



# The Clean Energy Equity Investment Gap

Mobilizing private finance in emerging markets

Co-authored by



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•• Allied Climate Partners

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# Executive Summary

## Objectives:

This report from Climate Policy Initiative (CPI) and the Glasgow Financial Alliance for Net Zero (GFANZ), with support from Allied Climate Partners and Three Cairns Group and analytical support from Wood Mackenzie, aims to fill a critical knowledge gap by providing detailed estimates of the financing required for the clean transition by asset class, sector, and region. By building on accepted transition scenarios, transaction, and cost data, and tracking over 70 real-world emerging market transactions that make use of catalytic finance, this report explores how catalytic, impact-driven investors can help close the gap in equity finance needed for clean energy infrastructure in three steps:

- **Breaking down total investment need** by asset class (equity and debt) across 10 emerging markets and developing economies (EMDEs) regions and nine key energy transition sectors.
- **Estimating the gap** between projected equity investment in a Base Case scenario and the equity necessary to support reaching global climate targets (Net Zero by 2050).
- **Defining the role of catalytic equity** as a tool to support capital formation.

## Urgency and relevance:

As official development assistance (ODA) declines and public finance providers are under pressure to “do more with less”, this work shows that catalytic equity can be an essential part of the development finance toolkit. This analysis aims to help development finance institutions, their shareholders, and philanthropies channel their limited resources more effectively and efficiently in order to help mobilize much more private capital towards climate and development priorities on commercial terms.

## Takeaways:

### 1. Equity is a critical component of capital formation but underutilized in the development finance toolkit.

- Climate and development actors have historically focused on debt financing.
- Equity leads transactions by taking on early-stage risk and providing the foundation for leverage — leading to larger total investment volumes in a project or fund.

### 2. Delivering the clean energy infrastructure required in EMDEs requires significantly increased volumes of equity finance.

- In a Base Case scenario, consistent with observed policy and technology trends, equity investment from 2025 to 2035 is expected to grow at a 5.4% compound annual growth rate (CAGR).
- Reaching the estimated scale of equity investment required to support an ambitious scenario consistent with Net Zero would require growth of more than double this rate: a 13.1% CAGR.
- Annual equity investment in the Base Case is projected at \$160 billion by 2035. A Net Zero scenario would require \$375 billion annually, revealing a **\$215 billion annual equity gap**. This total equity need represents a fourfold increase from today’s levels.

## The Clean Energy Equity Investment Gap

### **3. Early evidence from a review of 70+ transactions suggests that equity invested on sub-commercial terms — ‘catalytic equity’ — could be a powerful tool to mobilize capital.**

- Catalytic equity from philanthropies and official sector institutions mobilizes external capital by reducing risk or enhancing returns for other investors.
- Based on available transaction data, one dollar of catalytic equity has been shown to unlock \$4 in intermediated equity, \$9 in project-level equity, and, \$30 in total project capital expenditure (CapEx) once debt has been leveraged.

### **4. The mobilization power of catalytic equity implies only modest volumes could help reduce the equity gap and support increased total investment volume in EMDEs.**

- We estimate \$12–\$25 billion in catalytic equity annually by 2035 could help address the \$215 billion equity gap in EMDEs. Many additional measures, including supportive policy action, would also be required to fully close the gap.

## **Recommendations to the climate and development finance community:**

- Increase overall equity deployment to meet the \$375 billion in annual equity needed by 2035.
- Unlock additional catalytic equity volumes from providers with the risk-return appetite to provide it, aiming to meet the \$12–25 billion in catalytic equity needed by 2035.
- Develop the insights and learnings needed to ensure that catalytic equity is well targeted and minimally concessional.

Table 3 offers further detailed recommendations of specific ways development finance providers, impact-oriented investors, philanthropies, and commercial financial institutions can contribute to these goals.

# 1. Equity is a critical component of capital formation, but underutilized in the development finance toolkit

Equity is essential for scaling projects and companies. By committing early and taking on risk, equity investors lead transactions and provide the foundation for financial leverage, since debt investors typically follow equity. This initial support helps businesses progress through the development phase and grow the pipeline of bankable projects. Serving as the “cushion” on a balance sheet, equity can help to enhance financial stability through periods of weaker or more uncertain cashflow. Equity invested in infrastructure, energy projects, and corporations helps grow the productive capital base of EMDEs and reduces the risks associated with debt burdens for sovereigns.

Many actors invest equity, including corporates, infrastructure project developers, institutional investors,<sup>2</sup> sovereign wealth funds, impact investors, philanthropies, Multilateral Development Banks (MDBs), Development Finance Institutions (DFIs), and Vertical Climate and Environmental Funds (VCEFs).<sup>3</sup> Without initial risk-taking by equity owners, projects struggle to raise debt, financial structures cannot close, project development stalls, and economic development objectives fail to materialize, slowing infrastructure development and the energy transition. **Simply: No equity; no debt; no debt, no projects; no projects, no energy transition.**

## Equity is an underutilized climate finance tool

At its inception at Bretton Woods in 1944, the modern multilateral development banking system was established to solve a hard currency financing problem by lending dollars to countries seeking to accelerate development and post-war reconstruction. This original design feature has been a source of strength, scale, and success, allowing development banks to provide loans to developing countries through all phases of the economic and credit cycle, with almost no losses. Those within the institutions have, at various times, understood the importance of equity – but their capacity to mobilize the amounts needed is inhibited by the need to maintain the AAA rated balance sheets that their core business model requires.

As a consequence, about 85% of climate finance from MDBs in 2023 was debt, while equity, grants, guarantees, and other instruments **accounted for just 15%**.<sup>4</sup> Deploying equity is more expensive than debt, as it requires MDBs to hold significantly more capital in reserve.<sup>5</sup> These higher capital charges, combined with shareholder country risk appetites, limit the capacity of some official sector institutions to expand their equity allocation.

Of course, scaling equity investment alone is not enough. Strong policies, regulations, cost-effective technologies, quality project development, and experienced fund managers are also essential to building scaled capital markets. Nevertheless, a stronger focus on equity could reinforce private capital mobilization as a primary objective of the development finance system.

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1 Including via investing retained earnings into new projects.

2 Directly or indirectly through private equity funds and other asset managers.

3 VCEFs include the Green Climate Fund (GCF), the Global Environmental Facility (GEF), the Adaptation Fund, and the Climate Investment Funds (CIF).

4 MDBs (2024), [2023 Joint Report on Multilateral Development Banks' Climate Finance](#). Table 6, p. 10. Debt instruments include investment loans, lines of credit, policy-based financing, and results-based financing instruments.

5 Equity deployment can require up to five times the capital charge (\$0.80 per \$1 deployed) as senior debt (\$0.16 per \$1 deployed) for IFC; in other MDBs/DFIs, who leverage their balance sheets, this can be higher. World Bank Group Private Sector Investment Lab Equity & Junior Capital Working Group Analysis, drawing on input from the IFC Equity Portfolio team, March 2024.

