Long-term investors and green infrastructure

POLICY HIGHLIGHTS

from Institutional Investors and Green Infrastructure Investments: Selected Case Studies 2013

OECD
BETTER POLICIES FOR BETTER LIVES
“The fall-out from the financial crisis has exposed the limitations of relying on traditional sources of long-term investment finance such as banks. Governments are looking for other sources of funds to support the long-term projects that are essential to sustaining a dynamic economy. There is huge potential among institutional investors to support development in a range of areas such as infrastructure, new technology and small businesses.”

Angel Gurría, OECD Secretary-General
Overview

- Greening growth and achieving climate objectives will require a shift to a low-carbon economy. This process will mean that key sectoral contributors to GHG emissions – including energy, transport, and buildings – will have to scale up investment in “green” infrastructure (e.g. renewable and other low- or zero-carbon electricity generation, energy efficiency, public transportation and electric vehicles). The financial resources required to meet this challenge are substantial and the private sector will need to play a major role in green infrastructure projects, including by providing long-term debt finance and up-front capital investments.

- In the wake of the economic and financial crisis, some of the traditional sources of green infrastructure finance and investment – governments, commercial banks and utilities – face significant constraints. Alternative sources will be needed not only to compensate for these constraints, but also to ramp up green infrastructure investments.

- One potential source is institutional investors. These include insurance companies, investment funds, pension funds, public pension reserve funds (social security systems), foundations, endowments and other forms of institutional investors. In OECD countries, these investors held over USD 83 trillion in assets in 2012. In emerging and developing countries, sovereign wealth funds are key sources of capital, with USD 6 trillion in assets in 2012. In many cases institutional investors have to invest for the long term in order to fund liabilities that are multi-generational in nature. These liabilities can be met in part through long-term investments, including direct investments (Figure 4) in green infrastructure, which can provide steady, inflation-linked, income streams with low correlations to the returns of other investments.

- Although there is potential for institutional investors to invest in green infrastructure, and there are pockets of significant activity, in general their investments in this area are minimal to date. Standing in the way are a number of obstacles, some general to infrastructure, others more specific to green infrastructure. Many institutional investors have yet to conclude that green infrastructure investments offer a sufficiently attractive risk-adjusted financial return. This is due to misaligned policy signals such as continuing support for fossil-fuel use and production, low or no prices on GHG emissions, and unpredictable changes to support policies for renewable energy generation. In addition, many institutional investors still lack the knowledge and investment channels or means to access green infrastructure in a way that aligns with their varying sizes, operational models and investment objectives.

- Meeting global climate goals will depend on scaling up green infrastructure investment. Policy-makers need to better understand how institutional investors view these investments. In particular, policy-makers need to understand how policies and regulations can affect the attractiveness of these investments and institutional investors’ ability to participate in green infrastructure financing and investment. Poorly integrated policies send conflicting signals, increase perceived risk, and perpetuate a bias toward investments in “brown infrastructure” such as fossil-fuel-intensive electricity generation and transportation options.
Why scale up green infrastructure investment?

Investment in infrastructure is essential for long-term and sustainable economic growth. As the world’s population increases from about 7 billion today to over 9 billion in 2050, global infrastructure funding needs will grow significantly. At the same time, choices made today about the characteristics of new infrastructure projects will have significant long-term impacts on the environment, both locally and globally. For example, investing in a coal-fired power plant with a life of 50 to 60 years1 can “lock in” patterns of future greenhouse gas emissions for decades to come. The International Energy Agency (IEA) suggests that 80% of projected global CO₂ energy emissions to 2020 are already locked-in through the world’s current infrastructure asset base.

As shown in Figure 1, approximately USD 2 trillion is currently invested annually in infrastructure (transport, energy and water). An additional USD 1.2 trillion is required annually to meet global infrastructure needs to 2030, irrespective of climate-change constraints.

To achieve long-term climate objectives agreed by the global community – i.e. the 2-degree (2°C) goal2 – it is imperative that economies shift from fossil-fuel intensive to low-carbon and climate-resilient infrastructure investments. Examples include shifting from fossil-fuel-fired power plants to wind and solar power, and investing in passenger rail, metros, bus rapid transit systems and electric vehicle charging infrastructure. This shift may require additional spending beyond levels required to meet global infrastructure needs, but could also result in net savings instead (Figure 1, for example, suggests it could require 11% more investments or 14% less than regular levels).

