Climate Compatible Growth

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Data-to-Deal: How can Countries in the Global South Afford the Climate Transition?

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Summary

Many low- and middle-income countries (LMICs) are likely to face significant climate financing gaps. These may arise from difficulties in funding repayment of the substantial financing needed to implement net zero plans, particularly given the scarcity of concessional resources. In response, CCG is developing a new tool, MinFin, that identifies climate financing gaps based on projecting investment needs, estimating the associated cost of finance and comparing this to anticipated sectoral cashflows.

A recent pilot application of MinFin in Kenya already points to the likely severity of climate financing gaps in LMICs, and the associated need for measures that reduce the financing costs countries face, while also boosting the generation of sector revenues to fund repayment. All this points to the importance of integrating long-term energy planning efforts with the development of national climate financing strategies, which calls for closer collaboration between Ministries of Energy and Finance.

Key Policy Recommendations

- The financing terms and conditions available to LMICs have a significant impact on the affordability of implementing capital-intensive net zero plans and need to be improved over time. This involves reducing country risk perceptions through an improved policy environment, as well as increasing the availability of concessional finance.
- Another vital priority is to strengthen energy sector cashflows, particularly by improving the financial viability of the energy utilities that form the backbone of the sector and play a critical role as power purchasers for renewable energy projects. In practice, this means acknowledging the potential implications of net zero for energy pricing.
- Efforts to support LMICs in planning for the net zero transition should seriously examine the feasibility of countries successfully financing such plans, given the market conditions they face. CCG's emerging MinFin tool can provide a means for doing so, while facilitating collaboration between Ministries of Energy and Finance, by translating sector investment plans into annual financing requirements.

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Introduction

Extensive public discussion of climate financing gaps tends to focus on the huge shortfall between energy investment needs and existing capital flows for the global climate transition. While estimates on the size of this gap vary considerably, all agree that investment needs are several multiples of current capital flows [1,2].

This brief provides an alternative country-level perspective on the climate financing gap. According to this view, a country faces a climate financing gap when it lacks the cashflow needed to cover the financing costs associated with its climate investment programme, taking both public and private investments into account. This is based on the basic insight that there can be no financing without funding, as finance is only ever provided when there is proven capacity to repay.

The extent to which individual countries may face this gap depends on the interaction between three factors:

- ***Investment needs.*** How much of an increase in investment is needed to meet climate goals: the greater the carbon intensity of the current energy system, and the faster the growth in energy demand, the larger the investment required to meet net zero goals.
- ***Financing requirement.*** The terms on which the country can secure climate finance: countries with relatively elevated country risk premiums and/or relatively limited access to concessional financing will need to pay much higher financing costs to implement any given investment plan.
- ***Funding availability.*** The resources available in the sector to repay financiers: the more limited the public resource envelope, and the weaker the cashflow of energy utilities (both public and private), the more difficult it will be to repay financiers.

Beyond providing a useful conceptual framework, this approach can be relatively easily quantified to evaluate the extent to which specific countries face climate finance gaps, identifying where and when these gaps are likely to arise and exploring measures that could be taken to reduce them. MinFin is an emerging spreadsheet tool that takes any given investment plan for energy transition and computes the associated future annual financing requirements, based on the specific financing terms available to any specific country. The tool then compares annual financing requirements against that country's projected funding availability, to determine whether implementation is financially feasible [3].

The tool facilitates dialogue between Ministries of Energy and Finance by providing a visualization of the evolving financing gap and allowing interactive exploration of alternative strategies for closing that gap [4]. MinFin constitutes a valuable new component in CCG's ecosystem of analytical tools that support low- and middle-income countries (LMICs) seeking to progress climate investment pipelines all the way from Data-to-Deal [5,6]. This brief outlines how MinFin works, using illustrative results from a pilot application in Kenya, drawing throughout on an underlying CCG Working Paper [3].

