

# **How Renewable Energy Holdings Can Contribute to the Growth of Norway's Pension Fund in a Time of Oil Industry Uncertainty**



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# Executive Summary

Norway's Government Pension Fund Global (GPF) is facing a series of time-sensitive strategic investment decisions driven in large part by the declining financial performance of the oil industry. The Fund plays an integral role in supporting the annual budget of Norway, which counts on its contributions to maintain services and to balance the budget. The Fund's oil investments today place Norway budgetwise on a trajectory for long-term structural decline, and must be addressed quickly.

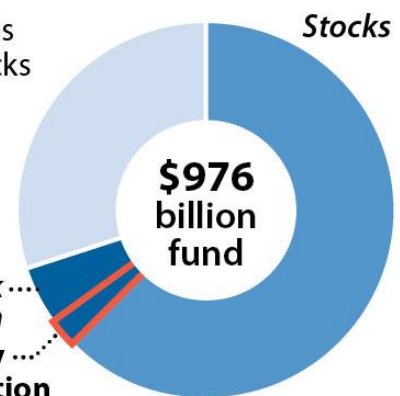
To manage the Fund in a declining oil market, the Ministry of Finance and its advisors have opted to increase the proportion of Fund assets invested in the stock market, from 62.5 percent of the Fund's 7.5 trillion NOK (US\$976 billion) in holdings to 70%.

The freed-up capital from this move of course needs to be carefully reinvested—and invested with returns in mind. One way to achieve a good outcome would be to invest in renewable energy, a fast-growing segment of the global energy economy and one that is now widely seen as a mainstream sector with a positive investment outlook.

## Norway Can and Should Invest More In Renewables

The country's pension fund is raising its investment in stocks from 62.5% to 70%. IEEFA recommends allocating some of that increase – about \$25 billion – to a renewable energy portfolio.

*Increase in stock allocation*  
**Renewable energy investment recommendation**



The same forces driving the decline in the oil industry are also providing opportunities to profit from renewable energy. The renewable sector is producing attractive returns, is growing, and its outlook is positive. As more institutional investors take advantage of this potential, new renewable energy investment opportunities are emerging in the stock market as well as in special purpose funds. Investor risks across the renewable sector, particularly in unlisted infrastructure, are typically well-managed by competent professionals.

The Institute for Energy Economics and Financial Analysis (IEEFA) recommends that a portion of the Fund's capital be rededicated now to expanding its position in renewable energy. The shift under consideration will require the re-allocation of approximately 554 billion NOK (US\$72 billion). We recommend that the Fund allocate approximately 35% of this capital—190 billion NOK (US\$25 billion)—to a renewable energy portfolio. A renewables portfolio could include a combination of increases in targeted investments to utilities and listed infrastructure companies with growing renewable portfolios; investment in indexes with exposure to renewables; and a set-aside for direct investments in listed and unlisted infrastructure projects. Each of these investment opportunities have track records with returns that meet or exceed GPF's historical performance. As the Fund becomes more experienced with new investment instruments the allocation of Fund assets to these areas can increase.

Equities add risk, but the Finance Ministry and its advisors have weighed them and determined that the shift under consideration would be a prudent course of action and an appropriately swift way to manage an emerging long-term fiscal problem. A timely response will allow Norway to get out in front of an emerging fiscal and political problem and to capitalize now on growth areas in the global marketplace.

How the Fund re-allocates capital will determine whether its new investment targets are met. The action recommended here offers the Fund a prudent way to diversify its investments and achieve attractive rates of return while complying with policy positions that the Norwegian Parliament, the Storting, has laid out for the Fund with regard to divestment from the coal sector.

## Background: GPFG Fiscal Responsibilities and Asset-Allocation Considerations

During the 2017 session of the Norwegian Parliament, the Ministry of Finance—in a white paper titled “The Management of the Government Fund in 2016”<sup>1</sup>—outlined the fundamental financial and fiscal challenges facing the Fund.

The Ministry of Finance showed how GPFG’s two main sources of income—returns on invested capital and revenues from the sale of Norwegian oil assets—are in decline. Both the Fund itself and the government of Norway rely on these sources of income. The Fund invests some of its oil revenues in stocks and bonds to expand the size of its portfolio, which in turn allows for more income to be generated. Some of the proceeds from the Fund’s investments also contribute directly to Norway’s annual budget. The decline of these revenue sources places fiscal and political pressure on Norway’s leaders to reduce annual budget expenditures.

The Fund, largely due to the success of its investments in oil, produced an overall real rate of return of 3.79% from 1998 through 2016 (Figure 1). However, the government white paper mentioned above projects that the Fund will probably produce a return of only 2.75 percent in the current international market going forward.

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<sup>1</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>

