

Enclosure

Norges Bank's assessment of the basis for unlisted investments focusing on the environment and sustainable growth

1. Introduction.....	3
2. Unlisted investments.....	3
2.1. Private equity funds.....	4
2.2. Supplements to fund investments.....	9
2.3. Infrastructure	10
2.4. Other institutional investors' approach to private equity and infrastructure.....	11
2.5. Operational challenges associated with investments in unlisted assets	12
2.6. New proposals for the regulation of the private market.....	14
2.7. Norges Bank's recommendation	15
2.7.1. Private equity.....	15
2.7.2. Infrastructure	16
3. Unlisted environmental investments.....	17
3.1. General	17
3.2. Environmental private equity investments	18
3.3. Environment-related infrastructure investments	19
3.4. Unlisted environmental investments at other institutional investors	21
3.5. Norges Bank's recommendation for unlisted environmental investments.....	21
4. Investments in sustainable growth in emerging markets	21
4.1. Private equity in emerging markets.....	22
4.2. Private equity in the least developed markets	24
4.3. Norges Bank's recommendation for investments in sustainable growth	24

1. Introduction

In *Report No. 20 (2008-2009) to the Storting*, the government proposed the creation of a new investment programme focusing on environment-related investments, and further assessment of whether it would be appropriate for the Government Pension Fund Global to introduce investments focusing on sustainable growth in emerging markets.

In previous letters to the Ministry of Finance, Norges Bank has argued that specialised unlisted investments must be based on an analysis of investment opportunities, of risk and expected return, and of whether Norges Bank can establish an organisation to perform this type of management. Such an analysis follows.

The investment strategy for the Government Pension Fund Global should be designed to exploit the fund's distinguishing characteristics as a large, long-term investor with no short-term liquidity needs. The fund is particularly well-placed to bear liquidity risk. A larger proportion of less liquid assets in the portfolio could increase the potential return on the fund and improve actual risk diversification, so helping to improve the trade-off between expected return and risk. This is in keeping with the line taken by the Ministry of Finance in *Report No. 10 (2009-2010) to the Storting*:

Future work on the investment strategy will focus in particular on evolving the strategy so as to exploit the special characteristics of the Government Pension Fund in the best possible manner... Further development will seek to diversify the risk further and increase the weight of investments that benefit from the Fund's size, long-term perspective and ability to hold less liquid assets.

Norges Bank recommends that unlisted investments focusing on the environment and sustainable growth should be made within the context of a broad management mandate. Given the size of the fund and expected developments in the two segments in question, investments serving the intentions of new investment programmes could eventually amount to a substantial sum. These investments should be subject to the same requirements for return and risk management as other investments. This would also require Norges Bank to develop an organisation with the expertise to evaluate, execute and monitor investments in private equity and infrastructure. This expertise could be built up on the basis of existing experience, qualifications and processes in the organisation.

2. Unlisted investments

The Government Pension Fund Global's investment universe has gradually been expanded. When the first transfer of capital to the fund was made in 1996, investments were limited to cash deposits, treasury bills and government bonds in developed markets. Equities in developed markets were included in 1998, and equities in emerging markets, corporate bonds, inflation-linked bonds and small-cap stocks have since been added. The universe has also

gradually been extended to include more countries. With the introduction of unlisted real estate investments in autumn 2007, the investment universe was expanded to include unlisted, less liquid assets. It is now natural to consider other unlisted investment opportunities.

Investments in the unlisted market were discussed in Norges Bank's letter to the Ministry of Finance of 20 October 2006 on the fund's long-term investment strategy. We argued that the fund was particularly well-placed to bear liquidity risk, and that the investment strategy should place greater emphasis on less liquid investments. Against this background, we recommended that the fund's investment universe should be expanded to include investments in real estate, infrastructure and private equity. The door has since been opened to investments in real estate, while infrastructure and private equity remain outside the fund's investment universe.

In the following, we will assess investment opportunities in private equity and infrastructure. These areas are relevant once again given the discussion of environmental investments. The report builds on the review of investment opportunities in the private market that we performed in 2006, but has been updated in line with subsequent developments.

2.1. Private equity funds

Private equity (PE) is used as an umbrella term for long-term, less liquid investments in unlisted equities where the investor aims to realise underlying value in the company through a future divestment or flotation.

Private equity investments are generally organised in the form of a fund, which a manager with specialist expertise (general partner) manages on behalf of a group of investors (limited partners). In most cases, the fund will consist of a limited number of investments in individual companies and have a predetermined life (normally ten years). The partnership and the relationship with the manager are governed by agreements between the parties. These agreements are usually identical for all of the limited partners, although there are cases where individual investors obtain special terms and conditions through supplementary agreements (e.g. to take account of special regulatory requirements).

When a fund is launched, investors commit a certain amount of capital. The manager decides the rate at which, and the companies in which, this capital is actually invested. As portfolio companies are divested, the proceeds are returned to the partners. In recent years, the average time between the acquisition and divestment of a portfolio company has been between three and four years. The profile of payments in and out of the fund is uncertain and will vary over time. However, this structure with periodic payments in and out of the fund means that actual total exposure will generally be less than the amount the partner originally committed.

A manager normally starts work on setting up his next fund well before the previous fund expires. The year when the manager first draws down capital from investors is often referred

to as the fund’s vintage year. A private equity portfolio should consist of funds of different vintages.

Information about private equity as an asset class is not readily available. Aggregated statistics such as market size and returns will always be based on some form of survey. The results of surveys of this type must be interpreted with caution, as the sample used will often have some form of systematic bias. In our analysis, after evaluating various data sources, we have chosen to use data from several different suppliers. Internal consistency between the samples used as the basis for these data is not a given.

One approach to estimating the size of the market for private equity funds is to look at how much new capital managers have raised in recent years. Developments since 2000 are shown in the table below. According to ThomsonOne, just over 300 billion US dollars was raised in 2009, or roughly half the amount in the two previous years.