## 2. Delivering the clean energy infrastructure EMDEs need will require significantly more equity investment

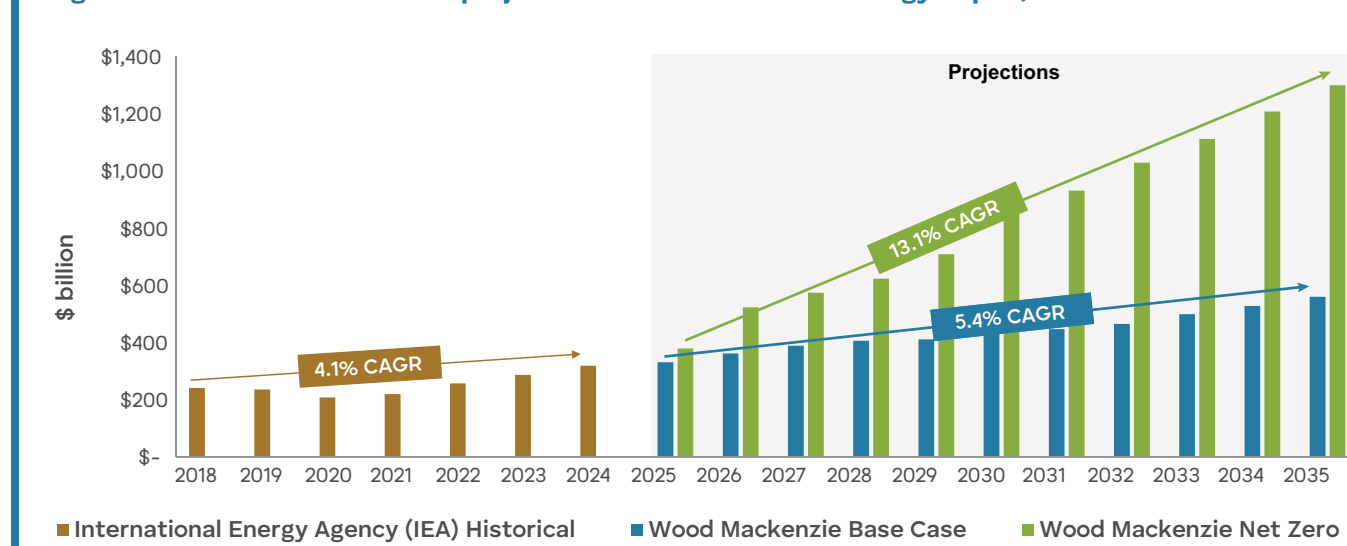
In 2024, investors deployed **\$319 billion**<sup>6</sup> in total CapEx (through debt and equity) in clean energy infrastructure in EMDEs. Though EMDEs generate over one third of global GDP, this total represents just 16% of global clean energy CapEx.<sup>7</sup>

CPI estimates that **35%** EMDE clean energy investment – about **\$100 billion**<sup>8</sup> – is equity. By tracking climate finance flows, CPI offers a detailed breakdown of investment that highlights future financing needs by asset class. See Box 1.

### Projected Gap

If the energy transition continues consistent with observed policy and technology trends (the Base Case)<sup>9</sup>, global temperatures could rise by 2.5°C above pre-industrial levels by 2100<sup>10</sup>. In this scenario, annual equity investment would grow just slightly faster than in recent years, reaching \$160 billion by 2035, representing a **5.4% CAGR** over 10 years. See Figure 1. This **\$160 billion** of equity investment would support **\$560 billion** in total annual CapEx.

**Figure 1: Historical baseline and projected annual EMDE clean energy CapEx, 2018-2035<sup>11</sup>**



6 International Energy Agency (IEA) (2024), [World Energy Investment 2024](#).

7 OECD (2024), [International Comparison Program](#). 2021, PPP basis. Global flow of clean energy investment ~\$1.9 trillion (\$330 billion/\$1.9 trillion -16%).

8 CPI (2025), [2025 Global Landscape for Climate Finance](#). This share refers to 2023 values.

9 The 2024 Base Case Outlook published in October 2024 is Wood Mackenzie’s reference case, representing their assessment of the most likely outcome for the global energy system based on the projected evolution of current policies and future technological advancements.

10 Temperature outcomes are based on cumulative emissions profiles and the carbon budgets estimated by the Intergovernmental Panel on Climate Change’s Sixth Assessment Report. Emissions profiles account for CO<sub>2</sub>-equivalent emissions from coal, natural gas and oil in end-use demand sectors, industrial processes, and electricity and hydrogen production, emissions reductions from carbon capture, utilization, and storage (CCUS), direct air capture (DAC), and nature-based solutions (NbS). Emissions reductions are estimated for projected investments in CCUS, DAC and NbS, as well as net changes to natural carbon sinks.

11 Source for historical baseline: IEA (2024), [World Energy Investment 2024](#). Source for Base Case and Net Zero scenarios: Wood Mackenzie. See Appendix A. Note: historical and projected estimates comprise modestly different technology and regional scopes. See Box 1.

### BOX 1

## Establishing a historical baseline for EMDE clean energy infrastructure investment

This analysis combines data from the International Energy Agency (IEA) and CPI to create a comparable baseline of clean energy infrastructure investment in EMDEs. Institutions<sup>12</sup> use different methods, scopes, and definitions when tracking clean energy investment, leading to large variations and limiting their comparability.<sup>13, 14</sup>

The historical baseline for EMDE clean energy CapEx shown in Figure 1 uses IEA figures.<sup>15</sup> While the IEA's approach contains modest differences to Wood Mackenzie's, both use similar 'top-down' methods. Wood Mackenzie estimates investment by taking the product of modeled technology deployment in its scenarios and expected unit (CapEx) costs at the time of commercial operation, based on asset data, project tracking, and integrated energy model outputs. They adjust costs over time to reflect technology learning rates and supply patterns. The IEA uses a similar approach, based on primary data and estimated additions of ongoing capital expenditure on assets.<sup>16</sup> In contrast, CPI's estimates come from a 'bottom-up' tracking of financial commitments, transactions, and projects by instrument and provider at financial close.

This analysis combines both methods to project total CapEx over time and identify the gap between expected and required growth and break down projected flows by debt and equity using CPI's detailed data.

Together, these complementary approaches can improve our understanding of climate finance trends such as:

- Investment shifts across sectors and regions in response to risk;
- Construction timelines from financial close to operation; and
- Uncertainty in top-down estimates.

As CPI expands its data coverage and improves its methods, the gap between its detailed tracking and broader estimates continues to narrow.

Building out the low-cost, clean energy and related infrastructure of a net zero economy, requires more capital expenditure to be invested sooner, as renewables have higher up-front costs but are cheaper to operate over time. In this scenario, annual equity investment would rise to **\$375 billion** at a **13.1% CAGR**. This sum would support **\$1,300 billion** in total annual CapEx by 2035.<sup>17</sup> See Figure 1. Major shifts in supportive policy and the pace of technological progress will also be critical to achieving a Net Zero 2050 outcome, in line with the goals of the Paris Agreement.

12 Including the IEA ([World Energy Investment 2024](#)), OECD ([CRS: Creditor Reporting System](#)), UNFCCC ([Sixth Biennial Assessment and Overview of Climate Finance](#)), and CPI ([Global Landscape of Climate Finance 2025](#)).

13 For further detail, see Section 3.4.2 of CPI (2025), [Global Landscape of Climate Finance 2025: Tracking Methodology](#).