**Fig. 1: The annual green infrastructure investment gap – an illustration**


**Note:**
1. Infrastructure sectors include transport (road, rail, ports, and airports; excluding vehicles), energy and water.
2. Annual average of the last 18 years, representing 3.8% of global GDP.
3. Annual average needs for the period 2012-2030 in transport, energy and water. Based on an estimate of infrastructure that would be sufficient to support anticipated growth and maintaining current levels of infrastructure capacity and service relative to GDP.
4. The lower bound is based on Kennedy and Corfee-Morlot (2013), the upper bound on WEF (2012). Both figures exclude buildings and transport vehicles.
infrastructure needs). For example, coal accounted for 44% of rail tonnage in the US in 2007. Transport of oil and coal accounted for 44% of the tonnage of maritime trade in 2009. If demand for fossil fuels decreased, this could reduce investment needs for rail and port infrastructure.

Investing in clean energy makes economic sense. The IEA (2012) estimates that every additional dollar invested today in clean energy can generate three dollars in future fuel savings by 2050. By 2025, the IEA estimates that fuel savings realised from transitioning to a low-carbon economy would outweigh the investments, with fuel savings amounting to more than USD 100 trillion by 2050.


2. In the 2010 Cancun Agreements, Parties of the United Nations Framework Convention on Climate Change (UNFCCC) agreed to work together, with a view to reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2 °C above pre-industrial levels.

3. Note that this estimate is based on a subset of infrastructure (transport, water, and energy), and excludes investment needs for energy efficiency options in buildings and fuel efficiency improvements in vehicles.


6. Screened by investment analysts as having met Environmental, Social and Governance (ESG) criteria.

Box 3: Benefits of green infrastructure investments

Green infrastructure investments have the potential to increase productivity, and also generate significant benefits for human health, the environment and energy security, some of which can be quantified in terms of economic benefits. For example, the European Union’s investment needs in low-carbon energy, energy efficiency and infrastructure are estimated to be EUR 270 billion per year. In addition to any energy security and climate benefits, it is estimated that these investments could result in fuel savings of EUR 170-320 billion per year and monetised health benefits of up to EUR 88 billion per year by 2050. However, achieving these benefits will rely on the mobilisation of more capital to support green infrastructure investment from long-term investors (including institutional investors).


Box 2: What are “green” infrastructure investments?

Green infrastructure investments include a very broad range of investments, including water infrastructure, sustainable agriculture, floodplain levees and coastal protection, waste management infrastructure, and various types of low-carbon and climate-resilient (LCCR) infrastructure. This paper focuses on a subset of green infrastructure investments, namely LCCR investments made in companies, projects and financial instruments that operate primarily in the renewable energy, clean technology and environmental technology markets, as well as those investments that are climate-change specific or ESG-screened. These investments include energy-efficiency projects, many types of renewable energy, carbon capture and storage, nuclear power, smart grids and electricity demand side-management technology, and new transport technologies (e.g. electric vehicles).

What are the sources of financing for green infrastructure investment?

The private sector accounts for roughly two-thirds of investment financing (through debt or equity) for green infrastructure projects in OECD countries and public sector sources (i.e. local, regional and national governments, and national development banks) provide the remaining one-third. The private sector share is divided evenly between corporate sources such as electric utility companies and the financial sector. Bank financing, such as project financing, accounts for roughly 95% of the financial sector’s contribution. A mere 5% is provided by non-bank entities, including institutional investors.

Public, corporate (e.g. utilities, project developers) and financial sector sources of investment financing for green infrastructure projects are under pressure and all may continue to diminish in coming years. The financial crisis has constrained government budgets in many OECD countries, putting downward pressure on public sources of investment financing for green infrastructure. Utility companies have little capacity to expand their investment in green infrastructure, as their balance sheets are constrained and any new debt could have potentially negative impacts on their credit rating and cost of capital. In addition, banks have undertaken significant “deleveraging” in the wake of the financial crisis, partly as a response to new regulations such as Basel III aimed at improving banks’ solvency.

The challenge of attracting long-term investors is relevant for all infrastructure investment, including traditional infrastructure investment. In the case of clean energy infrastructure projects, perceived risks about possible changes in support policies, for example, have resulted in investors requiring higher returns for these projects. This contributes to a perception that there is a shortage of “bankable” projects. However, renewable energy projects can have lower risks than fossil fuel-intensive projects, because, for example, they are unaffected by fuel costs and fuel price volatility. If investors can secure predictable revenues from renewable energy projects, e.g. through long-term power purchasing agreements, their immunity from fuel price risk can make them competitive with, or more competitive than, natural gas, as has been seen in Brazil and elsewhere.