**Figure 1: Return on the GPFG, 1998-2016 (Source: Ministry of Finance)<sup>2</sup>**

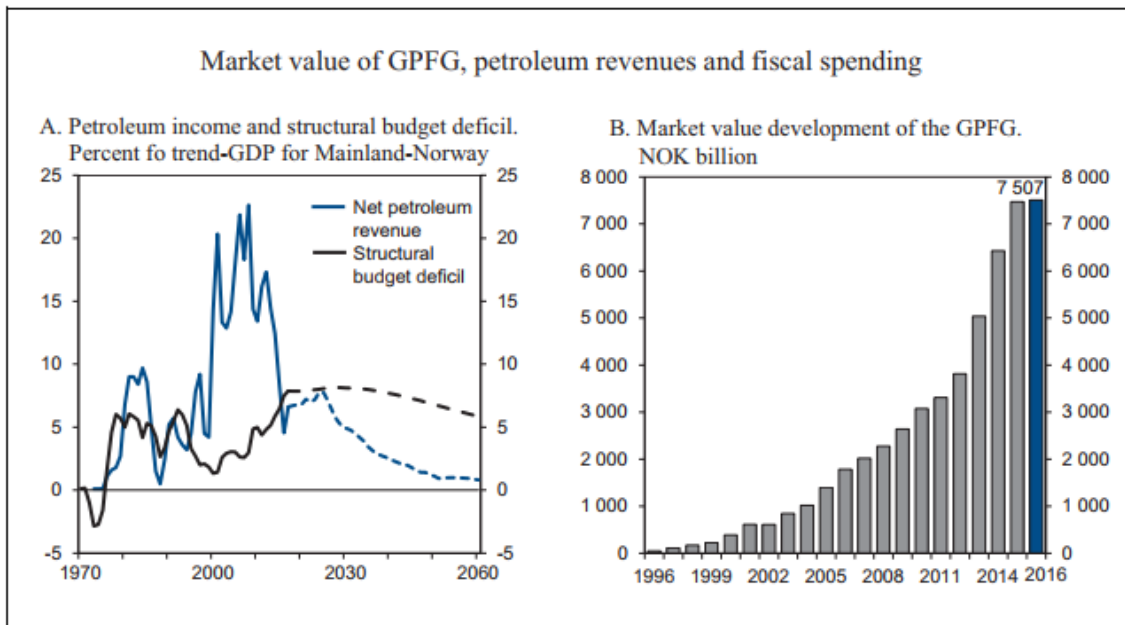
Table 2.1 Return on the GPFG in 2016, in the last 3, 5 and 10 years, as well as over the period 1998–2016, measured in the currency basket of the Fund and before the deduction of asset management costs. Annual geometric average. Percent

	2016	Last 3 years	Last 5 years	Last 10 years	1998–2016 <sup>1</sup>
<i>GPFG including real estate</i>					
Actual portfolio	6.92	5.72	9.22	5.25	5.70
Inflation	1.52	1.06	1.31	1.77	1.76
Asset management costs	0.05	0.06	0.06	0.08	0.09
Net real rate of return	5.27	4.56	7.74	3.33	3.79
Excess return (percentage points) <sup>2</sup>	0.15	-0.05	0.20	0.06	0.26

The Fund's contribution to the Norwegian government's annual budget is designed to come from the income generated from its investments, rather than from tapping into the principal. This system has worked since 1998 because high oil prices have generated strong cash flow that not only covered Norway's budget needs, providing services for the Norwegian people, but also helped build the principal of the Fund. However, the era of low oil prices and low investment returns that began in 2014 has eroded the viability of this model, diminishing the Fund's returns on investment and now threatening the government's ability to balance its budget.

<sup>2</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, page 24

**Figure 2: Market Value of GPFG, Petroleum Revenues, and Fiscal Spending<sup>3</sup>**



**Figure 3.7** Developments in petroleum revenues, budget deficits and the market value of the Fund  
 Source: Ministry of Finance.

The figure above, taken from the Ministry of Finance white paper, charts the astronomical growth of the Fund through 2016. Annual net petroleum revenues have covered Norway's fiscal needs for several decades now. Through 2060, oil revenues will remain substantial, but they will not cover Norway's fiscal needs; 2016 was the first year when oil revenues did not cover Norway's structural budget deficit. If the Fund is to cover this deficit going forward, in theory it would have to make a withdrawal from the principal balance, reducing the size of the Fund. The white paper states:

“Growth in the Fund capital is expected to be much slower in coming years. It is likely that production on the Norwegian continental shelf has peaked, and the oil price has declined significantly in recent years. It is nonetheless estimated that central government will earn significant petroleum revenues for many years to come, although at a lower level than for the last 10-15 years. International financial markets are also expected to generate lower returns in coming years.”<sup>4</sup>

The growth of the Fund has produced significant benefits for the people of Norway but has created an unsustainable fiscal dependency as well:

“As the Fund has grown large, it has also turned into a new source of instability for fiscal policy. While the fiscal policy framework has thus far sheltered the fiscal budget and the Norwegian economy from major fluctuations in central government petroleum revenues, the challenge has increasingly become how to handle major

<sup>3</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, page 57

<sup>4</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, p. 58.

fluctuations in international financial markets and in Norwegian krone exchange rates. It becomes more challenging to handle fluctuations in the value of the Fund, measured in Norwegian kroner, when the Fund growth levels off."<sup>5</sup>

Against this broad financial and fiscal backdrop, the Ministry of Finance white paper concludes that the Fund would benefit from a reallocation of capital from bonds to equities.

The Ministry of Finance, with the concurrence of Norges Bank and an outside Commission<sup>6</sup> (the "Mork Commission"), supports increasing the GPFG share of investment in equities to 70% of the Fund portfolio, an increase from the current 62.5%. The central assumption is that equities will perform better than bonds and will boost the real rate of return to 3% (up from an estimated 2.75% under current investment scenarios) in the years ahead.

The white paper recognizes that moving greater proportions of the Fund into equities comes with risk. The stock market has greater levels of annual volatility than fixed-income securities. Volatility can prove disruptive to annual fiscal plans and can threaten the political consensus that supports investment policy. The Ministry of Finance concludes nonetheless, after weighing the benefits and risks, that the prudent course is to increase the Fund's equity share.

Much of the reasoning stems from the fact that the large size of the Fund allows it to absorb annual stock market fluctuations so that, over the long term, sufficient real growth will smooth out cash shortfalls in bad years.