14 Differences in scope and findings between IEA and CPI historical baselines are detailed in the [2025 Global Landscape for Climate Finance](#) Annex Table A.1.

15 IEA (2024), [World Energy Investment 2024](#).

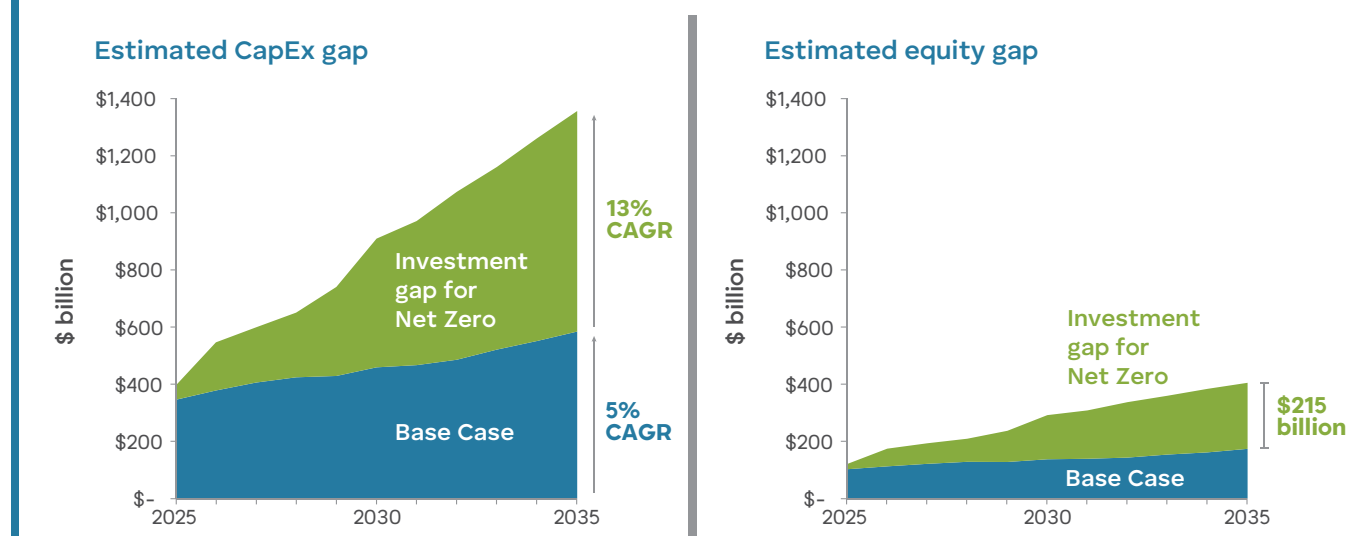
16 IEA (2024), [World Energy Investment 2024](#). See [Methodology Annex](#).

17 To meet this volume, capital would need to come from a combination of public, private, domestic, and international sources. One area of future work could be to map these sources of capital and the areas of the gap that they are best-placed to fill.

## The Clean Energy Equity Investment Gap

Without further interventions, the “equity gap” – the difference between equity invested in the Base Case and the Net Zero case<sup>18</sup> – could rise from \$15 billion per year today to \$215 billion per year by 2035. See Figure 2. This growing gap severely threatens the likelihood of realizing climate and development objectives in EMDEs.

**Figure 2: Annual CapEx and equity gaps in EMDE clean energy infrastructure (2025–2035)**



Key results for both the Base Case and the Net Zero scenarios are summarized in Table 1.

**Table 1: Estimated annual CapEx and equity investment gaps in EMDE clean energy infrastructure**

	2025		2035	
	Base Case (2.5°C)	Net Zero (1.5°C)	Base Case (2.5°C)	Net Zero (1.5°C)
Projected CapEx	\$330 billion	\$380 billion	\$560 billion	\$1,300 billion
Projected Equity	\$100 billion	\$115 billion	\$160 billion	\$375 billion
Projected 'Equity Gap'	—	\$15 billion	—	\$215 billion

This analysis offers insights across 10 EMDE regions and nine key energy transition sectors. The level of detail provided enables a greater understanding of areas where equity investors can most effectively close the equity gap. See Box 2 and Appendix B.<sup>19</sup>

<sup>18</sup> Implied financing needs account for current levels of leverage in project financing and estimate changes as technology deployment increases and economic growth. See Appendix A.

<sup>19</sup> Note: While all results quoted in the body of this paper are for the Base Case and Net Zero scenarios, additional results on a Country Pledges scenario are provided in Appendix B. This scenario is aligned with 2°C of warming, where CapEx needs are defined by the levels required for countries to achieve their stated climate commitments.

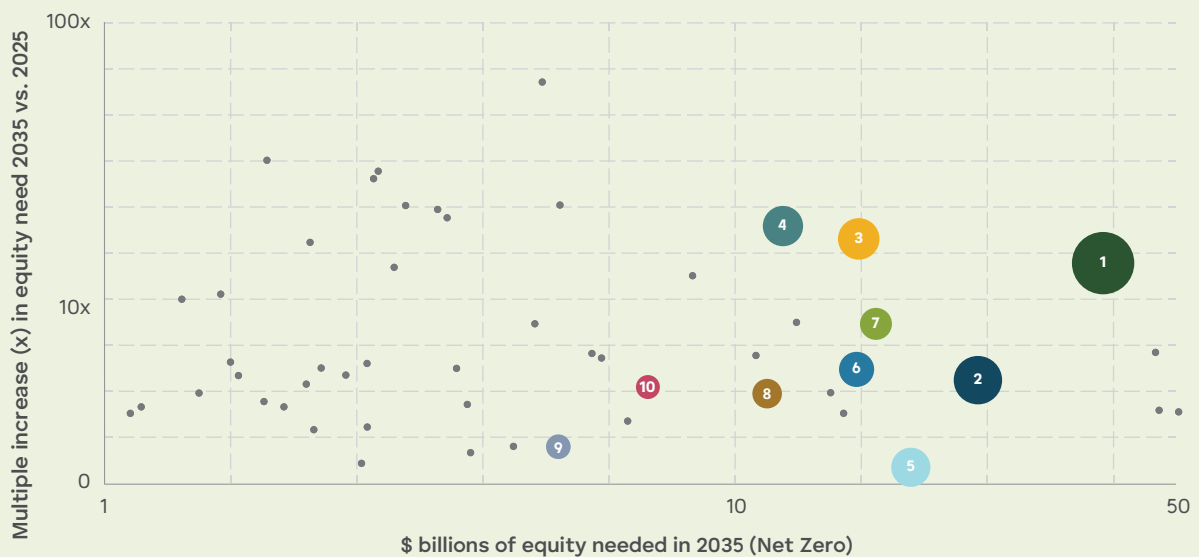
**BOX 2**

### Closing the equity gap with a focus on key sectors and regions

The ‘equity gap’ is concentrated. **Of the 90 region-sector pairs we model, the top 10 account for nearly half of the equity gap.** Three sectors in India – power generation, buildings, and transport – represent nearly one quarter of the equity gap.

Investors can use this dataset as a high-level guide to begin to identify asset allocation opportunities according to their size, risk tolerance, and policy expectations. Asset allocators should consider a strategic focus on these largest gaps and areas of growth.

