformed the fund's equity benchmark, returning 5.9 percent since inception in December 2009 as opposed to 9.7 percent for the benchmark. Over the past five years, however, the return on the environment-related equity mandates has been slightly higher than that on the fund's equity benchmark. The return on the environment-related equity mandates has been more volatile than the return on the equity benchmark. This is only to be expected, as the environment-related mandates are invested in far fewer stocks than the fund's broad equity portfolio. Because the environment-related investment mandates make up only a small part of the fund, the requirement for the Bank to make these investments has had little impact on the fund's overall return or risk.

The environment-related equity mandates are managed according to the same key principles as the fund's other investment mandates for equities. The management

[4] The following ICB sectors are excluded from the environment-related investment universe: 0530 (Oil & Gas Producers), 1750 (Industrial Metals & Mining) and 1770 (Mining). Companies with more than 20 percent of their business in upstream oil and gas production, coal and coal-related operations, and nuclear power are also excluded from the investment universe.

[5] Management costs for the environment-related mandates were discussed in the Bank's letter of 21 November 2014.

[6] Green bonds are bonds where the capital raised is earmarked for climate-friendly projects. To ensure that the capital raised is used for this purpose, investors often require independent assurance.

[7] The Bank has four internal environment-related equity mandates and one internal mandate for green bonds. The investment mandate for green bonds was established in 2016.

[8] Based on the companies included in FTSE's broad environmental index (FTSE EO).

objective is an excess return over the relevant benchmark. In the enclosure, we show risk and return for the environment-related mandates and relevant return metrics. The excess return from securities selection has varied over time and with different return metrics.

Considerations

When the Ministry presented its proposals for an environmental programme in Report to the Storting No. 20 (2008-2009), the intention was for this to form part of a wider strategy to enhance the fund's responsible investment profile. The fund's strategy for responsible investment is much more extensive now than it was in 2009 and is integrated into investment management. Both the Ministry and the Bank aim for the Bank's work on responsible investment to be in line with leading international practice.[9] We report on the Bank's responsible investment activities in our annual Responsible Investment Report.

Since the environment-related mandates were introduced, there have been changes in international standards, disclosure requirements and general corporate practices in the environmental field. The EU's Guidelines on Non-financial Reporting and the recommendations of the Task Force on Climate-related Financial Disclosures are two examples.[10] The Bank will continue its work on integrating environmental issues into the management of the fund. In the same way as today, we will make adjustments where we believe that this supports the management objective.

Yours faithfully

Øystein Olsen

Yngve Slyngstad

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[9] See Report to the Storting No. 13 (2017-2018) and Norges Bank Investment Management's strategy for 2017-2019.
[10] For further information on the Task Force on Climate-related Financial Disclosures (TCFD), see the Bank's letter of 21 February 2018.

Enclosure

The management of the environment-related mandates

The purpose of this enclosure is to provide a detailed review of the Bank's management of the environment-related equity mandates. We begin with a brief presentation of the background to the environment-related mandates. We then look at the Bank's management of the mandates, and finish by presenting the historical risk and return for environment-related investments.

Background

In connection with the Storting's consideration of the Revised National Budget in 1999, it was decided to create a separate environmental portfolio (the Environmental Fund) to address ethical and environmental issues in the management of the GPFG. The Environmental Fund was established on 1 January 2001 and managed by Norges Bank Investment Management in a separate portfolio. Initial capital equivalent to 1 billion kroner was transferred to the Environmental Fund on 31 January 2001, and a further billion was transferred that autumn. The fund was invested solely in equity instruments. The investment universe for the Environmental Fund was based on positive screening using criteria produced by consultants Ethical Investment Research Services (EIRIS) for the Ministry of Finance. This was then used by the Ministry to define a custom benchmark index for the Environmental Fund. The Environmental Fund was managed as an index fund. It was wound down in 2004 on account of poor performance and the introduction of ethical guidelines for the GPFG. The ethical guidelines also covered environmental issues, and the Ministry concluded that the Environmental Fund's environmental results did not give grounds to believe that continuing the fund would produce additional environmental benefits.

Following a wide-ranging public review of the ethical guidelines in 2008, the Ministry recommended creating a special investment programme focusing on eco-friendly activities or technologies expected to have clear environmental benefits, cf. Report to the Storting No. 20 (2008-2009). In this white paper, the Ministry anticipated that the investment programme would be invested in more asset classes than the fund's other investments. It also specified that these investments "must be aimed at eco-friendly assets or technology that is expected to yield indisputable environmental benefits, such as climate-friendly energy, improving energy efficiency, carbon capture and storage, water technology, and the management of waste and pollution."