IEEFA believes it is advisable for the Storting and the Fund to act now to address the long-term fiscal stress caused by declining oil revenues and investment returns. Since 1998, the Fund has provided revenues that have allowed the government of Norway to balance its annual budget. The current structural budget imbalance identified by the Ministry of Finance and the Mork Commission is a long-term challenge. By moving now, the government will benefit by receiving new revenues in a manner that will mitigate the negative impacts of declining revenues.

The Ministry of Finance white paper also responds to a proposal made by the Norges Bank to allocate 5% of the Fund's holding to investments in unlisted infrastructure.

The Norges Bank has argued that this step would allow the Fund to capture attractive returns, including those from renewable energy projects that are a part of most infrastructure portfolios. The Ministry of Finance<sup>7</sup> has objected to this recommendation in the past, and repeats its objections in its white paper, citing: 1) the market size of unlisted infrastructure (as being too small for the Fund to invest in); 2) overhead costs associated with such a move, including the hiring of more staff; and 3) regulatory and political risks in the countries where investment would take place. Even with these objections, however, the Ministry of Finance has agreed to continue to review changing market conditions and is expected to report on the issue again in the spring of 2018.<sup>8</sup>

Separately, the GPFG relies on a study by the McKinsey Group as support for the contention that the unlisted infrastructure market is too small; that report places the size of the global

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<sup>5</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, p. 58

<sup>6</sup> <https://www.regjeringen.no/en/dokumenter/nou-2016-20/id2516269/F>

<sup>7</sup> See Appendix III for a discussion of the risks cited in the Ministry of Finance White Paper

<sup>8</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, p. 13.

market at \$600 billion. IEEFA's February 2017 report, "Making The Case for Norwegian Sovereign Wealth Fund Investment in Renewable Energy"<sup>9</sup> found, however, that McKinsey sourced the \$600 billion figure from a 2012 report by RARE Infrastructure, and IEEFA noted that RARE updated that number in June 2016 to \$1.1 trillion.<sup>10</sup> The Ministry of Finance continues to cling to the outdated 2012 figure in its white paper. This is a material omission.

## Opportunity Now in the Growing and Profitable Global Market in Renewable Energy

The proposal to expand the equity share of the GPF is designed to grow the Fund within risk parameters that are satisfactory to the Ministry of Finance, Norges Bank and the Storting. IEEFA sees investments in renewable energy helping the Fund grow and stabilize within these parameters. As became clear during the Storting's discussions in 2017 on unlisted infrastructure investment, the renewable energy sector is producing solid returns and growth and its outlook for the sector is positive.<sup>11</sup>

By rejecting an asset allocation for unlisted infrastructure, the Ministry of Finance opted not to take part in a growing market whose value now stands at \$1 trillion. Hewing to this position will impair the Fund's ability to take advantage of one of several important ways in which it could participate in and benefit from the growth of renewable energy.

### *Demand for Renewables Is Increasing*

Renewable energy is now widely seen as a growth industry and a mainstream investment.

Renewable energy is driving the growth of listed and unlisted infrastructure markets. The current combined market for both is \$4.8 trillion.<sup>12</sup> Preqin, an institutional investor data tracking and analysis service, reports that in 2016 the infrastructure sector produced 1,772 renewable energy deals worth \$645 billion, with 42% of the transactions in renewable energy.<sup>13</sup> During the first half of 2017, 59% of all infrastructure deals were in renewable energy.<sup>14</sup>

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<sup>9</sup> [http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure\\_February-2017.pdf](http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure_February-2017.pdf)

<sup>10</sup> <http://www.rareinfrastructure.com/wp-content/uploads/PLSA-Article-Only.pdf>

<sup>11</sup> [http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure\\_February-2017.pdf](http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure_February-2017.pdf)

<sup>12</sup> <http://www.rareinfrastructure.com/wp-content/uploads/PLSA-Article-Only.pdf> RARE infrastructure. (November 2016). The Infrastructure Opportunity: Listed versus Unlisted.

<sup>13</sup> Preqin, *2017 Preqin Global Infrastructure Report*

<sup>14</sup> <https://d3k9pt3r5jsyv9.cloudfront.net/docs/quarterly/inf/Preqin-Quarterly-Infrastructure-Update-Q2-2017.pdf>



Bloomberg New Energy estimates that 72% of the US\$10.2 trillion to be invested in new power generation by 2040 will be in wind and solar.<sup>15</sup> KPMG estimates that by 2040 renewable energy capacity will almost triple from 2015 levels.<sup>16</sup>

The rapid pace of change in the renewable sector is bolstered by overwhelming support at national and subnational levels around the world.<sup>17</sup> Nowhere is this more evident, perhaps, than in India, where the deployment of solar energy is occurring at a far greater pace and volume than many analysts predicted. At the June 2017 G20 summit in Hamburg, Germany, India's prime minister, Narendra Modi, upon meeting Norway's prime minister, Erna Solberg, invited Norwegian pension funds to invest in the National Investment and Infrastructure Fund.<sup>18</sup>

In many countries, tariff and other supportive policies are bringing stability to the capital formation process in the renewable sector. In this environment, utility executives see renewable energy as an important ingredient in company level portfolio planning and capital expenditures going forward.<sup>19</sup>

In addition to the growing public-sector consensus, major Fortune 500 corporations are increasing renewable energy targets to support their own operations.<sup>20</sup> These initiatives underscore the long-term institutional support for renewable energy and demonstrate its growing role as a solution for businesses looking to cut costs as they reinvest in their own energy future.