The term **Data-to-Deal** *refers to actions taken throughout an entire process that runs from* **data** *collection, system modelling, and development planning, all the way through to national financing strategies and project finance arrangements to the agreement of a* **deal** *(contract), all driven by a strong stakeholder engagement process.*

Boosting investment

Clean energy technologies are relatively capital-intensive [7], thus the significant transformation of energy systems required to achieve net zero goals by mid-century calls for a surge of investment relative to baseline levels in the mid-2020s. System planning models, such as OSeMOSYS, provide year-on-year investment needs to meet specific decarbonisation goals, such as net zero by 2050. Ideally, these should be complemented by estimates of the financial compensation needed to permit early withdrawal from fossil fuel technologies, where warranted. This is because planning models produce scenarios where plants are shut down before the end of their useful life, without estimating necessary damages to asset owners.

Country-level simulations, based on OSeMOSYS, do indeed confirm that capital investment needs for delivering on net zero goals surge towards mid-century and beyond [3]. For Kenya, annual investment needs in 2050 for the energy sector alone exceed US$4 billion, which is more than seven times higher than the baseline level in 2025. (see **Figure 1**). Since fossil fuels no longer play a significant role in Kenya's energy mix, compensation required for early shutdown of plants is negligible in this case. Such investment needs produced by planning tools constitute the first key input to the MinFin tool.

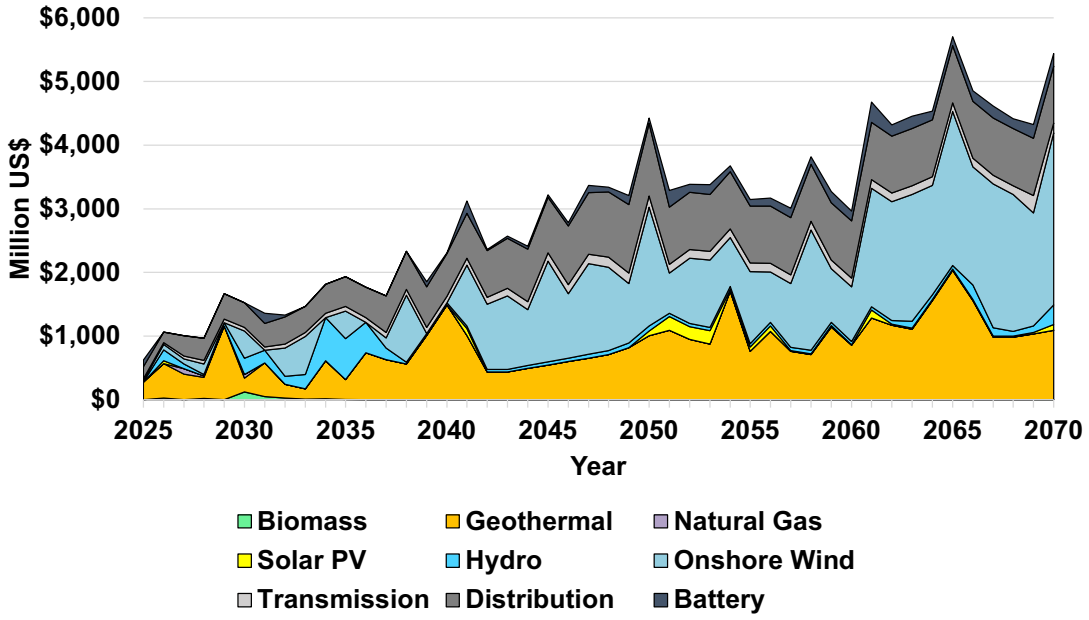


Figure 1. Technology-specific investment needs for achieving net zero in Kenya by 2050 as projected by OSeMOSYS.