In the National Budget for 2010, it was decided that the Bank should establish separate environment-related mandates within the existing investment universe for the fund's investments. It was planned that around 4 billion kroner would be invested on the basis of environmental criteria during the course of 2010. Effective 1 January 2011, special disclosure requirements for environment-related investments were included in the Management Mandate for the GPFG, namely that reporting on these investments "shall

among other things include the scope, strategy, asset type and a description and assessment of how the intentions for these investments are being met." Report to the Storting No. 15 (2010-2011) proposed specifying a range for the environment-related mandates in the Management Mandate, and this was put into effect from 29 June 2012. The range was initially set at between 20 and 30 billion kroner and has subsequently been increased twice, first to 30-50 billion kroner from 1 January 2015 and then to 30-60 billion kroner from 29 September 2015.

The Bank's management

The Bank established the first environment-related equity mandates in December 2009. In total, we have issued 17 different mandates for environment-related equity investments: 11 external and six internal (see Table 1). The total market value of environment-related investments has increased significantly since 2009 (see Table 2). The increase from 7 billion kroner in 2009 to 26 billion kroner in 2012 was a result of the addition of more mandates and an increase in the allocation to existing mandates. Strong returns on environment-related investments in 2013 and the creation of two new internal mandates pushed the market value of the fund's environment-related investments to 42 billion kroner at the end of 2014. Both increased allocation and strong returns contributed to continued growth in the market value of environment-related investments in 2016 and 2017. At the end of 2017, these investments had a total market value of 75 billion kroner. The external environment-related equity mandates were discontinued in May 2018, and the remaining mandates had a combined market value of 54 billion kroner at the end of the second quarter of 2018. The environment-related mandates are now managed entirely in-house.

Table 1: Number of mandates at year-end

Year	Internal mandates	External mandates	Internal mandates for green bonds	Total environment-related mandates
2009	2	2		4
2010	2	7		9
2011	2	8		10
2012	2	8		10
2013	2	6		8
2014	4	6		10
2015	4	7		11
2016	4	7	1	12
2017	4	5	1	10
2018*)	4		1	5

*) Per 30/09/2018. The external environment-related mandates were terminated on 25/05/2018

Both the internal and external environment-related mandates have concentrated on three main types of environmental activity: low-emission energy and alternative fuels; technology for the production of clean energy and energy efficiency; and technologies and services relating to the management of natural resources. The definition of what constitutes an environment-related company within these three main areas has evolved somewhat over time. The requirement for how much of a company's activities must be

environment-related has also varied both over time and between the internal and external mandates.

Internal equity mandates
The first two internal environment-related equity mandates were established in December 2009. One invested 2.6 billion kroner in renewable energy and energy efficiency technology, while the other invested 2.9 billion kroner in water and waste management. Additional capital was allocated to these two mandates the following year. By the end of 2010, the market value of the internally managed equity mandates was 14.5 billion kroner.

The mandate for water management was expanded in 2011 to become a mandate investing in technologies and services relating to the management of natural resources as well as water and wastewater services. Minor adjustments to the allocations to both mandates were made in 2013. Two new mandates were added in 2014: one for low-emission energy and alternative fuels, and one where water technology was hived off into a separate mandate. These two mandates were allocated 4.5 and 2.6 billion kroner respectively, while the allocation to the other two internal environment-related mandates was reduced by around 4.5 billion kroner. By the end of 2014, the market value of the internally managed equity mandates had risen to 24.8 billion kroner.

The range set by the Ministry for the size of the environment-related mandates was increased twice in 2015. That year therefore saw the introduction of a new internally managed mandate investing in small and medium-sized environment-related companies, and the allocation of additional capital to the mandate for low-emission energy and alternative fuels. The mandate for small and medium-sized companies was discontinued later that year following a broad review of ESG risk in its portfolio holdings. The capital was transferred to a new internal mandate operating across the three main types of environmental activity. Also in 2015, the mandate for water technology was merged back into the mandate for natural resource management. At the end of 2015, the combined market value of the internally managed mandates was 34.5 billion kroner. No significant changes have been made to the internally managed mandates since 2015, but strong returns pushed their market value up to 45.2 billion kroner at the end of the second quarter of 2018.

External equity mandates
The first external environment-related equity mandates were established in December 2009. These invested 0.4 billion kroner in the water sector and 1.4 billion kroner in renewable energy technology. In 2010, a total of 6.4 billion kroner was allocated to five new external environment-related equity mandates investing in renewable energy, water and wastewater technology, clean energy technology and smart power networks. A further 3.2 billion kroner was allocated to the mandates for renewable energy technology

and the water sector. As a result of this, the market value of the fund's external environment-related equity mandates climbed to 11.2 billion kroner.

