

Executive summary

Agreements reached in Cancún, Mexico, at the 2010 United Nations climate change conference recognised the need for deep cuts in global greenhouse gas (GHG) emissions in order to keep the global average temperature increase below two degrees Celsius (2°C) above pre-industrial levels. To meet a two-degree climate change goal, massive investments will need to be made in the coming decades in low-carbon and climate-resilient (LCR) infrastructure. Public finance can and does play a critical role to “jump start”, leverage and guide LCR investment, but transformational change will inevitably require large-scale private sector engagement.

However, traditional sources of private financing for sustainable energy infrastructure – governments, utilities, project developers and financial sector sources – face significant financial, regulatory and structural constraints. While the banking sector remains a key provider of investment financing, significant attention has been focused on the potential for institutional investors – including pension funds, insurance companies, investment funds, and sovereign wealth funds – to significantly increase their investments in sustainable energy infrastructure.

In OECD countries these investors held USD 92.6 trillion in assets in 2013. Continued growth in inflows of assets is occurring in both OECD and emerging economies and developing countries. Yet, while there are expanding pockets of activity in sustainable energy investment by institutional investors, as illustrated in the examples of large pension fund investments provided in this report, their investments in this area to date have been minimal compared to the scale of their assets. Looking just at large pension funds surveyed by the OECD, due to a range of barriers, direct investment in infrastructure projects of all types accounted for only 1% of their asset allocation in 2013. Large pension fund allocation to sustainable energy investment was estimated to be much smaller – only 3% of that 1% share.

Institutional investors have varying risk appetites, liability profiles, investment preferences, illiquidity tolerances and other constraints which will determine the extent to which they will seriously consider investments in sustainable energy infrastructure. Moreover, institutional investors will not make an investment just because it is “green”. Their primary concern is the risk-adjusted financial performance of the asset. Their willingness to finance major investment projects in any given country, including investments in sustainable energy infrastructure, will be heavily influenced by perceptions of the country’s sovereign risk, investment climate, policy settings, and institutions. At the same time, regulatory risks around unabated fossil-related investments can be expected to increase and returns from such investments can be expected to fall with the level of stringency of carbon pricing and climate change mitigation policy and improved governance and standards (e.g. on air pollution). This is particularly the case in the developing world where much of the infrastructure is likely to be built.

A critical issue for governments seeking to scale-up private investments is how to support the development of investment channels for sustainable energy that hold potential

to attract institutional investment and to lower the cost of capital for sustainable energy. To do so effectively, it is important for policy makers with varying degrees of familiarity with finance to have an appreciation of the full range of investment channels that are potentially available to institutional investors, and how diverse institutional investors consider investing in different channels. For example, large institutional investors evaluate prospective investments based on decisions to make the investment directly (“in-house”) or to create a contract with an intermediary (“out-source”) to make the investment on their behalf. Channels can provide exposure to a single project asset or company or can bundle multiple smaller-scale projects together.

The principal goal of this report is to provide policy makers with an integrated review of the myriad investment channels (instruments and funds) that can be used for sustainable energy infrastructure and the interventions that can enable or facilitate these investments, either through mitigating risks (risk mitigants) or lowering transaction costs (transaction enablers).

Risk mitigants include a range of targeted interventions generally aimed at reducing, re-assigning or re-apportioning different investment risks using mechanisms such as guarantees and insurance products, public stakes and other forms of credit enhancement. By providing coverage for risks which are new and are not currently covered by financial actors, or are simply too costly for investors, risk-mitigating tools increase the attractiveness and acceptability of sustainable energy projects for institutional investors that are particularly risk-averse (e.g. pension funds).

As a subset of risk mitigants, transaction enablers facilitate institutional investment in sustainable energy infrastructure projects by reducing the transaction costs associated with these investments while also mitigating risk in some cases. As most institutional investors have limited experience with direct investment in sustainable energy infrastructure projects, the cost associated with identifying, executing and managing investments is often prohibitive. Transaction enablers include warehousing (pooling small transactions), securitisation (transforming illiquid assets into tradable securities) in a prudent and judicious way, and co-investment and collaboration among institutional investors.

To assist policy makers in visualising investments and their defining characteristics, the report provides a classification framework for understanding investment channels for sustainable energy infrastructure. The report uses a number of tabular and visual devices to illustrate how this framework works for individual transactions and groups of transactions. After defining terms and investment characteristics, the report uses “investment pathways” to illustrate how transactions can be classified. To illustrate different investment channels, the report describes and evaluates the 47 sustainable energy infrastructure project investments by pension funds that were identified for the purpose of the report, along with 20 investments by pension funds in “pure-play” corporations (i.e. corporations engaged exclusively in sustainable energy activities). It then uses “matrix frames” to provide a visual device to plot all of the transactions together and highlight trends. Another visual device (“schematic overview – transaction layers”) is used at the level of a single transaction to highlight how instruments, funds, risk mitigants and transaction enablers have all come together in a specific investment example.

Policy makers and others can use the framework to: 1) understand and compare different investment channels available in practice and in theory; 2) illuminate where investment is or is not flowing; 3) highlight potentially promising channels in which policy makers may consider the use of risk mitigants and transaction enablers to address investment barriers and mobilise flows; and 4) target and undertake data collection on investments in different channels and undertake subsequent empirical analysis.