Given the need for increased investment in green infrastructure, and pressures on existing sources of financing, there is interest in exploring the extent to which institutional investors can expand their investments in this area (see arrow in Figure 2), and play a greater role in directly filling the green infrastructure investment gap.

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**Fig. 2: Landscape of investment financing sources for green infrastructure in OECD countries (illustrative example)**

- **Financing sources**: Private sector, Financial sector
- **Private sector**: 2/3
- **Financial sector**: 50% (bank asset financing), 95% (other non-bank sources including institutional investors)
- **Public sector sources**: 1/3
- **Corporate sources (balance sheet)**: 50%

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7. In developing countries and emerging economies, the picture would be roughly reversed, with the public and “quasi-public sector” (state-owned banks and corporations) providing two-thirds of investment financing.
8. The Economist (2013) notes that EU utilities have suffered vast losses in asset valuation, with their market capitalisation having fallen by over EUR 500 billion over the last five years.
Who are long-term and institutional investors, and why should we focus on them?

Institutional investors – particularly pension funds, Public Pension Reserve Funds (PPRFs), insurance companies and investment funds such as mutual funds – are increasingly important players in financial markets. In OECD countries, these investors traditionally have been seen as sources of long-term capital, with an investment horizon tied to the often long-term nature of their liabilities (e.g. pension benefits provided at retirement and life-insurance pay-outs). In today’s low interest-rate environment, infrastructure projects should in principle be attractive to institutional investors; they can deliver steady, inflation-linked, income streams with low correlations to the returns of other investments. Institutional investors are actively engaged in wind power in the UK, Sweden, Denmark, Germany, Netherlands, Australia, Canada and the US; solar PV in Germany, Japan, South Africa, Australia, Canada, and the US; and sustainable agriculture in Brazil, for example. However, as discussed below, institutional investors’ asset allocations to green infrastructure have been limited to date.

Institutional investors – investment funds, insurance companies, pension funds, PPRFs, foundations, endowments and others – in the OECD held over USD 83 trillion in assets in 2012. Pension funds alone held around USD 22 trillion of assets and had USD 1 trillion of new capital inflows (Figure 3). Despite their apparent long-term investment horizon, pension funds are currently a very small contributor to infrastructure investment. “Direct investment”10 in infrastructure of all types accounted for only 1% of pension funds’ asset allocation in 2012. Significantly, their allocation to green infrastructure investment was much smaller – only 3% of that 1% share, according to some estimates.11 To address the green infrastructure investment gap (Figure 1), it will be necessary to understand the barriers that are keeping institutional investor allocations to green infrastructure so low, and to identify which policy levers can help overcome these barriers.

9 Other types of institutional investors include Sovereign Wealth Funds (SWF). Globally, SWFs held approximately USD 6 trillion in assets (IMF Institute, 2013). Some of the largest SWFs in the world are located in emerging economies and they are increasingly being approached for financing green infrastructure.

10 Either through equity ownership in the project or through loans or other debt instruments made available directly to green infrastructure projects.

What are the barriers to institutional investment in green infrastructure?

Institutional investors with fiduciary responsibilities will not make an investment just because it is green – their primary concern is its risk-adjusted financial performance. A range of barriers can have an impact on the risk-return profile of green infrastructure and can determine whether the financial asset class is attractive or accessible to these investors at all.

1. Environmental, energy and climate policies and regulations that favour investment in “brown” infrastructure over green infrastructure.

- Environmental, energy and climate policies and regulations that favour investment in “brown” infrastructure over green infrastructure.
  - Existing incentives often provide limited or no pricing of carbon (i.e. the cost of environmental externalities are poorly reflected or not reflected in prices), subsidise fossil-fuel use, or do both.
  - The lack of a stable regulatory environment discourages long-term investments. In the case of green investment in the energy sector, rapid (and even retroactive) changes to renewable energy support policies are particularly damaging to investor confidence, especially when they are undertaken without advance notice to allow investors and businesses time to adjust.
  - The lack of support policies to help immature green technologies achieve competitiveness with incumbent technologies (such as well-designed feed-in-tariffs that are regularly evaluated to manage costs effectively).