## ***More Large Investors Are Allocating Capital to Renewable Energy***

Renewable investments have been capturing an increasing share of infrastructure investment. As the renewable sector has grown, investment houses are now also creating pure-play, stand-alone renewable investment vehicles. These funds are designed to achieve the same long-term returns—10 to 15% annually—as traditional infrastructure.

One example: Brookfield Asset Management, which has a 17-year history with an annual rate of return of 16%.<sup>21</sup> The Brookfield family of investment funds houses infrastructure, renewables, and private equity holdings.<sup>22</sup>

Since January 2017, two major investment houses—BlackRock and JPMorgan Chase—have announced the formation of new funds in the renewable sector. BlackRock closed its most recent renewable fund of US\$1.48 billion, bringing its total investment across the renewable

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<sup>15</sup> <https://about.bnef.com/new-energy-outlook/>

<sup>16</sup> <https://home.kpmg.com/content/dam/kpmg/sg/pdf/2016/11/Global-Trends-in-Renewable-Energy.pdf>

<sup>17</sup> <http://ieefa.org/ieefa-year-review-2016/>

<sup>18</sup> [http://economictimes.indiatimes.com/articleshow/59506481.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](http://economictimes.indiatimes.com/articleshow/59506481.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)

<sup>19</sup> <http://www.utilitydive.com/news/why-utilities-are-more-confident-than-ever-about-renewable-energy-growth/440492/>

<sup>20</sup> <https://www.ceres.org/resources/reports/power-forward-3>

<sup>21</sup> [https://bep.brookfield.com/~/\\_media/Files/B/Brookfield-BEP-IR/events-and-presentations/presentation-29-09-2016.pdf](https://bep.brookfield.com/~/_media/Files/B/Brookfield-BEP-IR/events-and-presentations/presentation-29-09-2016.pdf), p. 13.

<sup>22</sup> For a longer discussion of the evolution and performance of the Brookfield family of funds see: [http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure\\_February-2017.pdf](http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure_February-2017.pdf)

asset class globally to \$4.8 billion. Today, 22 European institutional funds are invested in BlackRock renewable initiatives.<sup>23</sup>

JPMorgan Chase made a splash in July by announcing that it would source 100% of its own corporate needs with renewable energy.<sup>24</sup> Its more significant announcement, however, was in stating its intention to work with its client base of 22,000 to make \$200 billion in renewable energy investments by 2025.<sup>25</sup>

These investment houses are responding to the demand by institutional investors<sup>26</sup> for renewable energy opportunities. According to Preqin, 86 percent of institutional funds now invested in infrastructure are likely or very likely to increase their participation in the sector in 2017.<sup>27</sup>

## **Returns Are Attractive**

The most recent performance data for infrastructure— while it does not reflect the return on renewable energy investments specifically—shows that the median net internal rate of return (IRR) for all vintages is approximately 10%,<sup>28</sup> which is typical of an investment favored for its relatively stable returns. These returns compare favorably to both the GPF's overall portfolio returns of 5.7% from 1998-2016 and the performance of GPF's equity portfolio at 5.86%.<sup>29</sup>

Figure 3, below, shows that Preqin identifies a range of returns in the infrastructure category both above and below the median Internal Rate of Return (IRR).

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<sup>23</sup> <https://ijglobal.com/articles/107325/blackrock-global-renewable-power-ii-fund-the-largest-of-its-kind>

<sup>24</sup> The larger trend of corporations adopting renewable energy targets is treated in <https://www.worldwildlife.org/publications/power-forward-3-0-how-the-largest-us-companies-are-capturing-business-value-while-addressing-climate-change>

<sup>25</sup> <https://pv-magazine-usa.com/2017/07/28/breaking-jpmorgan-chase-goes-all-in-on-renewable-energy/>

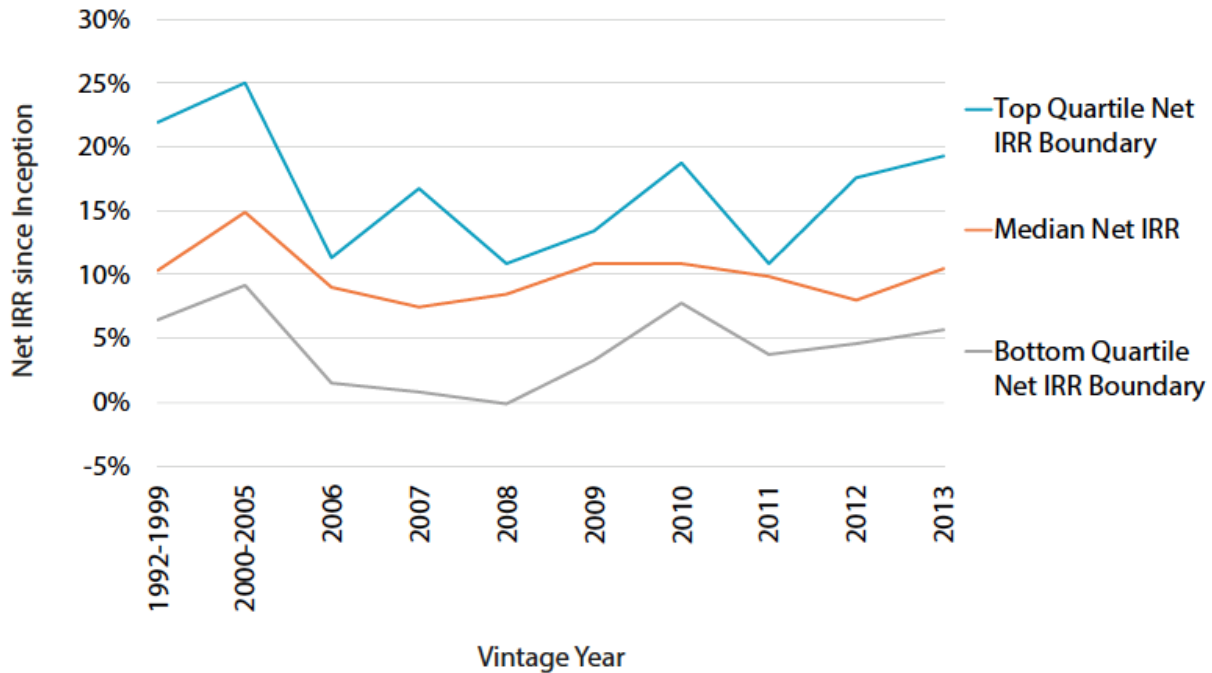
<sup>26</sup> See Appendix I for a list of largest institutional investors in the infrastructure space by Fund Type.