The following year, 1.4 billion kroner was allocated to a new external mandate investing in renewable technology, and a number of adjustments were made to the allocations to the other mandates. At the end of 2012, the externally managed environment-related mandates had a combined market value of 13.1 billion kroner, mainly invested in low-emission energy and renewable energy technology. In 2013, two renewable energy mandates were discontinued, and the mandate for investing in smart power networks was transferred to ordinary external equity management.

2014 brought a new external mandate to invest 1.4 billion kroner in energy efficiency technology. The following year, two new external mandates for renewable energy were created, while one external mandate investing in water-related companies was discontinued. At the end of 2015, the external environment-related mandates had a combined market value of 19.3 billion kroner. One external mandate for low-emission energy was discontinued in 2017. The total market value of the fund's externally managed environment-related investments at the end of that year was then 22 billion kroner. To reduce management costs, the Bank decided earlier this year to discontinue all externally managed environment-related mandates.

Green bonds

In January 2016, an internal investment mandate was created for green bonds, and 5.7 billion kroner was allocated to it. By the end of the second quarter of 2018, the market value of the fund's green bonds had increased to 8.9 billion kroner, due first and foremost to an increased allocation to the mandate.

Table 2: Market value, breakdown and range for environment-related mandates. Billions of kroner

	Internal mandates	External mandates	Green bonds	Total environment-related investments	Percent of fund	Interval determined by the Ministry
31/12/2009	5.5	1.9		7.3	0.28 %	
31/03/2010	5.4	1.8		7.1	0.26 %	
30/06/2010	5.2	1.6		6.8	0.24 %	
30/09/2010	5.3	1.6		6.9	0.24 %	
31/12/2010	14.5	11.2		25.7	0.83 %	
31/03/2011	14.1	11.7		25.8	0.83 %	
30/06/2011	13.0	10.5		23.5	0.76 %	
30/09/2011	5.5	7.5		13.0	0.43 %	
30/12/2011	12.0	9.1		21.1	0.64 %	
30/03/2012	12.7	9.4		22.1	0.63 %	
29/06/2012	12.0	8.9		20.9	0.59 %	20-30
28/09/2012	12.1	12.1		24.2	0.65 %	20-30
31/12/2012	12.7	13.1		25.8	0.68 %	20-30
29/03/2013	14.4	15.7		30.1	0.72 %	20-30
28/06/2013	15.7	13.7		29.4	0.67 %	20-30
30/09/2013	17.7	15.2		32.9	0.70 %	20-30
31/12/2013	19.0	12.8		31.8	0.63 %	20-30
31/03/2014	12.7	13.4		26.1	0.51 %	20-30
30/06/2014	13.6	14.6		28.2	0.51 %	20-30
30/09/2014	13.2	14.4		27.6	0.50 %	20-30
31/12/2014	24.8	17.1		41.8	0.65 %	20-30
31/03/2015	27.0	18.7		45.7	0.65 %	20-30
30/06/2015	27.0	17.7		44.7	0.65 %	30-50
30/09/2015	31.2	17.4		48.5	0.69 %	30-50
31/12/2015	34.5	19.3		53.8	0.72 %	30-60
31/03/2016	33.2	18.2	6.0	57.5	0.81 %	30-60
30/06/2016	34.7	18.7	6.0	59.4	0.83 %	30-60
30/09/2016	35.1	19.3	6.0	60.4	0.85 %	30-60
30/12/2016	37.1	20.5	6.1	63.7	0.85 %	30-60
31/03/2017	40.1	19.6	6.4	66.1	0.84 %	30-60
30/06/2017	42.0	20.1	6.8	68.8	0.86 %	30-60
29/09/2017	42.2	20.6	6.7	69.5	0.87 %	30-60
29/12/2017	45.7	22.0	7.1	74.9	0.88 %	30-60
30/03/2018	43.1	20.8	7.0	70.9	0.87 %	30-60
29/06/2018	45.2		8.9	54.1	0.65 %	30-60

Return

The annualised return on environment-related equity investments since inception has been 5.9 percent. The return on internally managed environment-related equity investments over the same period has been 7.3 percent, and the return on the externally managed mandates from 31 December 2009 to 25 May 2018 was 3.4 percent. The annualised return on the GPFG's equity benchmark since 31 December 2009 has been 9.7 percent. Over the past five years, however, the return on the environment-related mandates has been slightly higher than that on the equity benchmark. The underperformance of the environment-related investment mandates since inception is primarily due to lower returns than the wider equity market in the early years, when the allocation to the environment-related mandates was low. The money-weighted return on environment-related investments has therefore been better than the time-weighted return.

