Incentives for Large Asset Owners to Fund the Green Energy Transition in Developing Countries

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Abstract

Confronting climate change demands an urgent and comprehensive transition from fossil fuels to renewable energy sources, necessitating significant financial investments particularly in developing countries. This transition, underscored by the global commitment of the 2015 Paris Agreement, faces a complex challenge: devising and implementing financial strategies capable of supporting such a monumental shift. A third of the needed expenditures in these countries, or almost $1.5 trillion, are in the energy sector alone (of which 40% is in energy generation) (OECD, 2017). The vast majority of the funding will need to be sourced domestically, as only 15% of the FDI (Foreign Direct Investment - funds deployed for the purchase of an asset in another country) is being directed to developing countries. (BNEF, 2023).

This paper critically examines the multifaceted financial landscape of the green energy transition, with a focus on the indispensable role of developing nations. It provides an in-depth analysis of both historical and contemporary climate financing flows, highlighting the increasing importance of private sector investments and the exploration of innovative financial instruments and incentives designed to over-come the current financing shortfall. With global investment needs surpassing $1.7 trillion annually, the discourse expands on the pivotal functions of national development banks and significant asset holders, including pension funds and sovereign wealth funds, in propelling renewable energy advancements. By analyzing the challenges posed by national discrepancies, risk perceptions, and the absence of a standardized classification for "green" investments, the paper proposes nuanced policy interventions aimed at bolstering private sector participation. Furthermore, it articulates the necessity for policy reforms to realign investment benchmarks with environmental sustainability goals, advocating for a strategic adjustment that prioritizes investments in low-carbon technologies. This paper charts a strategic course towards mobilizing the essential available capital in large asset owners, for a sustainable energy future. It underscores the critical need for a regulatory frameworks and the strategic allocation of institutional investments to foster a transition that is not only environmentally sustainable but also economically equitable across the globe.

Keywords

Energy Transition, Pension Funds, Asset owners, Green Energy, Green Regulations, Green Benchmarks

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Introduction

If climate change is a big challenge of the 21st century, than the even bigger challenge in contemporary finance is how should we pay for the measures needed to control it. It is imperative that the world switch from fossil fuels to renewable energy sources in order to lessen the effects of climate change and accomplish sustainable development objectives. In order to improve infrastructure, implement renewable energy technology, and encourage the adoption of clean energy solutions across several industries, this change necessitates large financial expenditures.

Since the adoption of the Paris agreement in 2015 (Nations, n.d.), by the 196 countries who collectively pledged to unite their efforts to limit global warming to below 2 degrees Celsius compared to the pre-

industrial era, some of the ingredients for a successful outcome are now in place, namely increasing public awareness of the climate urgency, government actions to provide regulatory framework that is conductive to low carbon investments and a recognition by some of the leading energy and industrial companies of the need to align their strategy with the imperatives of a 2-degree scenario. But why should the world focus its efforts and financial strategies on the developing countries? Why are they of core importance in transforming the certainty of climate change into a sustainable realty, while building resilience to adapt to its impacts on the whole world?

In his research on the relationship between energy consumption and income per capita, the late scientist David MacKay, professor at Cambridge University, showed abundantly clear that even though the rich countries are the biggest consumers and therefore are responsible for most emissions, the planet's future will be largely determined by the arc of growth in the developing world, in the country most densely populated, China, India and sub-Saharan Africa (MacKay, 2013). While in the western nations we can see a rising in energy security concerns and a formal addressing of ecological problems, in developing countries without serious adaptation, climate change is likely to push millions further into poverty and limit the opportunities for sustainable development. Looking at this challenge from a global perspective, in its Sustainable Development Goals Report 2023, the UN (United Nations) underlines the mandatory need of the world to provide more energy so the poorest can thrive, but it is not enough to deliver cheap, reliable energy, but it also needs to be clean. (UN, n.d.). To get a sense of the scale of the economic importance, in the past 15 years, circa $1000 billion has been invested in renewable energy projects in developing countries but the need of investments exceeds $1.7 trillion annually. There is also a strong correlation between the SDG (Sustainable Development Goals) implementation and climate action. As (Garcia-Saravia Ortiz-de-Montellano, 2023) shows, the most frequently addressed SDG by Circular Economy development is climate action (Goal 13). According to a report by UNCAD (United Nations Conference on Trade and Development) the foreign investment in clean energy in the above-mentioned nations was worth only $544 billion in 2022 (UNCTAD, 2023).