<sup>27</sup> Preqin 2017 Annual, p. 50.

<sup>28</sup> Preqin, *2017 Preqin Global Infrastructure Report*

<sup>29</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>, p. 24

**Figure 3: Unlisted Infrastructure Median Net IRRs and Quartile Boundaries by Vintage Year (as of June 2016)**



Source: Preqin Infrastructure Online

Investing in listed infrastructure funds will allow GPFG to take advantage of attractive returns. Direct investments in funds and in the stocks of companies involved regularly achieve or exceed the market average reached by the GPFG.

Figure 4, below, shows how listed infrastructure funds have performed better over the past 10 years than the GPFG as a whole. Returns of the Dow Jones Brookfield Global Ex. U.S. (DJBGEx), which includes projects from nine European countries, also surpassed GPFG performance over the past decade. DJBGEx has achieved better results over the past five years as well.

**Figure 4: Five- and Ten-Year Returns of Selected Dow Jones/Brookfield Infrastructure Funds versus GPFG Returns**

Fund	Five Year Returns	Ten Year Returns
GPFG	9.22%	5.25%
Dow Jones Brookfield Global Infrastructure Composite Yield Index	8.67%	7.66%
Dow Jones Brookfield Americas Infrastructure Index	8.48%	9.76%
Dow Jones Brookfield Global Ex U.S. Infrastructure Index	9.47%	6.02%

## ***GPFG Policy Supports Renewable Energy as the Preferred Alternative to Coal***

The Storting decided in June 2015 that the GPFG should divest from coal-related companies that either derive more than 30% of their revenue from burning or mining coal or that generate more than 30% of their power from coal.<sup>30</sup> In the same statement of recommendation, the Storting called for Norges Bank<sup>31</sup> to develop a “policy mechanism chain” that rewarded companies with growing renewable energy portfolios.

As a practical matter, GPFG's protocol for coal divestment recognizes the dynamics of change occurring as part of the global energy transition. The Storting's divestment directive looks favorably upon the investment potential of renewable energy and encourages the Fund to re-invest in those companies that reduce their dependence on coal.

In fact, as shown in Figure 5 below, the share price of utilities with significant renewable portfolios outperforms utilities that remain coal-dependent.

**Figure 5: Share Price Trends by Listed Utility Companies, Averaged by Group Depending on their Approach to Investment in Renewables<sup>32</sup>**

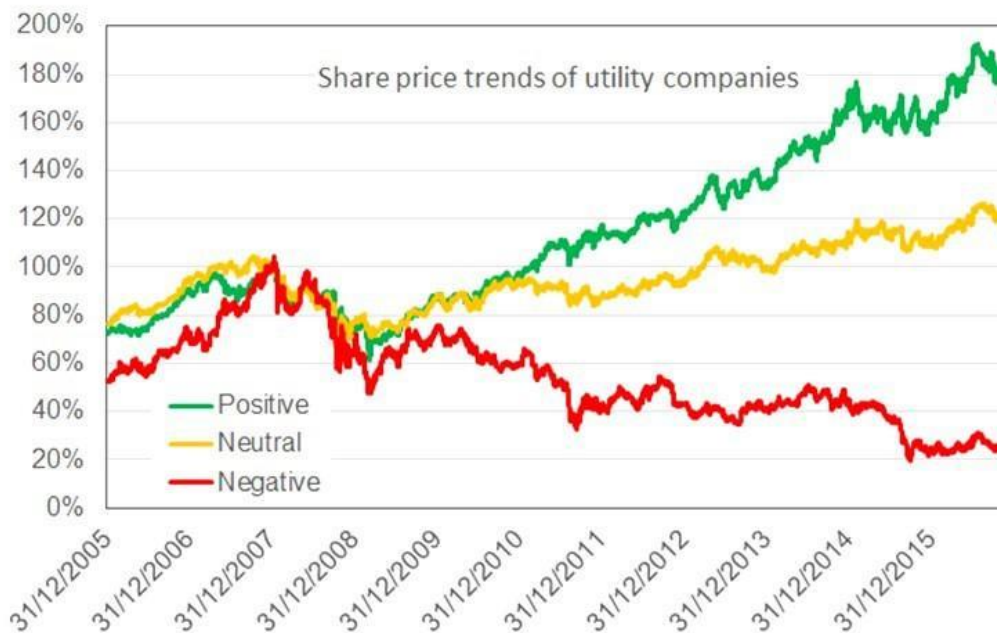


Figure 5 is derived from a sample of publicly traded utilities divided into three groups based on the general direction of each company's portfolio mix: a) significant increases in renewable energy investment, b) modest investment in renewable energy investment, and c) significant dependence on fossil fuels.