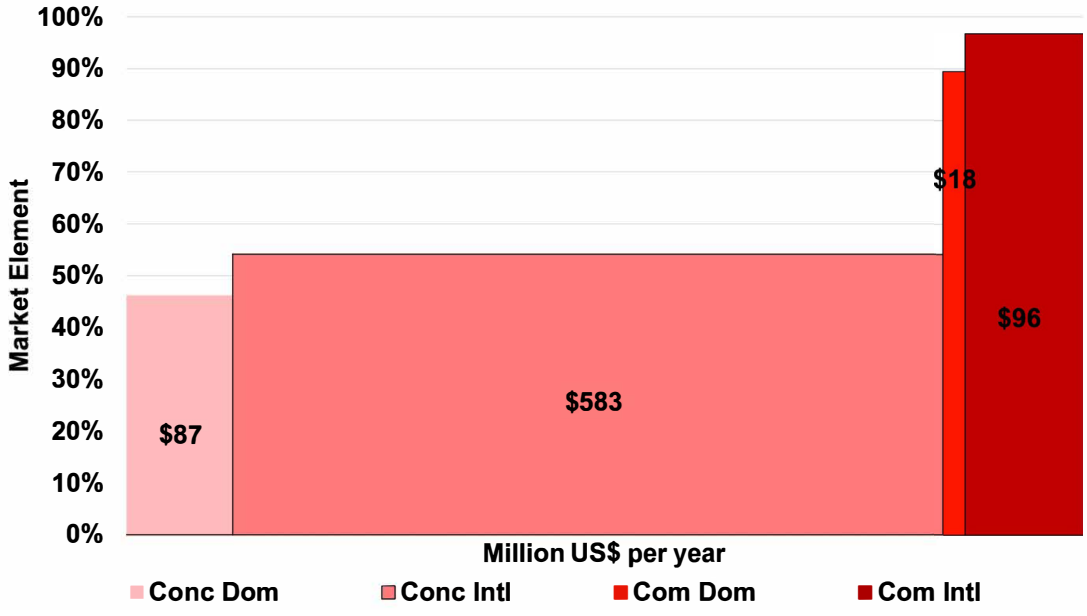
Securing finance

Finance provides a critical means of smoothing out such investment peaks over a longer period. Terms of finance will differ significantly across countries and technologies, reflecting the particular risk profiles relevant to each case.

Moreover, many different sources of finance are available, ranging from domestic to international and concessional to commercial, each with widely varying financing terms. Financing conditions are defined by the rate of interest, the maturity

of the loan, and the presence of any grace period before repayment begins. A limited amount of concessional finance, typically available from international financial institutions, softens financing terms through a combination of lower interest rates, greater maturities, and longer grace periods. The extent to which such financing terms correspond to commercial financing rates is known as the market element [8].

A detailed review of historic terms of financing for energy projects in Kenya over the period 2010–2023 illustrates the range of financing terms (**Figure 2**). This illustrates how Kenya benefits from a large volume of concessional finance, that is heavily discounted at around 45–55% of market rates [3]. This comes mainly from international (US$583 million per year) – and to a lesser extent domestic government-based (US$87 million per year) – sources. By contrast, relatively little commercial finance has been going into Kenya's energy sector, and that has been mainly from international (US$96 million per year) rather than domestic (US$18 million per year) sources. Overall, the weighted average financing terms for Kenya's energy sector over the last decade had an interest rate of 5.5%, with a maturity of 25.6 years, and 4.6 years of grace [3]. Such a characterization of historic financing conditions for energy projects in a country, based on local data collection, constitutes the second key input to MinFin, since historic financing terms provide a basis for estimating the cost of financing future investment plans.



Notes: Conc Dom = Domestic Public Sector concessional loans; Conc Intl = International Financial Institution concessional loans; Com Dom = Domestic commercial loans; Com Intl = International commercial loans.

Figure 2. Merit order for historic finance sources, 2010–2023.