Time wise, the next decade is critical. To compel a climate agenda and a range of climate financing solutions designed to mitigate the risk connected to climate investments, the stakeholders need to understand renewable energy from a financial point of view, as the energy sector as a whole has seen a shift in the past decades from state owned companies to private-sector investors. The volume of capital needed for a widespread transition toward a renewable energy economy will require increasing participation of financial investors and continued adoption of innovative financing techniques.

This paper explores the various financing mechanisms available within the private sector touching on the challenges and limitations in mobilizing local debt sources and proposes innovative financial instruments and incentives that can effectively enhance asset owners participation in closing the financing gap for an efficient energy transition.

To effectively address these issues, the paper will be structured in several chapters. It begins with a review of how the green transition is currently financed, touching on both generic impediments to private sector capital deployment in low-carbon investments and the short comings of the existing financial mechanisms. It then focuses on identifying the investors who supply the capital as well as on the progress that has been made so far in the past 5 years. It concludes with the key elements for closing the financial gap in the sector and proposes ambitious possible solutions to mobilizing private sector equity capital in the green energy transition.

Nevertheless, there are a number of obstacles to overcome in order to finance the shift to green energy, such as lack of funds, ambiguous policies, and market hurdles. This article examines the financial aspects of the switch to green energy, highlighting potential, major obstacles, and resource mobilization tactics for a low-carbon future.

1. Literature Review

Since the formal study of economics began in the 18th century with the famous work of Adam Smith, "An Inquiry into the Nature and Causes of the Wealth of Nations," researchers have all reached a rather simple conclusion: Economic growth is powered by a larger population (more consumers of services and goods and a larger workforce) and the increase of individual productivity (hence a greater individual buying power). At over 8 billion people and counting, with 6.82 billion in 152 developing countries, according to the IMF (International Monetary Fund) definition, the tactics for mobilizing resources for a low carbon future becomes essential in the context of an increasing public awareness of the climate urgency and of the imperatives of a 2-degree scenario. (UNCTAD, 2024)

It all stems from one key question, simple yet impossible not to phrase it threefold: What did we achieve in the past 5 years, where are we now, where are we heading and how are we going to pay for it?

In 2021–2022, average annual climate funding flows almost doubled from 2019–2020 levels to USD 1.3 trillion. 1. The primary factor responsible of this rise was the considerable acceleration of mitigation funding, which increased by USD 439 billion from 2019/2020. The remaining rise shown in 2021–2022 (USD 173 billion annually) is a result of additional sources of information and methodological advancements that supplement the flows monitored in 2019–2020. (IRENA, 2024)

According to the World Bank Reports, despite the growth in 2021/2022, current flows represent about only 1% of global GDP, estimated at $100 trillion in 2022.

The need for long term asset owner's investments into energy transitions also comes from a structural reluctance to address those investment needs by traditional banking finance as most financial institutions are not active in terms of providing green banking products and services because they often do not recognize the climate and green sector as commercially viable. This is mainly due to the perception of risks associated with climate change projects and their existing capacity or willingness to develop and grow financial supply in the sector is insufficient (Park, 2020)

This role might be more well suited to development banks (Zhang, 2022) as they act in a coordinating role that is enabled by National Development Banks' state-ownership, proximity to local markets and local contexts, information, and expertise. However, the research also shows the differences of the NDB's roles in supporting renewable energy finance between developed and developing countries. As such development banks can act as a catalyst, but they need to engage with private asset owners to co-interest them in investing a proportion of their assets in energy transition.