**Figure 3: Growth and needs in EMDE sectors and regions, 2035**



Region-sector pair	2035 equity gap, \$ billions <small>(between Net Zero and Base Case scenario)</small>	Percentage of total 2035 equity gap <small>(between Net Zero and Base Case scenario)</small>	2035 equity need, \$ billions <small>(Net Zero scenario)</small>	Multiple increase 2025–2035
1 India – Buildings	\$23.4	11%	\$35.8	9.1x
2 India – Power generation	\$14.1	7%	\$22.9	2.8x
3 India – Transport	\$10.4	5%	\$14.9	11.6x
4 Middle East – Buildings	\$9.8	5%	\$11.4	13.2x
5 Africa – Power generation	\$9.2	4%	\$18.1	1.2x
6 India – Grid & charging infrastructure	\$7.4	3%	\$14.8	3.1x
7 Africa – Buildings	\$6.2	3%	\$15.9	4.9x
8 Middle East – Power generation	\$5.3	2%	\$10.7	2.5x
9 Brazil – Power generation	\$3.7	2%	\$5.1	1.5x
10 Africa – Grid & charging infrastructure	\$3.4	2%	\$7.0	2.6x

Figure 3 below is a representation of three dimensions of the data: projected growth, total needs, and the scale of the gap. The X axis shows the total need under a net zero scenario in 2035; the Y axis shows projected growth from current levels, and the bubbles highlighted show the 10 region-sector pairs with the largest ‘equity gap’ between the Net Zero scenario and the Base Case in 2035. Data points for the Rest of World region are not highlighted given these represent a very broad geographic footprint, and some data points which show extremely high growth in the Net Zero scenario from a very low base today do not appear within the axes of the chart. See Appendix B for full data tables.

**BOX 3**

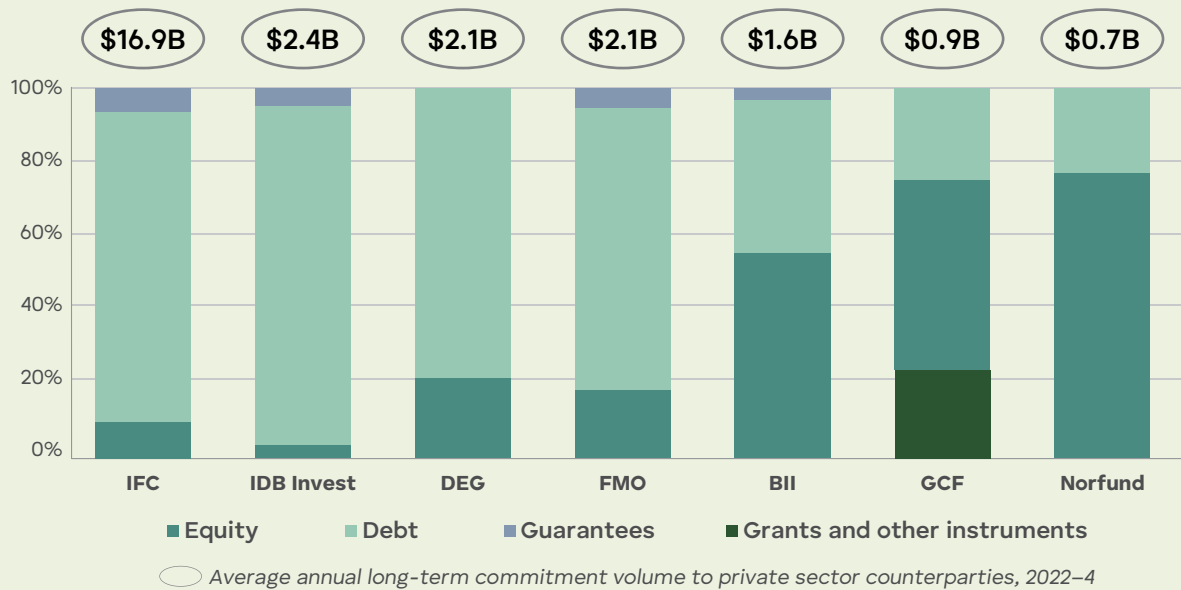
**Development finance institutions as equity and catalytic providers**

Debt remains the primary component (85%) of total MDB commitments.<sup>20</sup> We estimate that the total volume of equity deployed by MDBs, DFIs, and VCEFs to private sector projects or counterparties eligible for climate finance<sup>21</sup> totaled roughly \$3 billion per year in 2022–2024.

The chart below compares a sample of major ‘official sector’ providers of equity finance for all development priorities to the regions in scope of this paper.<sup>22</sup> It includes:

- Private sector-focused arms of the multilateral development banks:<sup>23</sup> the International Finance Corporation (IFC) and IDB Invest;<sup>24</sup>
- Four European Development Finance Institutions<sup>25</sup> (Britain’s BII, Germany’s DEG, The Netherlands’ FMO,<sup>26</sup> and Norway’s Norfund); and
- The Green Climate Fund (GCF), which is the only Vertical Climate & Environmental Fund with a mandate to provide equity finance to the private sector.

**Figure 4: Proportion of Equity in annual private sector commitments across key development finance providers**



*Continued on next page*

20 MDBs (2024), 2023 Joint Report on Multilateral Development Banks’ Climate Finance. Table 6, p. 10. Debt instruments include investment loans, lines of credit, policy-based financing, and results-based financing instruments.

21 While the scope of this paper excludes adaptation and resilience, this review of major institutions includes all climate finance, the overwhelming majority of which is invested into mitigation within the energy system. The exception is GCF which has a mandate to fund 50% mitigation and 50% adaptation.

22 Data used and totals reported here are across all development priorities given institutional differences in reporting and tagging of transactions for climate change mitigation. Data used is for new long-term commitments from these providers’ Annual Reports or Accounts, averaged across the most recent three financial years available (typically 2022–4). Due to data availability limitations, IDB-Invest and FMO are estimated slightly differently — these are noted in the footnotes below.

Key factors driving variation across institutions include:

- **Mandate and history:** While most of these institutions were formed with lending mandates, BII originated as an equity investor focused on funds and corporates and the GCF has a flexible capital mandate, typically using grants or low-cost loans but with the ability to invest equity in private sector counterparties.
- **Shareholder risk-return appetite:** Equity carries higher valuation volatility. Institutions with limited capacity for new capital injections may prioritize capital recycling and limit equity exposure. Where an MDB takes the additional risk of equity investment, they would need to be compensated with appropriate levels of return which, for some, has not been borne out in historical experience particularly when taking direct exposure rather than via funds.
- **Balance sheet leverage:** Some organizations, such as IFC, IDB Invest, and FMO leverage their balance sheets and must maintain credit ratings. High capital charges for junior equity positions discourage larger equity allocations.
- **Internal incentives:** Several factors affect the length of time taken to originate a deal, but equity deals and those with higher development impact can take longer to originate. Institutions with annual deployment or climate finance targets may favor quicker-to-disburse debt instruments.

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23 Other MDBs with mixed sovereign and non-sovereign operations have been excluded from this analysis. Further information on the share of equity within their private sector portfolios can be found from the [2025 MDB Comparison Report](#), p. 19 (accessed 7th November 2025). For AfDB, AfDB, ADB, IsDB, and NDB, private sector operations are a small share of their overall portfolios. For EBRD and EIB, private sector operations are much larger, however they are not included here given that their regional scope does not fully align with the regions covered in this paper.