<sup>30</sup> <https://www.stortinget.no/en/In-English/About-the-Storting/News-archive/Front-page-news/2014-2015/hj9/>

<sup>31</sup> <https://www.nbim.no/en/transparency/submissions-to-ministry/2016/government-pension-fund-global-proposed-amended-provisions-on-a-new-product-based-coal-criterion-in-the-framework-for-responsible-investment-etc/>

<sup>32</sup> <https://renewablesnow.com/news/analysis-utilities-risk-decline-unless-they-embrace-renewables-549836/>

These findings are discussed in more detail in previous IEEFA reports along these lines, “Making the Case for Investment in Renewable Energy Infrastructure” ( April 2017) <sup>33</sup> and “NTPC as a Force in India's Electricity Transition” (May 2017). The NTPC study highlights the significant positive stock performance of NextEra, a company that has embraced the renewable sector and is producing positive results for investors. The report also highlights several significant examples of companies that failed to pivot away from fossil fuels in a timely and strategic manner. IEEFA identifies both the short- and long-term implications of significant value destruction that have occurred at the companies in question. <sup>34</sup>

Standard and Poor's 2017 analysis of European utilities,<sup>35</sup> covering €300 billion in shareholder value, concludes that those companies with exposure to renewable energy are the best-positioned to achieve solid earnings now and in the future. Of the top ten companies identified in the study with new renewable investments, all but one has a rating of BBB or higher.<sup>36</sup> Three of these companies—Iberdrola, EDP and Enel—have led the DAX index for most of the past five years.

Standard and Poor's rates Iberdrola, Enel, EDP, EDF, E.ON, Vattenfall and SSE as well-positioned because of their expertise in the renewable sector.<sup>37</sup>

## Many Avenues for Institutional Investors to Take Part

The renewable sector is providing solid returns, is growing, and its outlook is positive. This success has been driven by sector trends toward improving technologically and declining prices for solar- and wind-generated electricity. As the renewable industry gains market share, opportunities for institutional investors to gain access to the market are on the upswing.

Below is a brief sketch of investment options available to GPFG as it explores access to the renewable energy market. The remainder of the paper discusses how this landscape can be applied given the specific issues facing the Fund.

1. **Stock Investments**—These includes opportunities to access the renewable sector through utilities and listed infrastructure companies.
2. **Energy-Related Indexes**—The market now offers renewable energy indexes,<sup>38</sup> environmental-mandate indexes,<sup>39</sup> fossil-free indexes,<sup>40</sup> and broader socially responsible indexes.<sup>41</sup>

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<sup>33</sup>Darren Sweeny and Garrett Devine, *Trump election hasn't changed utilities coal retirement plans*, SNL, November 21, 2016 and Jasmin Melvin, *Outlook for utilities 'positive' under Trump: Analyst*, SNL, December 19, 2016. [http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure\\_February-2017.pdf](http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure_February-2017.pdf), p. 32.

<sup>34</sup> [http://ieefa.org/wp-content/uploads/2017/05/NTPC-as-a-Force-in-Indian-Electricity-Transition\\_May-20171.pdf](http://ieefa.org/wp-content/uploads/2017/05/NTPC-as-a-Force-in-Indian-Electricity-Transition_May-20171.pdf). IEEFA is expanding these research findings in a forthcoming study.

<sup>35</sup> *Ibid.*

<sup>36</sup> *Ibid.*

<sup>37</sup> *Ibid.*

<sup>38</sup> <https://us.spindices.com/indices/equity/sp-tsx-renewable-energy-and-clean-technology-index>

<sup>39</sup> <https://www.msci.com/esg-index-family>

<sup>40</sup> <https://fossilfreefunds.org/>

<sup>41</sup> <https://www.spglobal.com/our-insights/ESG-Sustainable-Energy.html>

3. **Direct Investment in Listed and Unlisted Infrastructure**—Opportunities to invest in renewable energy are available both in listed infrastructure funds and in unlisted infrastructure, where deals and values are rising.
4. **Unlisted Renewable Energy Funds**—A number of investment houses now offer pure-play renewable energy funds.

## Equity-Expansion Options for GPFG

GPFG can take advantage of these renewable energy investment opportunities with a mix of practical strategies designed to maintain attractive returns and manage risk at a minimal cost.

IEEFA proposes the following investment strategy:

If the Fund increases its investment in equities from the current 62.6% to 70%, IEEFA estimates that the Fund would be redeploying approximately 554 billion NOK (US\$72 billion). The reallocation would most likely occur over the course of a few years.

The Fund will need to devise a sector and geographic plan for the redeployment of this capital that is consistent with its disclosure protocols, risk parameters and performance targets. IEEFA proposes a 190 billion NOK (US\$25 billion) renewable-energy target to be deployed from the estimated 554 billion NOK reallocation.

A portion of the 190 billion NOK (US\$25 billion) allocation can be spread across publicly traded utilities and listed infrastructure company stocks. An additional allocation within the 190 billion NOK envelope would be made as direct investments with unlisted and listed infrastructure funds.

If the Storting decides not to expand its asset allocation for equities from 62.7% to 70%, it has other ways to increase the Fund's exposure to renewable energy.

Either way, there are several responsible ways to proceed.

### **Stocks**

GPFG can devise a sub-classification of equities<sup>42</sup> within its overall equity portfolio that allocates capital to publicly traded utilities and listed infrastructure funds with growing renewable energy portfolios. From a policy perspective, such an initiative can build on the re-investment standards adopted by the Fund as part of its coal divestment policy.