Table 1: Fund-raising. Billions of US dollars¹

Year	New capital
2000	338
2001	250
2002	178
2003	140
2004	191
2005	346
2006	460
2007	606
2008	655
2009	302

Source: ThomsonOne.

The first private equity investments were made in the US in the 1950s. Their geographical scope has gradually expanded since then, and private equity funds are now active in all geographical regions. Almost 60 percent of the capital raised in 2009 went to funds investing primarily² in North America, while funds investing in Europe and Asia³ attracted 30 and 10 percent respectively⁴. Risk and potential returns vary from region to region, due partly to the underlying ownership/industrial structure, and how long private equity funds have been active in the region in question. In Europe, for example, it is more common for medium-sized companies to be in private ownership than is the case in the US, which may mean that private equity funds have greater potential here.

¹ Source: ThomsonOne.com. The database consists primarily of activity data from Europe and the US.
² Most funds have the option of investing outside their primary geographical focus area.
³ Asia here includes other parts of the world.
⁴ Source: 2010 Preqin Global Private Equity Report.

Private equity funds pursue a variety of strategies. One key distinction is between “venture funds” and “buyout funds”⁵. A venture fund will normally enter a company as a minority shareholder at an early stage of its development. Cash flow at these companies will often be negative. Buyout funds invest in more mature companies with a positive cash flow. These funds normally take larger positions and often contribute both equity and loan capital. The risk in a venture fund will normally be higher than in a buyout fund, due partly to investments being made at an early stage of a company’s life, and partly to the sectors in which venture companies tend to operate – often sectors characterised by high technology risk.

In terms of assets under management, buyout funds currently dominate. The *2010 Preqin Global Private Equity Report* estimates that buyout funds had around 1,000 billion US dollars under management⁶ at the end of the second quarter of 2009, and venture funds just under 400 billion dollars. Assets under management paint a picture of the investment opportunities within private equity funds, but the investment opportunities in private equity are substantially larger, as only a small proportion of the world’s private companies have private equity investors among their shareholders.

If the equity market is efficient, securities prices will at all times reflect all available information⁷. In an efficient market, rational, profit-seeking market participants will ensure that all relevant information is discounted, with the result that all trading to exploit price discrepancies (arbitrage) is unnecessary. With unlisted equities, there will be no observable market prices. Trading in these equities will be limited. It is reasonable to assume that there will be a degree of information asymmetry between shareholders and potential buyers relying on publicly available information.

Private equity funds attempt to create value through active ownership – e.g. by making operational changes at the company or by overhauling the company’s financial structure. A number of studies have attempted to identify the most important value drivers private equity investments. Common to these studies is limited data. Consulting firm Capital Dynamics and the Center for Entrepreneurial and Financial Studies (CEFS)⁸ attempted to identify the value drivers in 241 private equity transactions in the period 1989-2006 and found that operational changes explained two-thirds of the excess return relative to the public market, while financial restructuring (including greater leverage) explained the remainder.

The return on a private equity fund is normally measured as the internal rate of return, which is the annualised, money-weighted return over a specific period. The internal rate of return

⁵ In addition, the term “growth fund” is often used for funds pursuing strategies in the area between venture and buyout funds, while “mezzanine funds” invest mainly in the area between debt and equity.

⁶ Preqin’s estimates of assets under management are calculated as the sum of the market value of portfolio companies and dry powder (committed but uncalled capital).

⁷ For a more detailed discussion of the theoretical and empirical basis for efficient markets, please see the discussion in our letter of 23 December 2009 on Norges Bank’s active management of the Government Pension Fund Global.

⁸ Capital Dynamics and CEFS: *Value Creation in Private Equity*, February 2010.

will normally be negative during a fund’s early years, as cash flow is dominated by payments from investors. As portfolio investments gradually begin to generate a return and the manager succeeds in selling some of the companies, the internal rate of return is expected to move into positive territory and rise rapidly towards the end of the fund’s life if the manager is able to exit the portfolio companies. The return profile of private equity funds is often described as the J-curve.

While the value of portfolio companies was previously often measured at historical cost up until an actual exit took place, most managers chose to switch to a market value principle in 2008. This change may have led to increased volatility in reported returns. However, it is important to note that periodic valuations will always be uncertain. The true value of a portfolio company cannot be determined with any certainty until a transaction has actually taken place.

The return profile and other characteristics of this asset class require the investor to be long-term and able to retain his units for the life of the fund. Although there does exist a secondary market for units in private equity funds, an investor forced to sell his units at a particular time must expect to have to sell them at a discount. Investments in these funds need to be viewed as illiquid.

Aggregated data for private equity funds will to a great extent be based on the voluntary exchange of information. The table below shows the return on US and European buyout funds (US and W. Europe PE) and US venture funds over various periods. The table is based on statistics from Cambridge Associates (CA)⁹. It is reasonable to assume a degree of systematic bias in the sample on which the return data are based, due to some overrepresentation of funds with high returns. The table is intended as an illustration of the variations in return over time and between strategies/regions.

Table 2: Return on Cambridge Associates’ private equity indices over various periods to 30 June 2009. Percent

	US Venture Capital	US PE	W. Europe PE
1 year	-12.4	-8.9	-18.5
3 years	1.3	2.3	3.4
5 years	4.9	11.1	18.8
10 years	8.4	8.3	16.9
15 years	36.6	11.6	18.3

Source: Cambridge Associates

How successful managers are in the actions they take at portfolio companies varies. Variations in returns on private equity funds are therefore considerable. If we restrict the

⁹ Cambridge Associates LLC Proprietary Index: pooled end-to-end returns, net of fees, expenses and carried interest, to 30 June 2009.

sample of US private equity funds in the table above to include only the top two quartiles of the funds in the sample, the average annual return over the past ten years rises from 8.3 to 18 percent. The equivalent figure for the bottom two quartiles of the sample is -2.4 percent. A number of academic studies have attempted to compare the return on private equity funds with the return on listed equity investments. One widely cited study is Kaplan and Schoar (2005)¹⁰, which compares the average return on private equity funds after management costs with the return on an investment in the S&P 500. The study is based on return data from the former Venture Economics, now ThomsonOne, covering more than 1,000 funds. The study finds that the investor's return after costs from private equity funds has, on average, been slightly lower than could have been achieved after costs from investing in the S&P 500. Before fees, private equity funds produced a higher return on average. This study confirms the tendency in other studies for there to be often substantial variations in returns between private equity funds. This needs to be seen in the light of managers differing considerably in how successful they are at creating value through active ownership.