24 IDB Invest reports only annual new own-account long-term commitments, but only reported an instrument breakdown in 2022; long-term commitments are therefore scaled by portfolio asset allocation using data in the [2025 MDB Comparison Report](#), p. 19 (accessed 7th November 2025).

25 Some other large DFIs such as Proparco have been excluded given the lack of instrument-specific commitment data included in their publicly available reporting.

26 FMO did not report equity as a share of its new commitments in 2024; equity as a share of the outstanding portfolio is shown here instead.

### 3. Early evidence suggests that catalytic equity could be a powerful tool to mobilize capital

#### What is catalytic equity?

Catalytic equity is capital that mobilizes other investors by reducing risk or enhancing returns. By crowding in additional capital, catalytic equity accelerates capital formation and helps projects, companies, and funds achieve commercial viability.

By blending catalytic equity into deals, investors can unlock or scale projects or business models that might not otherwise happen, generating significant additionality. Successful examples create a demonstration effect and build confidence among commercial investors, reducing – or perhaps eliminating – the need for catalytic equity in future transactions.

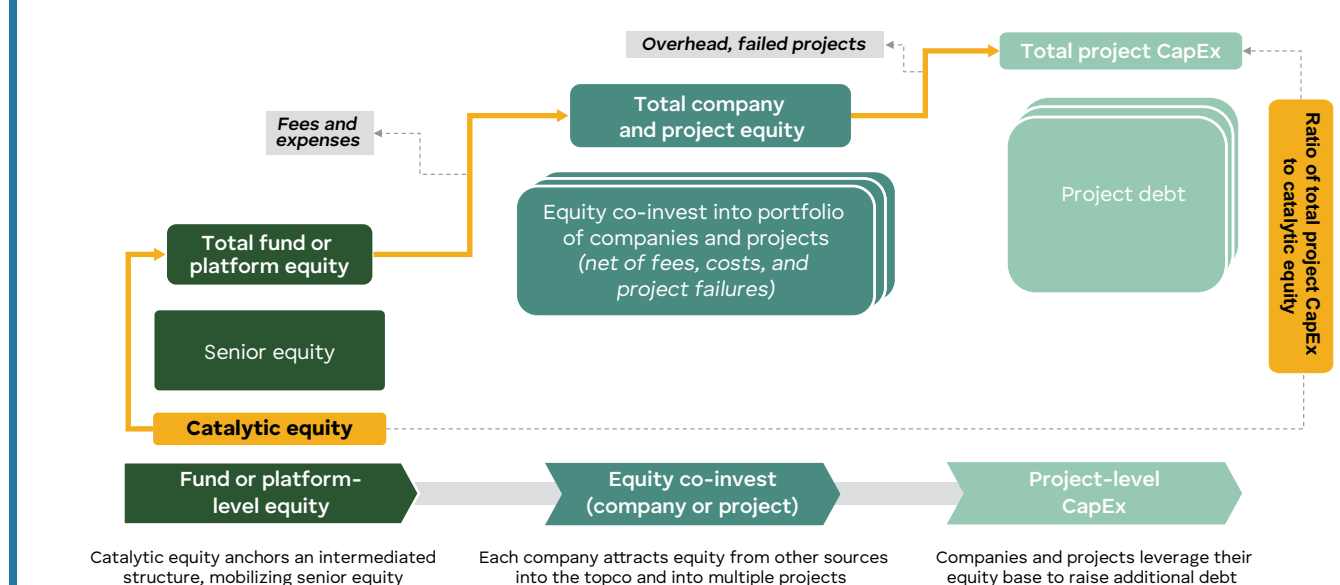
Beyond mobilizing capital, catalytic equity can have broader positive effects, including:

- **Compressing deal timelines** by bearing risk and enhancing terms for senior investors;
- **Reducing key bottlenecks** in the flow of capital; and
- **Inducing policy and regulatory improvements** by highlighting market inefficiencies, or by providing policymakers with greater confidence that private capital will flow in response to policy action.

#### Catalytic equity’s mobilization potential

Figure 5 illustrates how catalytic equity can mobilize additional investment into companies, platforms, and projects. In the case of fund investing, catalytic equity can help bring in senior investors. These funds then back companies and projects that attract additional equity rounds and use their equity to raise debt, amplifying the total volume of capital mobilized.

Figure 5: Simplified illustration of catalytic equity at work

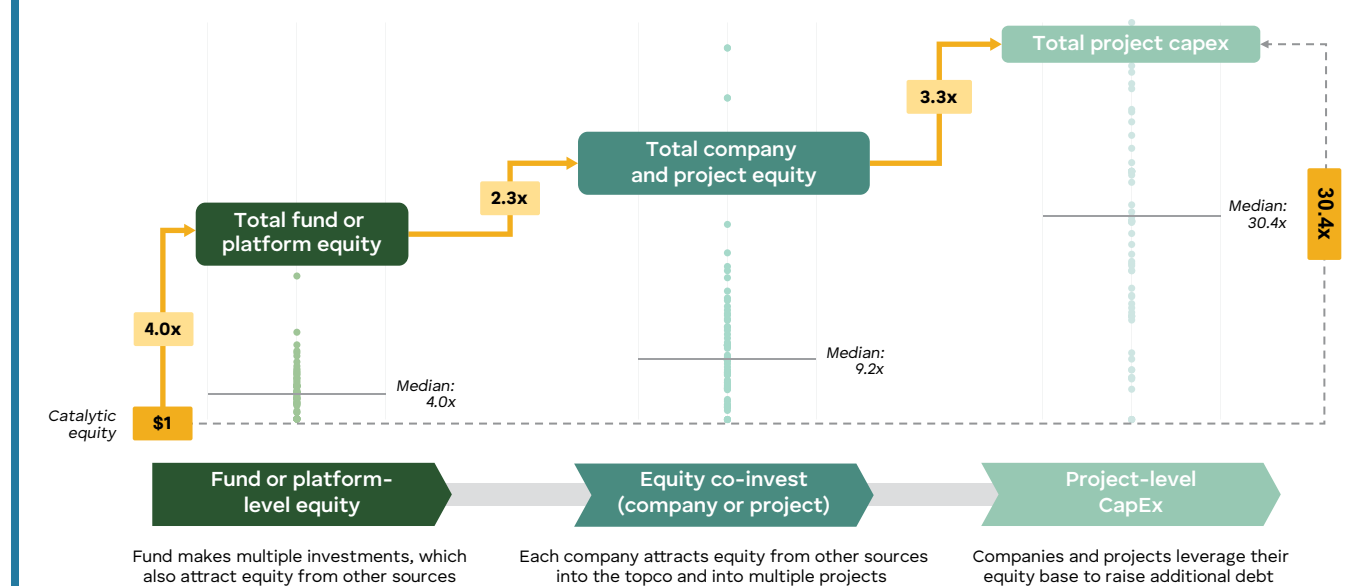


## The Clean Energy Equity Investment Gap

Initial evidence from a review of more than 70 recent EMDE transactions shows that catalytic equity can mobilize significant additional capital: about **4x** in intermediated equity, **2.3x** in company or project equity, and **3.3x** in project debt. Together, this equates to roughly **9x** total equity mobilization and **30x** total project investment (equity and debt) over the life of the investment. See Figure 6.