However, in the absence of a long-term commitment (via direct regulation) to green investments current state of play risks to induce volatility where we should have consistency as showed by research of the green spread that, differently from the benchmark greenium, is affected by confounding and idiosyncratic risk factors. As such, the research by (D'Amico et al., 2023) shows that while shocks to climate concerns trigger unexpected inflows into green securities, causing them to perform better than expected, shocks to risk attitudes trigger unexpected inflows into their conventional twins, causing green securities to perform worse than expected.

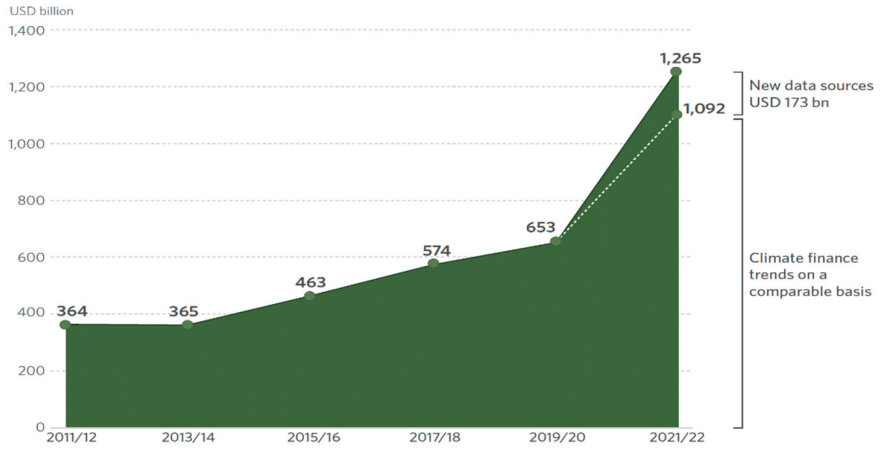

Figure no 1. Global climate finance in 2011-2022, biennial averages
Source: Global Landscape of Climate Finance (2023)

Despite of energy research and development mostly in the USA and Western Europe, with a focus for example on nuclear energy in France or hydro energy in Norway, wind and solar in the US, the share of renewable energy in total energy consumption remained generally low in most countries.

In 2021, more people than ever had access to electricity, but we were still not on target in the developing countries. Nearly 800 million more people got electricity by the rise in the worldwide energy avail-ability rate from 87% in 2015 to 91% in 2021. Even still, 675 million people—the majority of whom were living in developing countries—did not have access to electricity in 2021. The yearly access growth rate between 2019 and 2021, at 0.6 percentage points, falls short of the 0.8 percentage points recorded between 2015 and 2019, despite consistent gains over the previous six years. Due to population growth, the number of people

without access to electricity in sub-Saharan Africa has been stubbornly constant since 2010, with 567 million still lacking access in 2021. (UN, n.d.)

Fast forward to 2023/2024, a very timely report by IRENA (International Renewable Energy Agency), Renewable Capacity Statistics 2024, demonstrates that 2023 broke all previous records for the deployment of renewable energy in the power industry, with a total capacity of 3 870 Gigawatts (GW) world-wide. Out of all this, 86% of capacity increases came from renewable sources; nevertheless, this expansion is unevenly distributed globally, suggesting that the objective of doubling renewable power by 2030 is not being met. Asia led the 473 GW renewable energy boom once again, accounting for 326 GW or 69% of the total. China was the main driver of this rise, with a 63% increase in capacity to 297.6 GW. In spite of their enormous requirements for economic growth and development, the bulk of emerging nations are left behind by this stark disparity with other areas. Africa did saw some growth, but it was insignificant compared to the 4.6% gain that reached a total capacity of 62 GW (Camera, 2024).