The degree of persistence – in other words the degree to which a manager who performs well in one period can be expected to deliver good results in subsequent periods – has historically been higher for private equity funds than for traditional mutual funds¹¹. Kaplan and Schoar find a high level of persistence in the return on funds from the same manager, and that this effect is strongest for venture funds. Another study, published in *Private Equity International* in June 2006¹², estimates that the probability of funds from a manager ranked in the top quartile also being in the top quartile is around 40 percent, and that this probability is relatively stable over time. If we extend this to look at how many of the funds from managers ranked in the top two quartiles are also in one of these quartiles, the probability rises to almost 70 percent. The results of this study confirm that it is reasonable to assume a degree of persistence in returns.

Although there is reason to assume some persistence in returns, an investment strategy for private equity cannot be based solely on a manager's historical performance. The study referred to above estimates the probability of next-generation funds from a manager in the top quartile being in one of the bottom two quartiles at around 30 percent. Historical performance needs to be supplemented with other, more forward-looking criteria. The investor needs to understand the value drivers behind historical results and assess whether the basis for this past performance still applies.

When it comes to deciding whether to exploit investment opportunities in unlisted equities,

¹⁰ Kaplan, S. and A. Schoar (2005): *Private Equity Performance: Returns, Persistence and Capital Flows*.

¹¹ See the discussion of persistence in management results for actively managed equity and bond funds in our letter of 23 December 2009 on Norges Bank's active management of the Government Pension Fund Global.

¹² The study is based on data from almost 2,800 funds from the Venture Economics (now ThomsonOne) database. The funds in the sample on which the study is based are ranked by return adjusted for all management costs, and include only funds that made their first investment (vintage year) before the year 2000. The J-curve means that it will be a number of years before it is possible to determine which quartile a fund belongs to.

little weight should be attached to averages, due to a combination of large variations in returns and signs of persistence in performance. Whether an investor can expect to generate a higher return from private equity investments than from investments in the public market over time will depend largely on whether the investor succeeds in identifying, accessing and understanding the best managers. Access will to some extent be affected by the investor's characteristics, such as size, reputation and ability to hold an investment for the life of the fund.

2.2. Supplements to fund investments

Investments in funds can be supplemented with investments in funds-of-funds, co-investments and direct investments.

A fund-of-funds brings together capital from different investors and invests it in a portfolio of funds. A fund-of-funds manager's goal will often be to diversify the portfolio of underlying funds across vintages, strategies and regions in order to improve the trade-off between expected return and risk. Fund-of-funds investments can be attractive for small investors who are unable to build up the expertise to select managers themselves and too small to access the best funds. For larger investors, fund-of-funds solutions are an additional layer that adds costs. This does not mean that funds-of-funds could not be used during a start-up phase to gain experience and build up expertise in private equity. In time, however, fund-of-funds investments should not account for a large proportion of the private equity portfolio of a large, long-term investor with specialist expertise in manager selection.

It is common for partnership agreements to give the investor an opportunity to invest in the underlying portfolio companies alongside the manager. This is often referred to as co-investment or parallel investment and is an attractive option for a well-capitalised, long-term investor. First, fees to the manager will be lower for co-investments than for fund investments, in some cases approaching zero. Second, co-investments provide an opportunity to invest in selected managers' best ideas, which can increase the potential returns. To succeed with such a strategy, the investor must, above all, have the expertise to identify the best managers and understand how they work. In addition, the investor must be able to perform an independent analysis of concrete co-investments, including the risk associated with increased concentration in the portfolio. This type of expertise and experience will take time to build up, and the level of co-investments in the portfolio will need to take account of this.

Direct investments in unlisted companies, where the investor acts independently of a fund manager, are a possible alternative for investors with long experience and broad expertise in this asset class. Direct investments demand a considerable input of resources by the investor, and the skills needed will differ from those for fund investments and co-investments. It is also important for the investor to have established an incentive structure which ensures that direct investments are made and managed as best possible. Direct investments in private equity may have a place in a mature private equity portfolio for an investor who already has experience of

fund investments and co-investments.

2.3. Infrastructure

The term “infrastructure” is normally used about physical installations and facilities needed for society to function. This type of activity is rarely exposed to real competition, because these are often natural monopolies subject to public regulation. Revenue from these activities tends to be inflation-adjusted. Typical examples of an infrastructure investment might be a toll-financed bridge or road or a gas pipeline. Infrastructure is capital-intensive, and each individual investment will normally be relatively large.

Traditional infrastructure investments share many of the portfolio characteristics of investments in real estate and inflation-linked bonds, as the periodic cash flow is often automatically inflation-adjusted. The liquidity of infrastructure investments is limited, especially as ownership of the installations will often be tied to licences. Infrastructure investments therefore require a long-term investment horizon.

Infrastructure as an investment option is a young asset class, and limited data are available for determining the size of the market. In the same way as for private equity, aggregated data will be based on different surveys and assumptions about future developments. In a 2007 study¹³, the OECD estimated the future need for new infrastructure investments to be in excess of 1,800 billion US dollars a year.

Infrastructure has traditionally been owned by public bodies, but the degree of private ownership has grown in recent years. The combination of pressure on public budgets and demand from institutional investors for long-term, stable, inflation-adjusted cash flows suggests that it is reasonable to assume that private investors will finance a substantial proportion of future infrastructure investments. We are of the opinion that investment opportunities over time will be sufficient for a player of the fund’s size.