Raising cashflow

The main sources of funding available for the repayment of investments in clean energy are public investment and free cashflow from energy utilities (whether public or private). Public investment is primarily a political choice and reflects the nature of competing spending priorities in each country. The strength of utility cashflow depends on the adequacy of end-user tariffs and the operational and financial efficiency of the enterprise. A potential additional source of funding

for clean energy investments – which can be substantial for fossil fuel dependent countries – are the savings resulting from avoided fossil fuel expenditures.

Analysis of historic cashflows in Kenya underscores the extent to which public budget allocations have been in decline and highlights the importance of cashflow from energy utilities as the main source of funding for the sector, with international cash grants playing a negligible role. However, cashflows have been declining from a peak of some US$900 million in 2016 to under US$600 million by 2023, not even keeping pace with GDP growth over the same period. Such a characterization of historic funding flows through a country's energy sector, based on local data collection, constitutes the third key input to MinFin, since historic funding trends provide a basis for projecting future cashflows.

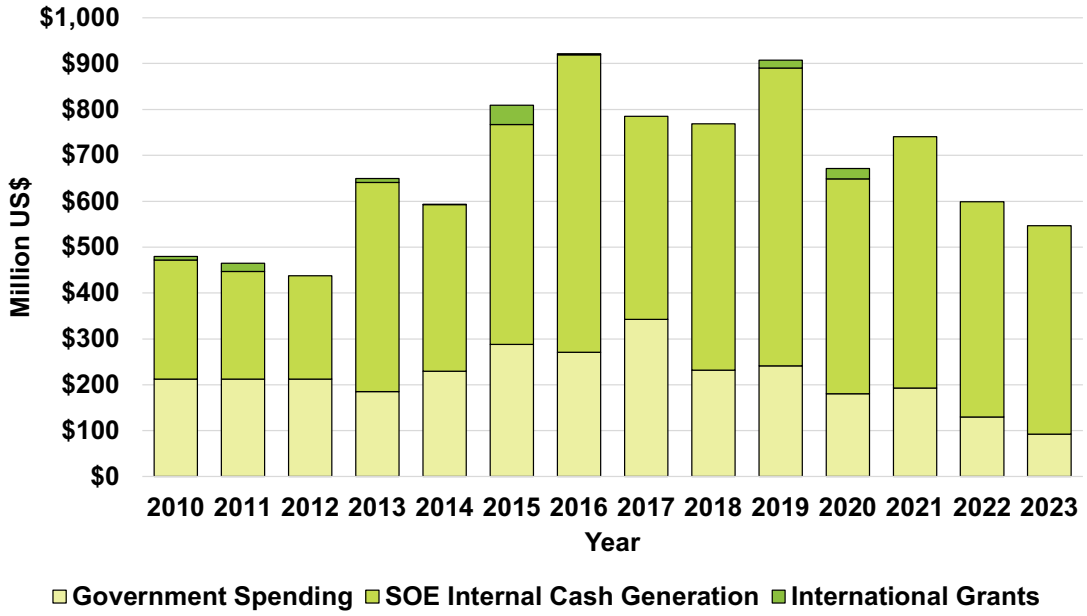


Figure 3. Historic sources of funding availability for energy investments.

Notes: SOE = state-owned enterprise

Closing climate finance gaps

Bringing these three elements together – investment needs, financing requirements and funding flow – the MinFin tool, provides a means of visualising any emerging climate financing gaps. To quantify these, financing requirements are first estimated, by applying *historic* financing terms to the *future* net zero investment plan. This determines the annual repayment that would be needed to service such a debt profile under business-as-usual conditions (see red line in **Figure 4**). Next, funding availability is also projected forwards based on the extrapolation of historic trends (see green line in Figure 4). By comparing these two projections, the presence of a climate financing gap can be established whenever the projected financing requirement (the red line in Figure 4) exceeds the projected funding availability (the green line on Figure 4).