2. Regulatory policies with unintended consequences.

- A number of investment restrictions established by pension regulatory and supervisory authorities may discourage institutional investors from investing in infrastructure and other “illiquid” asset classes, with the aim of ensuring their financial solvency (i.e. by not locking them into long-term investments that may be hard to exit from at short notice or at acceptable prices).
  - The accounting, reporting and reward cycle in financial markets tends to reward short-term over longer-term investment. Though they are theoretically long-term investors, institutional investors often face short-term performance pressures which can prevent them from investing in long-term assets. Evidence of growing short-termism includes the fact that investment holding periods are declining among institutional investors, and that allocations to less liquid, long-term assets such as infrastructure and venture capital are generally very low and are being overtaken in importance by allocations to hedge funds and other high-frequency traders.
  - Pension funds are often tax-exempt. In a number of countries, tax credits are used as a primary measure to support renewable energy, but pension funds typically will not benefit from such incentives.
  - Other policies with unrelated objectives may discourage investment in green infrastructure. For example, “unbundling” regulations aimed at gas and electricity markets prevent investors from owning a controlling stake in both transmission and generation, including renewable energy. Given the attractiveness of transmission and pipeline type infrastructure assets, this regulation may unintentionally force investors to choose between majority ownership in transmission and generation/production.
  - Financial regulations agreed at international level to increase banks’ levels of capital and reduce their exposure to long-term debts (Basel III for banks around the globe, and Solvency II for insurance companies in Europe) can discourage long-term investments, including green infrastructure investments. In addition, certain accounting rules such as fair value or mark-to-market accounting (while having brought greater transparency and consistency to financial statements) can be difficult to apply to illiquid investments with long holding periods.

3. A lack of suitable financial vehicles with attributes sought by institutional investors.

- There is a lack of financial vehicles that have the necessary attributes of familiarity, investment-grade credit rating, low transaction costs, liquidity, appropriate investment period, and availability of related financial research that will make them attractive to institutional investors.
  - Green bonds can be attractive to institutional investors. Bills and bonds make up on average 53% of pension fund portfolios, and 64% of insurers’ portfolios at the country level in 2012, irrespective of the size of assets in the OECD countries. When taking into account the size of the pension and insurance markets in terms of assets at the country level, the (weighted) average allocated by pension funds to bills and bonds becomes 27%, but remains above 60% for insurance companies. However, while the market for green bonds has been growing and maturing since 2010, it is still nascent and illiquid. Green bond
issuances that have had a sufficiently high credit rating and large issuance size to meet institutional investors’ stringent requirements (e.g. issuances by Multilateral Development Banks) have been limited. Other green bond issuances have been smaller and issued by entities with lower credit ratings. In addition there is a lack of green bond funds (i.e. funds investing in a variety of green bonds) and green bond fund indices, which prevents the emergence of green bond index funds. Such green bond funds and index funds may be preferred investment vehicles for institutional investors.

Highly liquid vehicles exist for other investment asset categories (e.g. Master Limited Partnerships18 for fossil-based energy infrastructure or Real Estate Investment Trusts (REITs)19), but they have not yet been permitted for use in green infrastructure investments.

Infrastructure funds do exist, but they typically do not offer the liquidity often sought by institutional and other investors, and their fees are high. In addition, they have typically relied on high (and therefore risky) levels of leverage (i.e. the ratio of debt to equity) to generate returns.

4. A shortage of objective information, data and skills to assess transactions and underlying risks.

- In the absence of transparent information, data and financial research that can act as a signal to investors or means for performance comparison in any given sector, there are significant barriers to entry. Unlike such investments as stocks, bonds, and REITs in which institutional investors commonly invest, green infrastructure and infrastructure investment performance data are generally not collected systematically. Much of this data may reside in commercial banks which have specialised in infrastructure finance. The availability of such data would be a key element in stimulating investment conditions and building confidence in and track-records for new technologies, markets and financial products.

- Most institutional investors have limited experience20 with direct investment in green infrastructure projects, and it is expensive to build an internal team with the right skill set (investors need a minimum of USD 50 billion in assets to build such a team). No standardised vehicles have been developed that overcome these barriers, so they tend towards traditional stock and bond investments or general infrastructure projects instead.