The performance and risk profile of a portfolio of infrastructure investments will vary according to the phase in which the investments are made. It is usual to differentiate between development projects (greenfield) and projects in an operational phase (brownfield). Expected return and risk will also be affected by the type of installation included in the portfolio, as there can be substantial variations between segments. An investor’s main motive for investing in this asset class should be to help safeguard his overall long-term real return. Infrastructure investments present some of the same operational challenges as private equity. These are discussed further in section 2.5.

Private investors can attain exposure to infrastructure either directly through ownership of the actual installation or indirectly through investments in funds and funds-of-funds. Indirect

¹³ OECD (2007): *Principles for Private Sector Participation in Infrastructure*.

exposure can also be achieved by acquiring equities or bonds issued by the infrastructure owner/operator, or through direct loans to the owner/operator. Infrastructure funds and funds-of-funds have traditionally been organised in the same way as private equity funds with a partnership structure, even though their portfolio characteristics differ.

2.4. Other institutional investors' approach to private equity and infrastructure

Public and private pension funds are currently the largest class of investor in private equity. The *2010 Preqin Global Private Equity Report* estimates that almost 50 percent of invested capital in this asset class comes from private and public pension funds. Endowments and national investment funds are another important investor class, while retail investors play only a minor role.

The percentage of the portfolio allocated to private equity varies from more than 10 percent on average as the long-term goal for endowments to just over 5 percent¹⁴ for pension funds. North American investors dominate on the investor side with 56 percent of total capital. European investors hold 36 percent, while investors from Asia and the rest of the world hold the remaining 8 percent¹⁵. Asian investors' share has grown in recent years and is expected to continue to do so.

Pension funds are also the dominant type of investor in infrastructure funds, accounting for just over 40 percent of investors in this asset class, with Australian and European players leading the way. Australia's relatively strong position has to do with the country being one of the first to allow private risk capital in the funding of public infrastructure projects. Infrastructure funds are generally larger than private equity funds, and so far they have generally been restricted to the largest investors. Allocations to this asset class vary. According to the *2010 Preqin Global Infrastructure Report*, almost 40 percent of investors say that they are targeting a long-term allocation of 1-5 percent. About the same proportion say that they are aiming at an allocation of 5-10 percent.

Each year CEM Benchmarking Inc. (CEM) produces a report comparing the Government Pension Fund Global's asset allocation with that of large pension funds. The peer group consists of the largest funds in the CEM survey (ten US, three Canadian and three European). The table below shows the peer group's allocation to unlisted investments in 2008 together with that of large university endowments¹⁶. The table confirms the conclusion in the report from Preqin that comparable funds have a substantial slice of their portfolio invested in unlisted assets.

¹⁴ Source: *2010 Preqin Global Private Equity Report*.

¹⁵ Source: *2010 Preqin Global Private Equity Report*.

¹⁶ Source: *2008 NACUBO Endowment Study* (www.nacubo.org).

Table 3: Strategic asset allocation of other institutional investors in 2008. Percent

Asset class	Peer funds	Endowments¹⁷
Real estate ¹⁸	9	6
Private equity	7	14
Infrastructure	1	0
Hedge funds	1	23
Natural resources	1	5

Source: CEM, NACUBO

2.5. Operational challenges associated with investments in unlisted assets

Investments in the private market differ structurally from investments in the public market. The investor must be prepared to hold an investment for a longer period. It will not be possible to sell the investment if developments are not as expected. Investments will not be transparent. A degree of reputational risk has to be expected with investments in the private market, both in terms of the manager and in terms of the underlying portfolio companies. An example of this might be negative news stories in connection with major organisational changes or strategy changes at portfolio companies. It is important that an investor performs a broad analysis and assessment of all of these aspects before taking an investment decision. Investments in the private market require the investor to approach and monitor investments in a different way. Experience built up through investments in the public market cannot automatically be translated into insight into how investments in the private market should be made and managed.

With listed assets, periodic valuations and risk management will normally be based on transaction-based market prices. In the private market, transactions are less frequent and so periodic valuations will be more uncertain and based on estimates. Nor will the investor have control at all times over the size of his allocation to unlisted asset classes. These considerations have implications for the ongoing management of the overall portfolio.

Investments in the private market are cost-intensive even beyond the fees that the investor pays the manager. The input of resources per krone invested will be higher than in the public market. This applies particularly to investments in private equity. While a portfolio of private equity funds will consist of a large number of small investments which all need to be monitored separately, a portfolio of infrastructure investments will consist of a smaller

¹⁷ Actual and average asset allocation for North American university endowments at the end of June 2008.

¹⁸ Including Real Estate Investment Trusts (REITs).

number of larger investments.

Unlisted investments demand administrative resources as follows:

- *Legal evaluation and contract reviews*
Although the partnership agreements that are entered into tend to have many similarities, each individual agreement needs to be reviewed and quality-assured. The need to negotiate special terms and conditions in the form of addenda must also be considered in each individual case.
- *Quality assurance of valuations*
The valuation of unlisted fund investments will normally be based on periodic reporting from the manager. Different approaches to determining the fair value of the underlying investments also mean that there may be a need for quality assurance of the data reported.

The reporting time lag (normally at least three months) means that there may be a need to adjust the figures received from managers in periods with large swings in financial markets.

- *Assessment of tax issues*
Many institutional investors, such as pension funds and insurance companies, are exempt from taxation in their home country. Investment in private assets will often require separate assessment of the tax implications that the chosen structure can be expected to have.
- *Cash flow management*
The rate of investment in a private equity fund is determined by the manager. The investor needs to establish systems and procedures for effective management of irregular inward and outward payment flows. The structure with periodic payments in and out of the fund requires a certain liquidity in other parts of the portfolio.

These are examples of considerations that need to be taken into account when designing a business plan for unlisted investments.