Following the above-mentioned data, the imperative of IRENA's 1.5-degree scenario, is clear. The world needs to generate an important spike in funding and significant international cooperation to hasten the energy transition, giving developing countries top priority. Grids, generation, storage, and flexibility all require investment. Increasing the capacity of renewable energy by three times by 2030 necessitates boosting policies, strengthening institutions, and human resources and attracting private investment capital by innovative financial mechanisms. In the words of Francesco La Camera, general director of IRENA, "Policy interventions and a global course-correction are urgently needed to effectively overcome structural barriers and create local value in emerging market and developing economies, many of which are still left behind in this progress. The patterns of concentration in both geography and technology threaten to intensify the decarbonization divide and pose a significant risk to achieving the tripling target." (IEA, n.d.)

In regards of financing a low carbon energy future, the reality of the scale of the investments needed for renewables in accordance with their potential to satisfy energy security and climate targets is much larger than previous estimates. Although the private sector will have to contribute the majority of the investment, public capital providers—like national and international development organizations—have a significant role to play in stimulating the private sector. Among the biggest challenges for enhancing fund flows especially in developing nations are the capacity constraints to take projects from concept to implementation and poor lending instruments to renewable energy projects.

In facing the daunting task of raising the trillions of dollars required for an efficient green transition, a few financial theories and instruments have been researched and implemented. As the share of renewables would need to increase by 65% of global energy supply by 2050, the worlds need to find a collective solution to more than triple the current level to meet the Paris agreement targets.

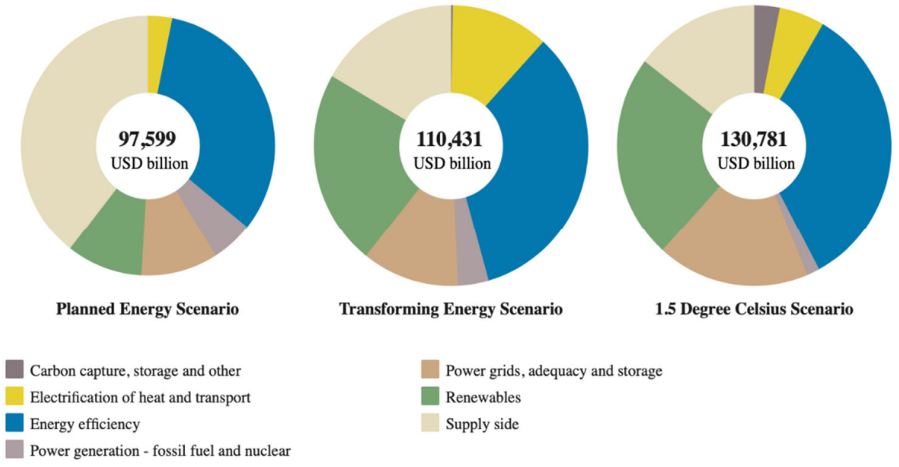

Figure no. 2. World Cumulative Investment Needs
Source: IRENA (2021)

In their research for finding methods for getting renewable energy infrastructure built, US economists Santosh Raikar and Seabron Adamson point out that renewable projects should not be stand alone in-vestments, but are deeply embedded in local support policies, legal and energy market structures. (Santosh Raikar, 2019) The financing for these types of investments should not be backed up by the balance sheet of a corporate investor but rather by the expected operating cash flows from the project itself. Of course, we

cannot even begin to talk about large scale renewable energy projects requiring large capital investments, without touching on public policy and policy mechanism to support the green transition, taking into con-sideration that energy generated by fossil and gas is often cheaper than renew-able.

A good place to start is laying the groundwork for exploring the major drivers for the expansion of renew-able energy for large asset owners, commercial banks, private equity funds, institutional asset managers, identifying the changes and innovations in renewable energy financing, and to dive into the evolving dy-namics of the financing market.