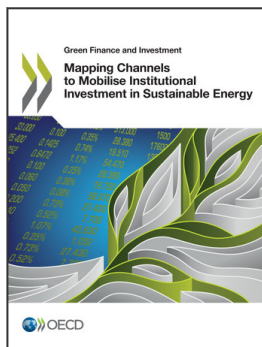
Assessment and recommendations

Building on findings from previous OECD reports, in particular the policy recommendations of the G20/OECD High-Level Principles of Long-Term Investment Financing by Institutional Investors and based on a review of key trends in institutional investment and investment channels (e.g. the rapid growth of the green bond market, and the emergence of “YieldCos”) this report provides the following high-level recommendations on what governments can do to facilitate greater investment by institutional investors. Chapter 5 elaborates on these in detail, presenting nine key policy recommendations for governments to address barriers and to facilitate institutional investors’ investment in sustainable energy infrastructure.

1. **Establish preconditions for institutional investment and favourable framework conditions for long-term investment financing.** Take steps to: *a)* improve the business climate, rule of law and investment regime underpinning sustainable energy infrastructure investments; *b)* strengthen competition policy through designing open and transparent procurement processes; unbundle vertically integrated network operators; establish a wholesale electricity market; and create a level playing field between independent power producers (IPPs) of sustainable energy and incumbent state-owned enterprises (SOEs); and *c)* improve the governance of institutional investors, including addressing “short-termism” and promoting long term investment while prompting disclosure of risks associated with long-term assets.
2. **Ensure a stable, transparent and integrated “investment-grade” policy environment addressing key barriers to investment by institutional investors.** Institute a “Green Investment Policy Framework”; avoid sudden or retroactive change to support policies in order to provide predictability to investors; examine the case for introducing barriers to policy change through legislation or contractual liabilities that make it unattractive to change policies retrospectively; address unintended consequences of policies that impede the mobilisation of institutional investment (e.g. “unbundling” regulation that forces investors to choose between owning transmission or generating assets); and ascertain whether regulatory and other financial market rules (e.g. accounting, solvency and investment restrictions) are unintentionally and unnecessarily hindering investment in sustainable energy.
3. **Improve risk-return profiles of sustainable energy projects by addressing market failures while improving electricity market design.** Put an explicit price on carbon; give a clear policy signal of a rising cost for CO₂ emissions over time through explicit and implicit carbon pricing policies; and phase out fossil fuel subsidies while addressing potential adverse impacts of subsidies reform. Provide an electricity market context that assures a reasonable and predictable return for investors in power generation and associated enabling infrastructure. Promote well-designed and time-bound sustainable energy support policies, when needed, to improve risk-return profiles. Promote the use of contracts such as Power Purchase Agreements that provide the stable and certain revenue which is instrumental to attracting institutional investors who seek these cash flow characteristics.
4. **Establish a national infrastructure strategy and road map with project pipeline.** Develop a sustainable energy plan within a national infrastructure strategy which maps out timing, capacity needs and location for new assets; deployment targets; the duration and level of support policies; and technology-specific considerations. The strategy should be revisited and updated regularly

based on periodic reviews to take into account evolving technology developments and views on policy needs. Create a credible sustainable energy pipeline to provide investors with confidence that investable projects will be forthcoming. Create and support facilities focused on improving the “bankability” of projects through preparation and selection and support initiatives aimed at facilitating enhanced partnership between the various actors along the project finance chain.

5. **Facilitate the development of liquid markets for sustainable energy infrastructure financing instruments** (e.g. for debt in the form of green bonds) **and funds** (e.g. for equity in the form of listed YieldCo-type funds) tailored to investor risk profiles across the project lifecycle and developed in co-operation with investors. Evaluate the case for passing or amending legislation allowing for sustainable energy infrastructure to be included in existing vehicles that appeal to institutional investors (e.g. covered bonds, Master Limited Partnerships and Real Estate Investment Trusts).
6. **Facilitate the development and application of risk mitigants** where they would “crowd-in” private investment and result in more appropriate allocation of risks and their associated returns (e.g. credit enhancements and revenue guarantees, first-loss provisions, cornerstone stakes, and tools targeting different challenges across stages of the project lifecycle).
7. **Reduce the transaction costs associated with sustainable energy investment.** Support channels for securitisation of sustainable energy debt to pool projects using a prudent and judicious approach (e.g. supporting efforts to standardise contracts and project evaluation structures, creating aggregation and “warehousing” facilities). Develop a sustainable energy project exchange network for large-scale projects; foster collaboration, innovation and knowledge-sharing amongst institutional investors and with other financial institutions.
8. **Promote market transparency and standardisation, and improve data** on performance, risks and costs of sustainable energy investments across available channels while promoting public-private dialogue. Strengthen, as appropriate, requirements for institutional investors to provide information on sustainable energy investments, following internationally agreed definitions, so as to enhance monitoring and understanding of the risk profile of these investments.
9. **Consider the case for establishing a special-purpose “green investment bank”** (GIB) or refocusing activities of existing public financial institutions to mobilise private investment for sustainable energy infrastructure. GIBs can facilitate the development of financing instruments and funds, deploy risk mitigants and transaction enablers and provide technical advice and project preparation and selection.



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