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<sup>42</sup> The New York State Common Retirement Fund (CRF) and Goldman Sachs have instituted a \$5 billion set aside of pension fund assets to be invested in a specially-designed product for CRF, a low carbon emission portfolio. <https://www.gsam.com/content/dam/gsam/pdfs/institutions/en/articles/2016/esg-case-study.pdf?sa=n&rd=n>. The New York State Comptroller has recently announced that the initial \$2 billion is performing well and the fund will take steps to move forward with the rest of the \$5 billion commitment in the near future: <https://www.environmental-finance.com/content/deals-of-the-year/personality-of-the-year-2017.html>

Investments in traditional publicly traded companies that are in the renewable space mitigate many of the risk considerations raised by the Ministry of Finance. The Fund already invests in many of these companies. As Fund administrators develop standards for this subclass, they can either increase existing investments in these companies or invest in new ones.

Further analysis by the Fund would create additional investment opportunities in renewable energy in the equity portfolio.

## ***Energy-Related Indexes***

GPFG can conduct an analysis of renewable energy indexes, environmental-mandate indexes, fossil-free indexes, and broader socially responsible indexes—and then select among them. Investment in indexes all but eliminates direct political and regulatory risks identified by the Ministry of Finance. The nature of index funds, however, may dilute the return potential and may mean they are precluded if their screening practices are inconsistent with Fund standards.

## ***Direct Investment in Listed and Unlisted Infrastructure***

A previous Storting proposal to allocate 5% of the fund to unlisted infrastructure was rejected by the Ministry of Finance.<sup>43</sup> The Fund, as a way forward, may now want to consider making a smaller allocation to the unlisted space, combined with direct investments in listed infrastructure funds with an emphasis on renewable energy to create an attractive return scenario with less risk. The principal purpose here is for GPFG to take advantage of a growing market with attractive returns, low inflation and long-term contracts. This recommendation would place a smaller amount of money into a far bigger market, as the combined market for unlisted and listed infrastructure funds is \$4.8 trillion. A smaller allocation and investment in listed and unlisted projects would also minimize the regulatory and political risks cited by the Ministry of Finance in its rejection. Additional allocations could be made at a later date, but getting into the market now allows the Fund to stay ahead of eroding revenues from oil sales and the resulting decline in the Fund's investment returns.

GPFG's selection of fund managers and investment partners will be critical to achieving the highest possible rate of return. As shown in the Preqin data in Figure 3, the lowest-return quartile of this sector produced returns that are only slightly below GPFG's long-term equity portfolio performance and exceeded the Fund's long-term returns on its fixed-income investments, but the median net IRR in the sector was in the 10% range.

The opportunity for direct investments in listed and unlisted infrastructure funds (and in renewable funds, see below) can take place regardless of whether the Storting votes to expand the Fund's investments in renewable energy. As discussed in our prior paper on this topic, funds can be set aside for an unlisted infrastructure program of investment with a small allocation similar to those dedicated to the Fund's real estate investment portfolio.

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<sup>43</sup> IEEFA recommended an allocation of 5% of the Fund in unlisted infrastructure. This level and type of commitment is the preferred path. This paper adjusts that recommendation to address the risk parameters established by the Ministry of Finance, suggesting that the investments could be done at a slower pace and built up over time.

## ***Unlisted Renewable Energy Funds***

Several prominent investment houses have developed pure-play unlisted renewable funds, reducing the risk profile of these holdings by excluding investments in more controversial infrastructure projects such as pipelines. GPFG can take advantage of similar opportunities now to invest in these funds with a smaller allocation than originally proposed by Norges Bank. Long-term stable purchase power agreements that use renewable energy for electricity generation pose less risk than some of the other longer-term politically sensitive projects, such as pipelines, that are more normally associated with infrastructure development.

## **Conclusion**

The global energy sector's transition away from fossil fuels is putting financial stress on Norway's Government Pension Fund Global, but it presents investment opportunities as well.

IEEFA recommends that the Fund create an internally managed portfolio of renewable energy investments that provides access to this growing sector.

Such an approach would allow the Fund to prudently manage risk while simultaneously reaping attractive returns.



# Appendix I: Lists of Largest Institutional Investors by Type Invested in Infrastructure Fund

Rank	Investor	Allocation to INF (\$bn)	Location
1	APG - All Pensions Group	8.6	Netherlands
2	Alberta Investment Management Corporation (AIMCo)	5.9	Canada
3	British Columbia Investment Management Corporation	5.8	Canada
4	PGGM	5.6	Netherlands
5	QIC	4.4	Australia

Source: Prequin Infrastructure Online

Fig. 7.23: Largest Investors in Infrastructure - Government Agencies

Rank	Investor	Allocation to INF (\$bn)	Location
1	International Finance Corporation (IFC)	4.1	US
2	DEG	2.1	Germany
3	Proparco	1.6	France
4	CDC Infrastructure	1.1	France
5	Norfund	1.0	Norway

Source: Prequin Infrastructure Online

Fig. 7.24: Largest Investors in Infrastructure - Insurance Companies

Rank	Investor	Allocation to INF (\$bn)	Location
1	Hanwha Life Insurance	5.2	South Korea
2	Manulife Financial	4.6	Canada
3	Samsung Life Insurance	4.1	South Korea
4	CNP Assurances	2.6	France
5	SBI Life Insurance	2.5	India