2. Methodology

The analysis adopts a multidisciplinary approach, incorporating insights from the fields of environmental economics, sustainable finance, and corporate governance, to highlight the critical role that large asset owners play in advancing the energy transition. By reviewing a broad spectrum of academic literature and industry reports, the discussion draws on expert opinions to emphasize the importance of green investments by these significant financial entities. The methodology focuses on exploring the economic benefits and environmental impacts of large-scale investments in renewable energy and sustainable practices. It also examines how investing in green projects can help asset owners manage investment risks associated with climate change. Furthermore, the discussion considers the influence of regulatory and policy environments in either supporting or obstructing these investment activities. Integrating diverse academic and profes-sional viewpoints, the analysis provides a comprehensive review of the challenges and opportunities facing large asset owners in their efforts to contribute to the energy transition, suggesting specific policy recom-mendations to enhance their impact on achieving sustainable development goals.

The case for large asset owners' commitment to the energy transition

Large asset owners, such as pension funds, insurance companies, sovereign wealth funds, and large invest-ment firms, wield significant financial power that can drive substantial change in the global energy land-scape. Given their long-term investment horizons and fiduciary responsibilities, these financial institutions are well-aligned with the objectives of sustainable development (Boermans, 2023). An in-vestment prefer-ence towards green investments have the potential to accelerate the transition to a low-carbon economy, especially in developing countries where such transitions are crucial but underfunded. There are multiple reasons why they are well suited for this endeavor such as the significant scale of the assets. Large asset owners manage trillions of dollars in assets collectively and some show the willing-ness to deploy money into (Reuters, 2024). Even a small shift in their investment strategies towards low-carbon initiatives can mobilize vast sums of money. This would be especially important for developing economies. The support of international climate finance could lead to a substantial acceleration in the deployment of renewable energy in developing economies (Briera and Lefèvre, 2024).

This scale of investments can significantly contribute to closing the financing gap for renewable energy projects, energy efficiency improvements, and other low-carbon technologies in developing countries.

When asset managers allocate funds to sustainable investments, it sends a powerful signal to the market about the viability and profitability of such projects. It has the potential to lead to a reevaluation of invest-ment norms by governments and regulatory bodies. As a side note, while the US and the EU are at the forefront of labeling green products, and regulating the large institutional investors, although on a voluntary basis, their regulation also have an impact in developing economies investments in the energy transition. The commitment of the large asset owners could encourage other investors to consider the long-term ben-efits and potential returns of low-carbon projects. This can increase capital flow into sustainable energy sources and technologies, driving down costs and making them more competitive. By investing in low-carbon technologies large asset owners can spur innovation in the energy sector.

Another area in which large asset owners, such as pension funds, can make a significant contribution is by engaging with stakeholders. These entities often have considerable influence over the companies in which they invest. As investors demand greater transparency and accountability, pension funds have the potential to become influential advocates for sustainability, shaping markets, influencing corporate behavior, and fostering a more sustainable future for both their beneficiaries and the planet. (Liu et al., 2024). Through shareholder activism, they can encourage or compel companies to adopt more sustainable practices, thus driving broader changes in the industry.

From a risk perspective investing in energy transition helps large asset owners manage long-term risks associated with climate change, such as regulatory and policy, physical, liability and transition risks. All of these can affect the entities directly or through the impact they can have on their underlying in-vestments.

Climate risks impact every sector. It is simply not possible to say that any climate change scenario is either "good" or "bad" for a specific industry. Every sector requires energy and has some carbon exposure, including knowledge-based industries such as financial services, pharma, or healthcare. Each company's exposure will depend on business models, strategies, locations, assets, and liabilities. As global policies increasingly favor decarbonization and consumers demand more sustainable products, companies that have not adapted to these changes will face increased risks. (EY, 2016) By diversifying their portfolios to include more green investments, large asset owners can mitigate exposures to uncertainty.

Long-term institutional investors, such as pension funds, are particularly exposed to climate risks due to their investment horizons, diversified international portfolios (including disproportionally heavy fossil fuel exposure) and largely passively managed portfolios (Egli et al., 2022) As such, there is a growing recognition among large asset owners of their social and environmental responsibilities. By funding low-carbon investments, especially in developing countries, they can contribute to global efforts to combat climate change, support sustainable development, and improve living conditions. This not only helps fulfill their corporate social responsibility objectives but also aligns with the increasing demand from their clients and beneficiaries for sustainable investment options. Despite pressures to cut costs and a need for less risky investments, the sector increasingly recognizes their responsibility regarding sustainability. Through the largest responsible investment initiative in the world: The United Nation's Principles of Responsible Investments (UNPRI), which comprises large asset owners as signatories they pledge to take environmental, social and governance (ESG) criteria into account when making investment decisions.