Other investors have chosen to organise their unlisted investments in various ways. We have attempted to illustrate this below with four concrete examples of the approaches chosen by other large institutional investors:

- *Wholly owned subsidiary*
Danish public pension fund ATP has created separate subsidiaries for the management of both its real estate portfolio (ATP Real Estate) and private equity (Private Equity Partners). Unlisted investments in traditional infrastructure and renewable energy,

however, are managed by the parent company.

- *Joint venture*

In the Netherlands, the two largest pension managers, APG and PGGM, have set up a joint venture called Alpinvest to implement their private equity strategy. Alpinvest operates relatively independently within the bounds of annual investment mandates issued by its owners. Infrastructure investments are managed internally by both APG and PGGM.

- *Sister company within a holding structure*

The Government of Singapore Investment Corporation (GIC) has chosen to organise its investment activities in three units of equal standing (GIC Asset Management, GIC Real Estate and GIC Special Investments) within one and the same group. Each of the three units has its own board of directors separate from the board of directors at group level.

- *Integrated with other management*

The CPP Investment Board in Canada has chosen a fourth solution where the management of unlisted investments is integrated with the management of other assets.

Besides the challenges noted above, the need for flexibility in terms of remuneration and incentives is often highlighted as a reason for keeping the management of unlisted assets separate from the management of other assets.

2.6. New proposals for the regulation of the private market

Investments in the private market have traditionally been less transparent than investments in the public market. There have been few requirements for participants to publish information on how they operate or how they have performed. In the wake of the financial crisis, the authorities in both Europe and the US have advocated more stringent regulation of participants in this part of the financial market (private equity funds, hedge/venture funds, infrastructure funds, etc.). The justification for these proposals is that this type of fund represents a systemic risk and so there is a need for greater transparency and regulation of participants in the private market.

In May 2010 EU finance ministers lent their support to proposals which include a requirement that funds wishing to operate in the EU must register with the authorities. These funds must report on their strategy and the degree to which this involves leverage. In cases where the degree of leverage is considered to present a systemic risk, the rules allow the regulatory authorities to instruct participants to reduce this leverage. These new rules, expected to become law from 2012, will also effectively ban European investors from investing in funds

domiciled in countries with inadequate regulation of financial markets. Which countries these are has still to be decided.

In addition to these new rules, participants in this part of the financial market can also be expected to be affected by more stringent capital requirements for banks through higher margins on lending. When calculating capital adequacy, unlisted investments have a weighting of 150 percent, or 50 percentage points more than listed equity investments.

In parallel with the debate about new official regulations, investors in some unlisted fund structures have advocated more detailed reporting and greater transparency when it comes to the strategies pursued by managers. This trend is expected to persist and lead to increased transparency.

2.7. Norges Bank's recommendation

2.7.1. *Private equity*

Norges Bank has not conducted a fresh general assessment of private equity since its recommendation to include this asset class in the Government Pension Fund Global's investment universe was issued in 2006.

Investments in private equity mean exploiting the fund's distinguishing characteristics as a large, long-term investor with no short-term liquidity needs. This is in keeping with the line taken by the Ministry of Finance in *Report No. 10 (2009-2010) to the Storting* on the development of the investment strategy for the fund.

Investments in private equity as an alternative to public equity could in some cases help to increase the overall return on the fund's equity investments. Besides the equity market premium, the return from this asset class will include a liquidity premium and possible added value from concrete actions by the manager.

The return that we as an investor can expect in the unlisted side of the equity market is closely correlated with the return on the listed side in the long run. The fundamental value drivers will be largely the same. It is difficult to estimate any diversification effects empirically due to differences in underlying structure, including when it comes to valuation. We are not attaching great weight to diversification characteristics when it comes to the possible inclusion of private equity in the investment universe.

We are of the opinion that Norges Bank as an investor will be able to build up gradually an organisation with the expertise to identify the best managers and also gain access to them. The latter factor needs to be seen in the light of the fund's characteristics, such as its ability to tie up capital for long periods, its reputation as a responsible investor, and its size. Norges Bank will also have opportunities to co-invest with selected managers, so increasing the potential returns.

The size of the market or investment opportunities is difficult to gauge precisely. Since 2000, private equity funds have, on average, raised around 350 billion US dollars a year¹⁹. We are of the opinion that the market is sufficiently large for Norges Bank to build up a portfolio capable of affecting the fund's overall return, through a combination of fund investments, co-investments and, possibly, direct investments.

How quickly a portfolio of private equity investments can be built up will, however, depend largely on factors other than the investment opportunities available. It will take time to build up an organisation with the right skills, even though we will to some extent be able to build on existing expertise in the organisation. Norges Bank will approach new investment opportunities progressively. During the start-up phase, investment activity will have to be limited relative to the fund's overall size. As the organisation gains experience of this asset class, it is reasonable to envisage a situation where co-investments and, in the longer term, direct investments can play a more central role. Investment opportunities will grow as a result of this. Investments in private equity will bring greater flexibility in terms of exploiting new investment opportunities for the fund in the future.

Investments in private equity should not be considered a separate strategic allocation. Investments in private equity should be part of the universe for the operational management of the fund's equity investments and managed through a specific limit in Norges Bank's investment mandate. Investment opportunities will vary over time depending on which funds are raising capital. It will also take time to establish a strategy based on investing with the best managers. A period of years will often elapse between each time a manager is in the market to raise new capital. Investment opportunities will also be affected by opportunities to make co-investments with the funds, which will depend to some extent on the funds' access to other financing. An investor will only be able to control the level of committed capital, not how much of this capital will actually be exposed at any one time, as the profile for payments in and out of the fund is determined solely by the manager.

To succeed with a private equity strategy, it is essential that there are no restrictions on the investment universe which reduce the number of potential managers or force Norges Bank to select managers on a basis other than expected performance. Examples of the latter might be strict limits for the geographical diversification of the portfolio or explicit requirements for a minimum allocation. Investments in private equity should therefore be permitted in all geographical regions without any constraints on the distribution between these regions.