Application of the MinFin tool to Kenya highlights that under a continuation of historic financing conditions, climate financing gaps could be expected to appear relatively rapidly for a net zero investment scenario, beginning in 2025 and

growing continuously to reach US$1.4 billion per year by 2050 and US$2.4 billion per year by 2070. These findings point to the need for improving upon historic financing conditions, and/or boosting sector cashflows, if the net zero transition is to be successfully implemented. For example, Kenya's climate financing gap could be overcome by accelerating growth of sector funding sources to 5.5% per year, equivalent to 0.4% of GDP by 2050.

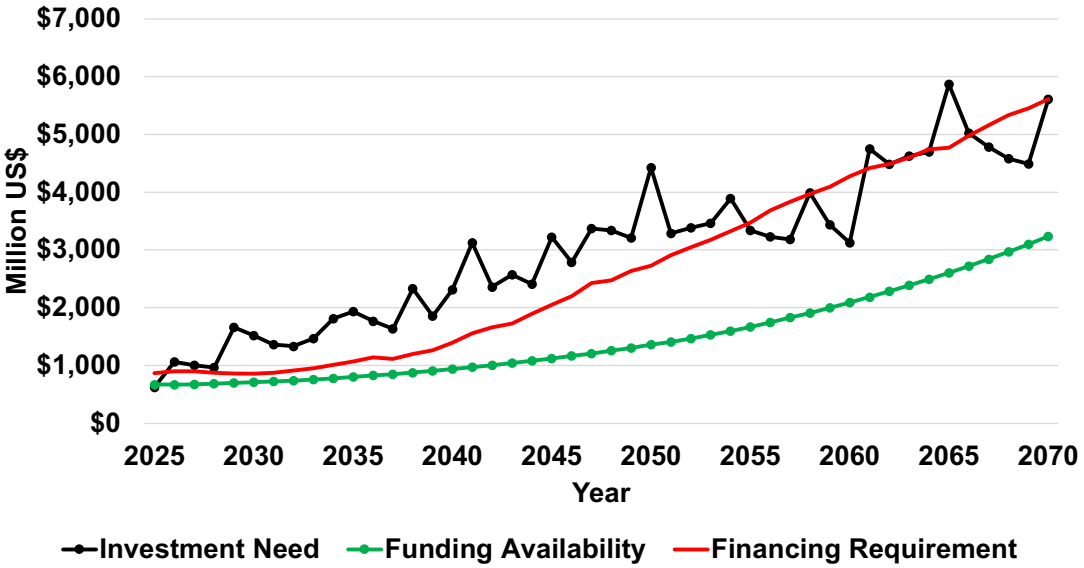


Figure 4. MinFin projections in absolute terms.

Notes: The black line represents the investment needed to build the necessary infrastructure to achieve net zero emissions, while the green line depicts the funding availability, comprising resources from government budgets, state-owned enterprise (SOE) generation, and international grants derived from historical data. The red line corresponds to the financial obligation for repaying loans used to finance the new infrastructure investments. When the red line exceeds the green line, it indicates that achieving net zero emissions is financially infeasible for the country.

Conclusion

Although preliminary, these simulations already indicate that the ability of LMICs to finance the climate transition is not something that can be taken for granted. Irrespective of global market conditions, the specific configuration of required investment profiles, available financing terms, and projected sector cashflows at the country level critically determine financial feasibility. The illustration provided for the case of Kenya, illustrates how rapidly this equation breaks down under the pressures generated by a mid-century net zero target, even for a country that is relatively advanced in its clean energy transition. The implication is that efforts to improve available financing conditions, while boosting sector funding streams, are an essential part of the support that LMICs will need to deliver on climate objectives. Clearly close collaboration between Ministries of Energy and Finance will be essential to find workable solutions to closing such climate financing gaps at the country level. To further support such collaboration, planned enhancements to the MinFin tool include computation of economic net benefits from climate investment, calculation of fiscal implications, and implications for debt dynamics.

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