Source: Prequin Infrastructure Online

Fig. 7.25: Largest Investors in Infrastructure - Private Sector Pension Funds

Rank	Investor	Allocation to INF (\$bn)	Location
1	Universities Superannuation Scheme	2.8	UK
2	TIAA	1.9	US
3	BT Pension Scheme	1.6	UK
4	Western Conference of Teamsters Pension Plan	1.3	US
5	Railways Pension Trustee Company	1.1	UK

Source: Prequin Infrastructure Online

Fig. 7.26: Largest Investors in Infrastructure - Public Pension Funds

Rank	Investor	Allocation to INF (\$bn)	Location
1	CPP Investment Board	16.1	Canada
2	National Pension Service	14.4	South Korea
3	OMERS	12.1	Canada
4	CDPQ	11.8	Canada
5	Ontario Teachers' Pension Plan	11.2	Canada

Source: Prequin Infrastructure Online

Fig. 7.27: Largest Investors in Infrastructure - Sovereign Wealth Funds

Rank	Investor	Allocation to INF (\$bn)	Location
1	Abu Dhabi Investment Authority (ADIA)	23.8*	United Arab Emirates
2	Future Fund	5.9	Australia
3	Khazanah Nasional	2.9	Malaysia
4	Alaska Permanent Fund Corporation	2.1	US
5	Texas Permanent School Fund General Land Office	1.6	US

\*ADIA has an allocation between 1% and 5% of assets under management. Allocation is estimated on the basis of the midpoint of these two values (3%).

Source: Prequin Infrastructure Online

## Appendix II: Response to Selected Risk Factors Identified by Ministry of Finance Related to Unlisted Infrastructure Investments

During the 2017 session of the Norwegian Parliament, the Ministry of Finance released a white paper titled “The Management of the Government Fund in 2016”<sup>44</sup> that identifies risk factors for unlisted infrastructure investments. Below is IEEFA’s response to several of the primary risk factors raised in the paper.

### 1. The size of the unlisted infrastructure market is too small for the GPFG and the political risks are too great

The GPFG relies upon a McKinsey report as support for this contention. The McKinsey report places the size of the global market at \$US600 billion globally. IEEFA’s February 2017 report, “Making The Case for Norwegian Sovereign Wealth Fund Investment in Renewable Energy,”<sup>45</sup> found that McKinsey had sourced the \$US600 billion figure from a 2012 report by RARE Infrastructure. IEEFA noted that RARE updated its number in June 2016 to \$US1.1 trillion. However, the Ministry of Finance continues inexplicitly to carry the outdated 2012 figure in its 2017 white paper. This is a material omission.

(IEEFA recommends that the GPFG respond now to growing market opportunities by taking the following actions: 1) setting aside capital for both direct investments in listed and unlisted infrastructure deals; and 2) decreasing the size of its infrastructure initial set-aside from 5% of the Fund (approximately 370 billion NOK) to less than 100 billion NOK.

The Ministry of Finance has also resisted unlisted infrastructure deals because of the political risk associated with many projects. IEEFA believes that the regulatory and political risks identified by the Ministry of Finance are manageable. However, we note that several investment houses are expanding investment vehicles in “renewable-only” funds that are designed to reduce political risk of the kind that has been generated around oil pipelines,<sup>46</sup> for example.

### 2. The returns from unlisted infrastructure are “uncertain”

The Ministry of Finance states that returns from unlisted infrastructure investments are uncertain. Yet its recent white paper on this topic provides no discussion of this. IEEFA, by contrast, emphasizes data on returns provided by Prequin in its 2017 Annual Report on Infrastructure. This data shows an average rate of return since 1996 of approximately 10%. We also note returns information for Brookfield Asset Management, which has had a return of 16% in the 17 years since the inception of its renewable funds.

IEEFA points out in this paper, too, that the returns presented by Prequin for unlisted infrastructure exceed the returns for the GPFG as a whole. Given the fiscal crunch faced by Norway from declining oil sales and prices and lower investment returns, it strains credulity that the Ministry of Finance says it will take a pass on ample returns like these—from a \$1

<sup>44</sup> <https://www.regjeringen.no/contentassets/114c28f5daba461e95ed0f2ec42ebb47/en-gb/pdfs/stm201620170026000engpdfs.pdf>

<sup>45</sup> [http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure\\_February-2017.pdf](http://ieefa.org/wp-content/uploads/2017/02/Making-the-Case-for-Investment-in-Renewable-Energy-Infrastructure_February-2017.pdf)

<sup>46</sup> <https://www.theguardian.com/us-news/2017/mar/17/sami-dakota-access-pipeline-norway-pension-fund-divest>

trillion market—because the market is too small. As seen in the list of institutional investors provided in Appendix II, a wide variety of funds have successfully managed the political and regulatory risks that the Ministry of Finance has mentioned.

## Institute for Energy Economics and Financial Analysis

The Institute for Energy Economics and Financial Analysis (IEEFA) conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. More can be found at [www.ieefa.org](http://www.ieefa.org)

## About the Author

### Tom Sanzillo

Tom Sanzillo, director of finance for IEEFA, is the author of several studies on coal plants, rate impacts, credit analyses, and public and private financial structures for the coal industry. He has testified as an expert witness, taught energy-industry finance training sessions, and is quoted frequently by the media. Sanzillo has 17 years of experience with the City and the State of New York in various senior financial and policy management positions. He is a former first deputy comptroller for the State of New York, where he oversaw the finances of 1,300 units of local government, the annual management of 44,000 government contracts, and where he had oversight of over \$200 billion in state and local municipal bond programs and a \$156 billion pension fund.

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