2.7.2. *Infrastructure*

Infrastructure investments have many of the same portfolio characteristics as investments in real estate and inflation-linked bonds. This type of investment can help to safeguard the long-

¹⁹ Source: ThomsonOne.

term real return on the fund in line with the overall goal for the fund and the strategy of increasing the proportion of real assets in the fund.

An investor can also expect to receive a liquidity premium over time. This is a premium to which a long-term investor with no liquidity needs such as the Government Pension Fund Global should be exposed.

Infrastructure is a relatively young asset class. A limited amount of data are available. The combination of considerable future investment needs, pressure on public budgets and attractive portfolio characteristics make it reasonable to assume that private venture capital will play a growing role in the funding of infrastructure investments in the future. Investment opportunities in this asset class are therefore considered sufficient for the fund to be able to build up a portfolio of infrastructure investments over time through a combination of fund investments, co-investments and direct investments.

The investment opportunities in this asset class will vary over time, and it may be inappropriate to commit to a set timetable for phasing in infrastructure investments. The level of infrastructure investments should be seen in the light of investments in other real assets that aim to safeguard the fund's long-term real return, such as real estate.

3. Unlisted environmental investments

3.1. General

Norges Bank has been asked to perform a separate evaluation of unlisted environmental investments. In *Report No. 20 (2008-2009) to the Storting*, the Ministry of Finance writes that investments in the environmental programme should focus on:

“eco-friendly assets or eco-friendly technology that is expected to yield indisputable environmental benefits, such as climate-friendly energy, improving energy efficiency, carbon capture and storage, water technology and management of waste and pollution.”

The Storting supported this. In the following, we will limit the discussion of unlisted environmental investments to include primarily investments in assets and technology in the segments of clean energy and energy efficiency. Examples of investments that fall under this definition are solar energy, wind power, biofuels and biomass²⁰. This narrower definition has been chosen in order to ensure that the data underlying our analysis are of satisfactory quality.

Investments in clean energy and energy efficiency grew from 35 billion US dollars in 2004 to 145 billion dollars in 2009, according to data from Bloomberg New Energy Finance. The growth in new investments in recent years needs to be seen in the light of climate change,

²⁰ See World Economic Forum (2010): *Green Investing 2010: Policy Mechanisms to Bridge the Financing Gap* for a more detailed account of which sectors come under “clean energy”.

energy insecurity, the depletion of fossil fuels, and constant technological innovations. This growth is expected to continue. The UN Environmental Programme (UNEP)²¹ estimates that annual investment will need to approach 500 billion dollars a year by 2020 if the global community is to meet the emissions targets it has set. The financial crisis meant that the level of investment fell slightly from 2008 to 2009, although public stimulus packages ensured that the drop in new investment was smaller than might have been expected.

2009 saw particularly strong growth in China, where 34.6 billion kroner was invested in clean energy projects, up 50 percent on 2008²². US investments during the same period were just half those in China.

Even with the narrower definition that we have chosen, environmental investments are not homogeneous. The risk and return profile can vary widely between segments and sub-segments. There will also be variations in the risk and return profile depending on which part of the value chain investments are made in.

3.2. Environmental private equity investments

Private equity funds invest in companies that are developing environment-related technology and/or companies that have come slightly further in the development process and are heading into the commercialisation phase. While we typically find venture funds in the first of these categories, buyout funds play a more active role when it comes to companies in the commercialisation phase. Funds active in this segment are often referred to as cleantech funds. The technologies included are constantly evolving. The table below shows some of the largest segments. It can be seen from the table that nuclear power is defined by many to be a clean technology. The number of funds active in this segment is, however, limited.

Table 4: Clean technologies

Main group	Sub-groups
Solar	Household, thermal, concentrated, photovoltaic (electricity)
Wind	Household, land-based, sea-based, maglev
Smart	Smart homes, smart meters, smart networks
Storage	E-mobility, fuel cells, batteries
Biomass	Household heating, local power production
Hydro	Tidal, wave power, dams
Nuclear	Fusion, fission

Cleantech funds currently make up a small part of the private equity investment universe. Preqin estimates that the 200 or so cleantech funds (specialist and diversified) in the market raising new capital at the end of the first quarter of 2010 accounted for 7 percent of all funds in the market for capital at that time. This has to be considered a rough estimate.

²¹ *Global Trends in Sustainable Energy Investment 2009.*
²² Source: Pew Charitable Trust.

Since 2001, a total of 530 funds investing in the clean technology segment have been set up. Most of these funds have included clean technology as part of a broader investment universe. In terms of the number of funds, the split between specialist and diversified funds in recent years has been around 30/70. In terms of capital, the split is closer to 10/90. This is because the specialist cleantech funds are relatively small, with average assets in recent years of 150-250 million US dollars²³. As the number of specialist funds is limited, a portfolio of funds investing in clean technologies will, in practice, often include generalist funds.

Most of the funds are venture funds, which invest in companies in the start-up phase, when the technology is not fully tried and tested, and when cash flows is in many cases negative. This is a natural result of environmentally-friendly technology being a relatively immature sector. According to Preqin, 77 percent of funds in their survey can be classified as venture funds, and only 6 percent fall into the buyout category. Other funds adopt strategies in the area between these two main approaches. This split between venture and buyout funds differs from elsewhere in the private equity market, where buyout funds dominate. The high proportion of venture funds makes clean technology a high-risk segment.

An investor in cleantech funds must be prepared for some substantial fluctuations in returns. This can be illustrated by data from the annual *International Clean Energy Returns Analysis (ICTRA)*²⁴, which reveals that the average return on venture investments in this segment went from +68 percent in 2008 to -81.4 percent in 2009²⁵.

The tendency towards persistence in private equity management results means that importance should be attached to historical performance when choosing a manager. In this particular segment, this will be difficult in practice, as this part of the market is dominated by first- and second-generation funds. Investors in clean technology will therefore need to be willing to accept slightly higher manager risk than in other parts of the fund universe.