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12. Though investment restrictions are important to protect pension fund members, there may be unintended consequences preventing investment in infrastructure through bans on unlisted or direct investments (See IPII, 2017; “Pension Fund Use of Alternative Investments and Derivatives”). The OECD does not recommend the use of ‘investment floors’ which require pension funds to invest in a particular asset class, and therefore would not support measures compelling pension funds to invest a certain percentage of their assets in infrastructure or green projects.


14. The Basel Committee on Banking Supervision (BCBS) is the committee that sets the rules for banks and has set minimum capital requirements for banks in order to protect depositors and ensure the stability of the international financial system. The Basel III framework is the third version of the Basel Accords agreed upon by 25 countries on 12 September, 2010. Basel I is the agreement concluded in 1988 to develop standardised risk-based capital requirements for banks across countries.

15. A directive developed by European Commission for the European insurance industry. It aims to establish a revised set of EU-wide capital requirements and risk management standards that will replace the currency solvency requirements.

16. The practice of valuing an asset or a liability, using current market prices.


18. A publicly traded limited partnership that includes one or more partners who have limited liability.

19. Real Estate Investment Trusts (REITs): A corporation or trust that uses the pooled capital of many investors to purchase and manage income property and/or mortgage loans.

20. A very few have spent years building this in-house capacity, as has been the case with Canadian public pension funds, for example, which are some of the most experienced infrastructure investors in the world.
What can governments do to remove barriers to green infrastructure investments by institutional investors?

Governments can take a number of key actions to address these barriers and facilitate institutional investors’ investment in green infrastructure projects:

1. **Ensure a stable and integrated policy environment**
   which provides investors with clear and long-term incentives and predictability.

2. **Address market failures (including a lack of carbon pricing)**
   which result in investment profiles that favour polluting or environmentally damaging infrastructure projects over green infrastructure investments.

3. **Provide a national infrastructure road map**
   which would give investors confidence in government commitments and demonstrate that a pipeline of investable projects will be forthcoming.

4. **Facilitate the development of appropriate financing vehicles or de-risking instruments**
   by issuing financing vehicles (e.g. green bonds), or supporting the development of markets for instruments or funds with appropriate risk-return profiles.

5. **Reduce the transaction costs of green investment**
   by fostering collaborative investment vehicles between investors and helping to build scale and in-house expertise.

6. **Promote public-private dialogue on green investments**
   by creating or supporting existing platforms for dialogue between institutional investors, the financial industry and the public sector.

7. **Promote market transparency and improve data on infrastructure investment**
   by strengthening formal requirements to provide information on investments by institutional investors in infrastructure and green projects.

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**1%**

The amount of pension funds’ asset allocation in 2012 that is “directly invested” in infrastructure. Significantly, their allocation to green infrastructure is much smaller.
OECD work on institutional investors

The OECD is undertaking a major project on “Institutional Investors and Long-term Investment” (the “LTI Project”). Launched in February 2012, the LTI project aims to facilitate long-term investment by institutional investors such as pension funds, insurance companies and sovereign wealth funds. The project addresses both potential regulatory obstacles and market failures. Engaging institutional investors and policy makers allows the OECD to provide effective policy recommendations at the highest political level. As a significant part of the LTI project, OECD work on Institutional Investors and Green Growth investigates how to better engage institutional investors in green infrastructure investments and provides policy recommendations to facilitate their green investments. These recommendations are informed by the OECD’s ongoing analysis to advise governments on policies to mobilise finance and investment to support climate action and green growth.

On the topic of institutional investors and long-term investment, the OECD has made contributions to related G20 initiatives. The “G20/OECD Policy Note on Pension Fund Financing for Green Infrastructure and Initiatives”, was welcomed by the G20 Finance Minister and Central Governors’ meeting on 5 November 2012. In addition, at the request of the G20 Finance Ministers and Central Governors, the OECD developed the “High-Level Principles of Long-Term Investment Financing by Institutional Investors” to enable long-term investors to scale up their participation. These principles were welcomed by the G20 Finance Ministers and Central Governors’ meeting on 19-20 July 2013 and endorsed by G20 Leaders in September 2013.

The OECD Working Paper “Institutional Investors and Green Infrastructure Investments: Selected Case Studies” summarised in this brochure developed a set of case studies to help develop guidance to better design policy and structure deals to encourage investment from institutional investors into green infrastructure projects. This working paper was transmitted to the G20 Finance Ministers and Central Governors’ meeting on 10-11 October 2013.

Relevant OECD references


OTHER REFERENCES


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For more information:

www.oecd.org/env/cc/financing.htm

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