For example, a \$25 million catalytic equity commitment could attract \$100 million in senior equity (4x). **If this equity draws matching co-investment at the company level, total equity raised would reach \$250 million — a 9x multiplier.**<sup>27</sup> With debt financing added at typical leverage ratios, total project capital could reach about \$750 million. While claims on mobilization can be subjective, the evidence suggests that each dollar of catalytic equity can leverage many more dollars of private capital over the life of a project or fund.

**Figure 6: Estimated multiples across 70 sample transactions employing catalytic equity<sup>28</sup>**



Boxes 4–9 show real-world examples of this effect, including platform-level investments (Ayana Renewable Power, Vertelo), company-level investments (GreenCell Mobility, Xurya), and project-level investments (Djibouti Wind, Golomoti Solar).

<sup>27</sup> Calculated as  $(\$250 \text{ million} - \$25 \text{ million}) / \$25 \text{ million}$ .

<sup>28</sup> Note: All transaction multiples are estimated based on available data for 70+ real-world transactions (either already closed, or currently being realized). To generate estimates beyond the first level of mobilization (from catalytic equity to total fund or platform equity), some key simplifying assumptions are made. These are: that funds or platforms secure a further 3x in co-investment from external partners, that fund/platform fees/expenses are 20%, that financed projects have a failure/attrition rate of ~25%, that a project sponsor provides 75%, and that projects are financed with a 70/30 equity debt split. In each chart, one dot represents one observed transaction.

### Fund or platform-level equity case studies

#### BOX 4: CASE STUDY

##### MACQUARIE ASSET MANAGEMENT | Vertelo

Macquarie Asset Management developed and launched the Vertelo<sup>29</sup> platform in India in April 2024. It aims to finance the commercial electric vehicle sector by supporting leasing and financing models for fleets, charging infrastructure, and new energy generation solutions.

The [Green Climate Fund](#) (GCF) anchored the platform with a \$200 million first-loss catalytic equity commitment, which was instrumental in providing downside protection to institutional investors entering an untested, nascent market with high up-front costs. Within six months of receiving funds, Vertelo appointed its CEO and management team, completed its first transactions, and signed cooperation agreements with local operators.

Macquarie Asset Management announced in August 2025 that it had closed the first fundraising round for the platform, having secured further \$205 million from institutional investors including the Macquarie Green Energy Transition Solutions Fund, Allianz Global Investors, and Australian Ethical. Over time, Vertelo targets further mobilization of around \$1.5 billion to accelerate India's EV transition, equivalent to over a 7.0x multiple on GCF first-loss catalytic equity.

#### BOX 5: CASE STUDY

##### BRITISH INTERNATIONAL INVESTMENT (BII) | Ayana Renewable Power

With 69% of its portfolio in equity,<sup>30</sup> BII takes earlier, risk-bearing positions than most DFIs to build investable platforms that crowd in private capital. Where existing investment pipelines are thin, but market or sector growth potential is high, BII has directly launched and anchored platform businesses.

In 2018, BII seeded Ayana Renewable Power ("Ayana") with \$100 million of equity.<sup>31</sup> In 2019, a further \$330 million of equity was committed by India's National Investment and Infrastructure Fund (NIIF) and Eversource, alongside BII.<sup>32</sup> In December 2020, shareholders announced \$350 million more,<sup>33</sup> bringing the primary equity mobilized by \$230 million in total BII commitments to approximately \$450 million over two years, a **2.0x** multiple on equity.

Ayana has attracted strong leverage at the project level as utility-scale renewables in India have matured rapidly, having received approximately \$1.4 billion in debt financing up to 2025.

By early 2025, Ayana had built 2.1 GWp of operational renewable energy assets with another 1.9 GWp under construction.<sup>34</sup> After a competitive bidding process Ayana was exited to ONGC-NTPC Green (ONGPL) for a **\$2.3 billion** enterprise value.<sup>35</sup>

29 [Global Capacity Building Coalition, Macquarie Asset Management](#). Accessed 11 October 2025.

30 Foreign, Commonwealth, & Development Office (2022), [Evaluating the Impact of British International Investment's Infrastructure Portfolio](#).

31 British International Investment (2025), ["Ayana Renewable Power"](#). Accessed 11 October 2025.

32 National Investment and Infrastructure Fund (2019), ["Eversource Capital and NIIF announce partnership with CDC to invest in its renewable platform Ayana"](#). Of this fundraising round, \$260 million came from NIIF and Eversource and \$70 million came from BII.

33 Eversource Capital (2020), ["PE funds invest \\$390mn in renewable energy platform Ayana"](#). December 2020. Of this fundraising round, \$320 million came from NIIF and Eversource and \$70 million came from BII.

34 NTPC Green Energy (2025), [ONGC NTPC Green Private Limited](#).

35 NTPC Green Energy (2025), [ONGC NTPC Green Private Limited](#).

## Company or project-level equity case studies

### BOX 6: CASE STUDY

#### EVERSOURCE I | GreenCell Mobility

Eversource Capital's Green Growth Equity Fund ("Eversource") is among India's largest climate investment funds, with \$741 million closed in early 2022. The fund had two sleeves: a blended sleeve of \$331 million and a non-blended sleeve of \$410 million. The blended sleeve was anchored by \$81 million of first-loss catalytic equity from the Green Climate Fund (GCF), resulting in 3x mobilization of commercial and DFI capital.

In 2019, Eversource incubated GreenCell Mobility ("GreenCell"), its flagship electric mass mobility business, and helped it secure its first contracts for electric bus deployment in multiple Indian states. As of 2024, GreenCell is now the largest e-bus platform in India, operating over 1,200 buses across 14 states, displacing diesel emissions and expanding clean public transit access.<sup>36</sup>

GreenCell has gone on to raise more than \$160 million of follow-on debt<sup>37</sup> and \$37 million in follow-on equity.<sup>38</sup> Already, GCF's catalytic exposure to GreenCell has mobilized **10.5x**<sup>39</sup> in equity and debt capital. If GreenCell continues to scale, this number could grow substantially higher.

### BOX 7: CASE STUDY

#### SOUTHEAST ASIA CLEAN ENERGY FACILITY (SEACEF II) | Xurya

Founded in 2020, the Southeast Asia Clean Energy Facility (SEACEF) began as a \$22.5 million, philanthropically funded investment facility managed by Clime Capital. It provides catalytic capital to derisk climate-focused platforms and businesses in Vietnam, Indonesia, and the Philippines.

SEACEF invested \$1 million in Xurya, an early mover in Indonesia's nascent commercial and industrial solar sector. This critical investment accelerated Xurya's growth and enabled it to attract additional financing. Building on SEACEF's success, including Xurya's, Allied Climate Partners anchored SEACEF II, a blended \$175 million fund with a 25% catalytic equity layer, achieving a 3x mobilization within the fund. In 2024, Xurya raised \$55 million, led by \$10 million from SEACEF II. In June 2025, Xurya raised approximately \$21 million in debt from UOB Indonesia to develop an additional 50 sites.<sup>40</sup> This represents **over 75x** overall mobilization over and above SEACEF I's original highly catalytic investment. To date, Xurya has built 127 MWp of solar capacity, with another 80 MWp under construction.