3.3. Environment-related infrastructure investments

Investments in installations that produce renewable energy, such as solar and wind farms, have some of the same characteristics as traditional infrastructure investments, such as illiquidity and the need for a long-term investment horizon. However, there are also a number of differences.

Infrastructure investments in renewable energy will often be associated with a higher and different type of risk relative to traditional infrastructure investments. In particular, this type of investment will bring a larger amount of technological and political risk. Environment-related infrastructure investments are also less likely to be inflation-adjusted.

²³ 2010 Preqin Private Equity Cleantech Review.

²⁴ The analysis is performed by Bloomberg New Energy Finance on the basis of the results of a questionnaire survey of American and European venture investors.

²⁵ The return figures for 2008 and 2009 refer to the 12-month period from the middle of the previous year to the middle of the year in question.

Of the approximately 145 billion US dollars of new environmental investments in 2009, asset finance and private equity accounted for 90 billion and 6 billion dollars respectively. The equivalent figures for 2008 were 97 billion and 16 billion dollars respectively²⁶. Estimates of investment levels are associated with uncertainty and need to be interpreted with caution, but we can conclude that asset finance dominates the private market for new environmental investments.

The estimate for asset finance relates largely to new investments in environmentally-friendly infrastructure. This is a market dominated until recently by banks, industrial players, infrastructure funds and a number of development banks. There are also examples of institutional investors participating directly with either debt or equity.

The risk will depend on the maturity of the technology to be used, the subsidy regime for the segment/project in question, and whether the cash flow from the project is subject to some form of inflation adjustment. Within one and the same segment, the risk will also vary between jurisdictions due to the different design of public subsidies. While European authorities have generally chosen to subsidise investment in solar farms through so-called “feed-in tariffs”²⁷, the US authorities have opted for subsidies in the form of tax credits, which not all investors will be able to benefit from.

The risk associated with individual projects decreases as they reach completion and move into the operational phase. In many contexts, the project will then be refinanced. It would be possible to establish an investment strategy which attempts to reduce the risk by investing only in installations that have reached the operational phase. There are limited statistics on the size of this part of the market.

Regional development banks are playing an increasingly important role in funding renewable energy projects. The European Investment Bank (EIB), for example, has a target of at least 20 percent of capital lent to energy-related projects in the EU going to renewable energy projects. The EIB was one of the six institutions behind the Marguerite Fund, which aims to provide equity for EU infrastructure projects in transport, energy and renewable energy. The aim is to raise a total of 1.5 billion euro for this fund in a partnership between private and public investors. Other development banks, such as the European Bank for Reconstruction and Development (EBRD) and Asian Development Bank (ADB), have launched their own programmes to attract private capital for investments in this type of project.

There are currently few infrastructure investments in renewable energy which are profitable without some form of public support. This is especially the case for financial investors who, unlike industrial players, cannot realise synergies in other areas. Whether investments in renewable infrastructure eventually prove profitable without public support will depend partly

²⁶ Source: Bloomberg New Energy Finance.

²⁷ This form of subsidy aims to ensure market access and guarantee a particular price level for producers of renewable energy.

on the degree to which the players involved succeed in developing more cost-effective technology. The pricing of traditional energy sources such as oil will also have an effect. National targets to source a growing share of overall energy from renewables, together with new requirements for players in the market, will generate demand and provide incentives to invest in technological development.

3.4. Unlisted environmental investments at other institutional investors

Unlisted environmentally-motivated investments are a growing segment within both infrastructure and private equity. Environmental investments are also considered attractive on the basis of criteria other than the purely financial. This may be the reason why a number of players have chosen to launch separate programmes for this type of investment. Common to these investors is that, as far as we have been able to ascertain, they have been able to build on expertise, experience and systems from several years of investing in the private market. The exceptions to this are institutions that play multiple roles, such as the development banks.

3.5. Norges Bank's recommendation for unlisted environmental investments

Investments in private equity and infrastructure with an environmental bias should be made within the context of a broad management mandate.

Investments in clean technology are a natural part of a broad, diversified private equity portfolio and can be expected to amount to a substantial sum in time. However, clean technology accounts for only a small proportion of the investment opportunities in this asset class. The risk is generally higher, and the segment is dominated by young management organisations.

Investments in environmentally-friendly infrastructure projects share some of the characteristics of traditional infrastructure investments and could be part of a broad, diversified portfolio of infrastructure investments. Variations between segments and jurisdictions are greater than for traditional infrastructure investments, and the risk is higher. In some segments of environmental investments, it will be a challenge to find investment opportunities that justify the financial and regulatory risk that they entail.

Expansion of the fund's investment universe to include only risky segments of new asset classes cannot be recommended. A separate limit for unlisted environmental investments should not therefore be established.

4. Investments in sustainable growth in emerging markets

Norges Bank has been asked to assess whether it would be appropriate to create an investment programme focusing on sustainable growth in emerging markets. In the same way as for

environmental investments, investments in private equity and infrastructure have been proposed as possible instruments.

Norges Bank currently has experience of investing in public markets in a number of emerging economies²⁸. The fund’s benchmark portfolio does not include countries that the index supplier (FTSE) has defined as frontier markets²⁹. These are countries which FTSE believes satisfy the requirements that institutional investors normally have in terms of market size, governance and infrastructure. However, the FTSE Frontier Markets index includes few low-income countries³⁰, such as in sub-Saharan Africa. In the following, we assume that emerging markets as referred to in *Report No. 20 (2008-2009) to the Storting* include both frontier markets and typical low-income countries.

Emerging economies have undergone strong growth in recent years. From accounting for 40 percent of growth in global GDP in 1990, their share had increased to 75 percent in 2007³¹. The liberalisation of world trade, strong productivity growth and political reforms have contributed to this expansion. The financial crisis had fewer negative consequences for growth in these countries than in more developed markets. While GDP in developed economies contracted by 3.2 percent in 2009, it was another year of expansion in emerging economies, which posted growth of 1.7 percent. The IMF expects the stronger growth rates in these parts of the world to persist in the years ahead. Parts of the basis for profitable investment in this region should therefore be in place.