Challenges

One of the most important challenges that the large scale investment of significant asset owners in energy transition faces all over the world, but especially for developing market investment mandates is the plethora of jurisdictional differences between Europe, China, the US and other markets for green products (Babic, 2024) that have a mandate to invest in global green transition projects. The lack of a unitary classifications induces confusion which translates into difficulties of identifying true "Green" in-vestments, increase due diligence costs, and an extra layer of complexity when comparing performances.

Writing for the OECD in 2011 highlights the disjunct between the high-risk profiles of innovative renewable energy projects and the low risk-appetite held by pension fund fiduciaries. In addition to strengthening climate policies in order to send market-signals in favour of renewable energy, she suggests that governments should be prepared to make sure that "adequate, investment-grade deals at scale come to the market" by taking on risk through debt positions, reducing risk on investments through various subsidies or issuing green bonds.

Within the establish risk profile, the funds are under pressure to deliver investment return. As such, research show that the investors' have conflicting objectives of advancing sustainability while achieving superior returns (Li, 2023). This, coupled with the perceived high-risk profile, is likely the most signify-can't barrier deterring asset managers from investing a greater proportion of their assets in the energy transition.

Conclusions

Numerous initiatives are created to involve asset owners in funding the energy transition, some of them are too ambitious and trigger pull back from the initial commitments. However, we can generally say that although they have diverse levels of success, they, on aggregate, are tilted towards more engagement. We suggest that the following measures could serve as a driving force for directing capital to-wards the energy transition. This not only has the potential to significantly enhance the financial landscape but also offers broader economic improvements.

A significant impact in green investments is determined by public policy. As such regulatory bodies have the tools to determine change. As of today, one of the major challenges, as expressed above, is that energy transition investments are perceived as higher risk. To level the playing field regulators could offer a lower risk weight for green investments, as they are tools to lower the overall risk of the portfolio in the long run, by diminishing the impact of climate change. There are already initiatives at a firm level that are essentially soft voluntary commitments and, consequently, investment mandates are not always updated accordingly to provide room for maneuver for the fund manager, especially in developing countries. A regulatory (and therefore mandatory) upgrade would not only incentivize green investments but also drive a profound transformation in how the large asset owners perceive and manage environmental risks. This change could accelerate the redirection of capital towards sustainable projects and companies, contributing significantly to the global effort to combat climate change and transition to a sustainable future.

Another policy that could change the landscape and ensure more support for energy transition would be to transform investment benchmarks to "Green". This shift means that the performance of investments is not only measured against traditional financial returns but also includes criteria related to environ-mental sustainability, particularly the transition to a low-carbon economy. One way of achieving this would be by limiting the weight in the indices that comprise the benchmarks of companies with high carbon emissions. As environmental criteria become a part of investment benchmarks, assets that are heavily involved in fossil fuel production and use may no longer meet the desired standards. Pension funds might begin divesting from oil, gas, and coal companies, decreasing the capital available to these industries and signaling a broader market shift away from fossil fuels. This might also accelerate the trend that we already see by which companies across all sectors would be incentivized to adopt more sustainable practices to remain attractive to large institutional investors like pension funds. This strategic shift not only aligns with the global efforts to combat climate change but also addresses the financial risks and opportunities presented by the energy transition.

Abbreviations and acronym

IMF - International Monetary Fund
IRENA - International Renewable Energy Agency
OECD - Organisation for Economic Co-operation and Development
UNCTAD - United Nations Conference on Trade and Development
UN – United Nations
SDG – Sustainable Development Goals

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