While SEACEF II is still early in its life, Clime Capital is beginning to have visibility on potential mobilization across its portfolio. We estimate that catalytic equity's contribution to SEACEF II has the potential to mobilize up to **30x** in equity and debt across the portfolio.

36 Global Private Capital Association (2024), [Deal Case: GreenCell Mobility](#).

37 Pitchbook (2025), [GreenCell Mobility Affiliates](#). Accessed 8 October 2025.

38 International Finance Corporation (2025), [IFC Project Information & Data Portal](#). Accessed 31 September 2025.

39 This estimate isolates the mobilization of GCF capital through the blended sleeve only. It does not include the non-blended sleeve.

40 UOB Indonesia (2025), [Green Term Loan with Xurya Daya Indonesia](#).

## Project-level CapEx case studies

### BOX 8: CASE STUDY

#### CLIMATE INVESTOR ONE | Red Sea Power's Djibouti Wind Project



Photo credit: Red Sea Power

[Climate Investor One](#) (CI1), managed by [Climate Fund Managers](#) (CFM), is a blended finance facility designed to accelerate renewable energy across emerging markets.

CI1 is composed of two funds:<sup>41</sup> a \$56 million Development Fund comprising of 100% catalytic capital that absorbs early-stage project development risk, and an \$879 million Construction Equity Fund that mobilizes private investment into asset construction. The Construction Equity Fund is made up of three layers: a 40% capped senior equity return layer, a 40% commercial equity layer, and a 20% first-loss layer.<sup>42</sup>

This case study focused on CI1's investment in the [Red Sea Power Djibouti Wind project](#) by the Construction Equity Fund. The wind farm project is a collaboration between CFM, Red Sea Power (RSP), the Africa Finance Corporation (AFC), Dutch entrepreneurial development bank FMO, and Great Horn Investment Holding (GHIH), an investment firm owned by a unit of the Djibouti Ports & Free Zones Authority and Djibouti Sovereign Fund.

The Construction Equity Fund committed \$1 million in development capital and \$25 million in equity to the project. The \$122 million<sup>43</sup> project – Djibouti's first wind project – commenced construction in January 2020 after an 18-month development process and began commercial operations of 60 MW in September 2023, boosting the country's overall generation capacity by 50%. This project mobilized an estimated **23.4x**<sup>44</sup> of project equity, alongside other owners of project risk.

An expansion phase is already underway, with further mobilization potential. With the Djibouti Wind Farm, CFM linked development and construction funding, used equity during construction, and applied blended finance to aggregate capital. CFM has since replicated this approach across its Climate Investor Two and Three strategies, yielding 17 additional projects currently under construction or operational across its focus markets of Africa, Asia and, Latin America.

41 Climate Fund Managers (2025), "[Funds](#)". Accessed 7 October 2025.

42 The fund's capped senior equity and commercial equity tier LPs include: FMO, Swedfund and FinDev Canada, the Norwegian pension fund KLP, Aegon Asset Management and Troidos Bank.

43 FMO (2023), "[Djibouti Inaugurates Red Sea Power, Country's First Wind Farm](#)".

44 Calculated as  $(\$122 \text{ million} - \$5 \text{ million} \times 20\% \text{ first loss layer}) / (\$25 \text{ million} \times 20\% \text{ first loss layer}) = 23.4x$ .

BOX 9: CASE STUDY

PRIVATE INFRASTRUCTURE DEVELOPMENT GROUP | Golomoti Solar



Photo credit: PIDG

The [Private Infrastructure Development Group](#) (PIDG) is a government-funded development finance organization offering a variety of derisking tools, including early-stage project development funding and concessional equity through its regional InfraCo arms.

PIDG, via InfraCo Africa, co-developed the 28.5 MWp solar and 5 MW/10 MWh lithium-ion battery energy storage system at Golomoti in Malawi with [JCM Power](#), the first utility-scale paired solar and storage facility in Malawi and among the first in Sub-Saharan Africa. InfraCo Africa invested \$2.3 million in early-stage project development equity, which alongside a £2.1 million grant from Innovate UK<sup>45</sup> for the battery energy storage system, provided initial project support.

InfraCo then increased its sponsor commitment to a total of \$8 million, equivalent to 23% of the total project cost of \$34.8 million.<sup>46</sup> The project then attracted the remaining equity of \$25 million from JCM Power via a long-term loan from the US Development Finance Corporation,<sup>47</sup> \$24 million MIGA political risk guarantee,<sup>48</sup> liquidity cover from the Regional Liquidity Support Facility,<sup>49</sup> and a loan from Denmark's IFU,<sup>50</sup> implying mobilization of upwards of **3.1x** at the project level, alongside necessary support from grants, guarantees, and liquidity cover as noted above.

The plant was switched on in 2022 under a 20-year power purchase agreement with Malawi's state utility, ESCOM. Following three years of successful commercial operations, InfraCo exited the project in early 2025 and sold its 25% stake to a regional institutional investor (Old Mutual's Infrastructure Investment Trust Fund in Malawi).<sup>51</sup>

45 British High Commission Lilongwe (2021), "[UK supports Malawi's energy diversification drive](#)".

46 Private Infrastructure Development Group, "[Golomoti Solar](#)". Accessed 15 October 2025.

47 DFC (2022), "[DFC Commits \\$25 million Loan for Golomoti Solar, Expanding Renewable Energy Generation and Storage in Malawi](#)".

48 MIGA, "[Golomoti Solar](#)". Accessed 12 October 2025.

49 ATIDI (2021), "[ATI Supports the 20 MW Golomoti Solar Power Plant in Malawi with its Regional Liquidity Support Facility](#)".

50 Impact Fund Denmark, "[Golomoti](#)". Accessed 12 October 2025.

51 Private Infrastructure Development Group (2025), "[InfraCo to sell its stake in Golomoti Solar to Old Mutual Infrastructure Investment Trust Fund \(Malawi\)](#)".

### Catalytic equity remains nascent

Despite its demonstrated potential, the use of catalytic equity remains nascent today. A review of the portfolios and terms of major official sector institutions underpins an initial estimate of annual catalytic equity deployment in 2023: approximately **\$650 million**<sup>52</sup> per year across all providers. Because catalytic equity is newly defined in this paper, these estimates are based on an analysis of previous transaction rather than direct provider reporting<sup>53</sup> and carry a wide margin of error. This represents **less than 2%** of total concessional climate finance and under 1% of all equity investment in these markets.<sup>54</sup>

The largest source of catalytic equity globally is the Green Climate Fund, for which all equity deployment would be considered catalytic in line with the definition in this paper.<sup>55</sup> Other providers deploy equity exhibiting catalytic characteristics under distinct investment strategies. For instance, BII's Catalyst and Kinetic investments, while relatively small compared to their core Growth portfolio, can have a higher tolerance for risk or lower expectation of return, and so are counted as catalytic.<sup>56</sup> Private sector arms of the MDBs typically make use of trust funds, such as IFC's use of the IDA Private Sector Window,<sup>57</sup> to deploy equity in more junior positions. For other providers, it is possible to identify individual transactions where the equity deployment can be classed as catalytic, rather than dedicated pools of catalytic equity.