4.1. Private equity in emerging markets

There are limited statistics on the level of unlisted investments in emerging economies. The table below is based on statistics from the Emerging Markets Private Equity Association (EMPEA)³². Private equity funds operating in this region have seen strong growth in new capital in recent years. 2009 was therefore an exception, with a drop of 66 percent in new committed capital. The size of the decrease is approximately the same as in developed markets and needs to be seen in the light of the financial crisis. Despite strong growth in recent years, the market is still relatively small. Unlisted investments in this region will, in isolation, have little impact on the fund’s overall diversification or return.

Table 5: Fund-raising by region

Billions of USD	2007	2008	2009
-----------------	------	------	------

²⁸ The fund's benchmark portfolio for equity investments currently includes countries such as Turkey, the Czech Republic, Hungary, Poland, Russia, Argentina, Brazil, Chile, Colombia, Egypt, Morocco, Mexico, Peru, South Africa, China, Indonesia, India, Malaysia, the Philippines, Pakistan, Thailand and Taiwan.

²⁹ Bahrain, Bangladesh, Botswana, Bulgaria, Ivory Coast, Croatia, Cyprus, Estonia, Jordan, Kenya, Lithuania, Macedonia, Mauritius, Nigeria, Oman, Qatar, Romania, Serbia, Slovakia, Sri Lanka, Tunisia and Vietnam.

³⁰ The OECD classifies countries with GNP per capita of less than 937 US dollars in 2007 as low-income countries.

³¹ Source: IMF.

³² EMPEA was set up in 2004 to promote the development of the PE industry in emerging markets. Its members include investors, managers, service providers and other stakeholders. For further information, see www.empea.net.

Emerging Asia	28.9	39.7	15.9
Eastern Europe and CIS ³³	14.6	5.6	1.6
Latin America/Caribbean	4.4	4.5	2.2
Middle East	5.3	6.9	1.1
Sub-Saharan Africa	2.0	2.2	1.0
Multi-region	4.1	7.7	0.8
Total (number of closed funds)	59.2 (204)	66.5 (210)	22.6 (196)

Private equity funds in the emerging economies of Asia have attracted the most new capital in recent years, and this is by far the largest region. Funds active in the least developed countries, which are typically found in sub-Saharan Africa, Latin America and the Caribbean, account for a small share of both funds and fundraising, according to the statistics from EMPEA.

Private equity is a global asset class. Over the past three years, funds active in emerging markets have received around 10 percent of new capital in this asset class. The equivalent figure for 2004 was 4 per cent. Private equity funds operating in emerging markets are organised in the same way as funds active in more mature markets. The general characteristics of this asset class discussed above also apply to this type of private equity fund.

However, there are also some differences between this region and more developed markets. First, growth and venture strategies have dominated the funds available up until now. This is natural given the industrial structure of the region, with many young companies with considerable growth potential. A higher proportion of growth and venture strategies is a possible reason why the degree of leverage has generally been lower in emerging markets than has been the norm in more developed markets. Another possible reason is that banks may have been more restrictive in granting loans for private equity investments in emerging markets.

When we compare the return on the public equity market in emerging economies as measured by the MSCI EM³⁴ index with an index from Cambridge Associates (CA EM) for the return on private equity funds active in the same countries, we find that returns have been substantially higher in the public market than in the private market. While the MSCI EM index has returned 17.7 and 11.7 percent respectively over the past five and ten years, the equivalent figures for the CA EM are 12.8 and 6.6 percent³⁵. The picture changes, however, if the sample is narrowed to include only funds in the top two quartiles, where the return over the past five and ten years has been 24.3 and 18.7 percent respectively. In the same way as in more developed markets, the correct choice of manager will therefore be crucial. Note that this comparison reflects returns in the least developed markets to only a limited extent.

³³ Commonwealth of Independent States: former members of the Soviet Union.

³⁴ Morgan Stanley Capital International Emerging Markets Index.

³⁵ Return figures adjusted for all management costs. Return data to 30 September 2009.

4.2. Private equity in the least developed markets

The number of regulated marketplaces in the least developed countries has risen in recent years. The number of functioning stock markets in Africa, for example, has grown from five in the mid-1980s to 16 today. However, regulation is still inadequate in some areas. Only around half of the markets that can be considered well-functioning satisfy the criteria for inclusion in the FTSE Frontier Markets index.

In addition, the public market covers only a small percentage of overall investment opportunities. In the least developed markets, unlisted investments will often therefore be the only realistic option.

In line with their respective mandates, the regional development banks play an important role in the least developed economies. In terms of providing venture capital for the private sector, the International Finance Corporation (IFC) is probably the development bank with the longest experience in these countries. IFC has traditionally been financed by contributions from member countries. With the formation of IFC Asset Management Company in autumn 2009 and the launch of IFC's Sovereign Fund Initiative, however, IFC has also opened the door to private venture capital. In its first fund as part of this initiative, IFC aims to raise 1 billion US dollars. By the end of the first quarter of 2010, five investors had committed a total of 800 million dollars. Besides IFC, PGGM in the Netherlands, Korea Investment Corporation, the State Oil Fund of the Republic of Azerbaijan and a fund from Saudi Arabia have signed up as investors.

4.3. Norges Bank's recommendation for investments in sustainable growth

Norges Bank has previously recommended that the investment universe for the Government Pension Fund Global be expanded to include unlisted investments. Investments in private equity funds active in emerging markets, including the least developed countries, are a natural part of a broad management mandate for this asset class. Whether an investor succeeds in realising the potential returns from private equity will depend largely on whether the investor succeeds in identifying, accessing and understanding the best managers. We would not recommend that investments be restricted by means of strict regional weights or allocations to specific regions. Nor, therefore, should separate limits be established for unlisted investments in sustainable growth in emerging markets.

A global private equity portfolio would need to be built up gradually over a period of time. Norges Bank would be able to build up gradually a management organisation with the experience, expertise and processes to manage such a portfolio.