Table 3: Return, annualised data measured in the fund's currency basket. Percent

Returns	Since inception	Last 5 years	2018	2017	2016	2015	2014	2013	2012	2011	2010
Environment-related equity investments	5.9	12.2	0.8	21.7	12.4	1.1	5.0	41.2	8.8	-22.6	-6.3
Internal mandates	7.3	13.0	0.7	22.8	13.0	2.0	4.9	43.8	12.4	-23.4	-1.6
External mandates*)	3.4		1.6	19.4	11.5	-1.3	5.0	38.4	4.7	-20.6	-17.9
GPFG equity reference index	9.7	10.8	0.6	18.7	8.6	3.0	8.7	25.0	17.5	-8.4	12.6
FTSE Global All Cap	11.0	11.8	1.5	17.9	11.1	3.2	11.8	25.1	16.2	-6.3	15.7

*) The external environment-related mandates were terminated on 25/05/2018

Index suppliers offer a variety of environmental indices. For example, FTSE produces a narrow technology-focused environmental index (FTSE ET) and a somewhat broader environmental index (FTSE EO). The companies in the narrow index must have more than 50 percent of their business in environment-related activities, while the broader index includes companies where environment-related activities account for more than 20 percent of their business. The MSCI index requires 50 percent of a company's business to be environment-related. Common to these indices is that they have undergone major changes in their composition over time and have big differences between them. Index suppliers exercise a considerable degree of judgement in the construction of the indices, and there is no broad consensus across index suppliers. The performance of the Bank's environment-related investments has varied both over time and relative to these environmental indices.

Table 4: Return, annualised data measured in the fund's currency basket. Percent

Returns	Since inception	Last 5 years	2018	2017	2016	2015	2014	2013	2012	2011	2010
Environment-related equity investments	5.9	12.2	0.8	21.7	12.4	1.1	5.0	41.2	8.8	-22.6	-6.3
Internal mandates	7.3	13.0	0.7	22.8	13.0	2.0	4.9	43.8	12.4	-23.4	-1.6
External mandates*)	3.4		1.6	19.4	11.5	-1.3	5.0	38.4	4.7	-20.6	-17.9
FTSE ET 50	4.7	11.4	-2.2	25.1	1.2	5.4	5.8	46.1	4.9	-26.9	-4.5
FTSE EO AS	11.1	12.7	-1.9	24.2	13.8	2.9	7.0	33.1	15.4	-12.3	19.0
MSCI Global Environment	8.7	9.8	0.3	22.2	10.8	-0.4	-0.5	38.4	14.5	-16.7	14.3

*) The external environment-related mandates were terminated on 25/05/2018

Risk

The return on environment-related equity investments has been more volatile than the return on the fund's equity benchmark. This is only to be expected, as the environment-related mandates are invested in far fewer stocks than the fund's broad equity portfolio. Since 31 December 2009, environment-related equity investments have had an annualised volatility of 12.5 percent, compared to 11.0 percent for the fund's equity benchmark. Externally managed environment-related equity investments were more volatile than their internally managed counterparts. Since the environment-related equity mandates account for only a small part of the fund, the contribution to the fund's overall volatility has been insignificant.

Table 5: Realised standard deviation, annualised data measured in the fund's currency basket. Percent

Standard deviation	Since inception	Last 5 years	Last 3 years
Environment-related equity investments	12.5	10.5	10.1
Internal mandates	12.5	10.6	9.8
External mandates*)	14.0	11.3	11.5
GPFG equity reference index	11.0	9.1	9.7
FTSE Global All Cap	10.2	8.7	9.4

*) The external environment-related mandates were terminated on 25/05/2018

Table 6: Beta compared with FTSE Global All Cap

Beta	Since inception	Last 5 years	Last 3 years
Environment-related equity investments	1.08	1.08	1.00
Internal mandates	1.08	1.07	0.96
External mandates*)	1.16	1.12	1.08
GPFG equity reference index	1.06	1.03	1.02
FTSE Global All Cap	1.00	1.00	1.00

*) The external environment-related mandates were terminated on 25/05/2018

The environment-related investment mandates draw on the Bank's limit for relative volatility because the Bank is required to invest in a way that deviates from the benchmark index. The impact on expected relative volatility is a result of prices for the shares in the environment-related mandates having fluctuated more than, and out of step with, the fund's broad equity benchmark. These companies also differ from other companies in the fund's equity benchmark index in terms of currency composition, geographical distribution and factor exposures. At the end of 2017, expected relative volatility resulting from the requirement for environment-related mandates was an estimated 3 basis points at fund level and 4 basis points relative to the equity benchmark. As with the fund as a whole, the most important driver for environment-related equity investments is equity risk. The overall contribution to expected relative volatility has therefore been limited.