### Estimating future volumes of catalytic equity

A review of more than 70 recent transactions found that catalytic equity accounts for approximately **10%** of total project-level equity in deals that use it. Table 2 shows that scaling EMDE investment in line with the Net Zero scenario requires \$1,300 billion in annual investment by 2035, including \$375 billion in equity. Of this, about \$255 billion is in sectors or regions where derisking through catalytic equity may be necessary.

If catalytic equity continues to represent 10% of project equity and were applied widely, about **\$25 billion**<sup>58</sup> per year would be needed by 2035. With greater efficiency, stronger demonstration effects, better targeting, and more supportive policy, the need could fall substantially. Our initial modeling suggests that highly efficient use results in an approximately 5% project-level equity requirement, implying that annual needs could be much lower, at about **\$12 billion**. See Appendix A.

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52 This estimate carries a high range of inherent uncertainty. Derived through a combination of a top-down estimate of catalytic equity in climate finance and a bottom-up review of major transactions. Conservative bottom-up estimates can account for approximately \$425 million; top-down estimates suggest a ceiling of about \$1.1 billion. See Appendix A.

53 Data used is for transactions committed to between 2022–4 and transactions are manually tagged as catalytic or not based on either manual evaluation of the features of the Equity commitment demonstrated in public disclosures (e.g., the Equity acting as a "first-loss" buffer is mentioned), the use of a blended finance trust fund (e.g., International Development Association Private Sector Window for IFC), or specific features of the investment strategy (e.g., the Catalyst or Kinetic investment strategies for BII). This analysis naturally carries a wide degree of uncertainty, and we are happy to share further assumptions with those interested in refining these estimates.

54 CPI (2024), [Understanding Global Concessional Climate Finance](#). Estimate includes low-cost concessional debt (including IBRD loans) and grants.

55 [GCF project portfolio](#), accessed 7th November 2025.

56 [BII investment portfolios](#), accessed 7th November 2025.

57 [IFC IDA21 Private Sector Window projects](#), accessed 7th November 2025.

58 Of the total 2035 Net Zero Equity need (\$375 billion), we estimate \$255 billion could need derisking from catalytic equity based on the expected maturity of each sector and region. See Appendix A. 10% of \$255 billion is about \$25 billion. This is a directional estimate and carries inherent uncertainty.

**Table 2: Estimated CapEx, equity and catalytic equity requirements in 2030 and 2035**

	2030	2035
	Net Zero (1.5°C)	Net Zero (1.5°C)
Projected CapEx	\$875 billion	\$1,300 billion
Projected equity	\$270 billion	\$375 billion
Portion of equity in sectors or regions that may need derisking	\$160 billion	\$225 billion
Catalytic equity required at 10% of project-level equity	\$16 billion	\$25 billion
Catalytic equity required at 5% of project-level equity	\$8 billion	\$12 billion
<b>Estimated range of catalytic equity required</b>	<b>\$8-16 billion</b>	<b>\$12-25 billion</b>

These estimates of catalytic equity volumes are directional and uncertain, as catalytic equity is still an emerging tool with limited data. This analysis aims to encourage further research into its broader system effects.

## High-level Recommendations

Based on the above findings, stakeholders in climate and development finance should prioritize three actions:

### 1. Increase overall equity deployment to meet the \$375 billion in annual equity needed by 2035.

MDBs, DFIs, and VCEFs should prioritize increased equity deployment, balancing the tradeoffs of higher capital intensity with the outsized potential for private sector mobilization, climate impact, job creation, and support for small and medium enterprises. Certain structures, such as the IFC's use of net income allocation, should be studied and replicated where possible. These actors can also recycle capital by seeking to exit once risk mitigation is achieved, allowing private investors to take over mature assets.

Commercial investors can scale existing blended facilities, while private sector asset owners and managers can engage with MDBs/DFIs to understand how catalytic equity improves returns and reduces risks.

### 2. Unlock more catalytic equity to meet the \$12-\$25 billion in annual catalytic equity needed by 2035.

Governments, philanthropies, and official sector institutions should expand their use of catalytic equity alongside complementary tools such as grants and mission-related investments. Building on the push for mutual reliance frameworks in the MDB system, developing shared standards for due diligence, legal processes, and impact assessment will improve efficiency.

Building dedicated institutions for catalytic equity, such as specialized catalytic equity investors, advisory firms, and standard-setting non-profits, can help deploy funds with more trust, speed, and additionality.

### 3. Learn from the use of equity and catalytic equity in the market.

Development finance providers should continue scaling investment while promoting transparent data sharing to track real-world results. Future work could:

- Measure the mobilization potential of catalytic equity across funds, platforms, and projects;
- Estimate minimum subsidy levels needed and improve how catalytic equity is allocated within standardized transaction structures;
- Identify and map priority sources of catalytic equity;
- Identify high-impact uses of catalytic equity;
- Understand how technology adoption and company performance respond to its use;
- Analyze how catalytic equity interacts with policy and regulation to address barriers and risk perceptions; and
- Support data sharing among catalytic equity providers to better assess performance and price concessionality.

More detailed recommendations for key development finance actors are offered in Table 3 below.

**Table 3: Detailed recommendations for climate and development finance actors**

	<b>Development finance providers</b> , inc. MDBs, DFIs, VCEFs, bilateral agencies supported by their shareholders	<b>Impact-oriented investors and philanthropy</b>	<b>Commercial financial institutions</b> <i>Voluntarily and in-line with fiduciary duties</i>
<b>1. Increase overall equity deployment</b>	<p><b>Grow traditional equity deployment</b> to projects and funds as part of strategic asset allocation; work together with shareholders to consider balance sheet implications and other trade offs.</p> <p>Focus equity deployment on opportunities with <b>clear additionality to the market</b>, and where it will be an effective tool to mobilize private capital.</p> <p><b>Support development and scaling of local and regional investment platforms and fund managers.</b></p>	<p><i>For impact-oriented investors</i></p> <p><b>Grow impact-oriented equity deployment</b> to projects and funds as part of strategic asset allocations.</p>	<p>Utilize performance data to <b>grow institutional investor appetite to invest</b> in vehicles enabled by catalytic equity.</p> <p><b>Identify and evaluate secondary market opportunities</b> where development finance providers exit catalytic equity and equity positions.</p>
<b>2. Unlock more catalytic equity</b>	<p><b>Increase availability of catalytic equity</b> and work with shareholders to identify additional off-balance sheet sources, such as retained earnings for development finance institutions; raising additional dedicated funding from shareholders or philanthropies.</p> <p>Partner with commercial financial institutions (FIs) and other providers of catalytic equity to <b>identify areas where catalytic equity is needed to unlock investment at project, platform, and fund level.</b></p> <p><b>Deploy catalytic equity through platforms and fund managers</b> with relevant market and sector capabilities; support development of local intermediaries and capacity wherever possible.</p> <p><b>Work with others to co-develop projects and investment vehicles anchored by catalytic equity</b> to enable commercial FI participation.</p> <p><b>Seek to minimize levels of concessionality</b> by deploying catalytic equity sparingly to attract commercial FI participation.</p> <p><b>Provide greater transparency on the availability of catalytic equity</b>, e.g., clarity on how to access, specific requirements/limitations.</p>	<p><i>For philanthropy</i></p> <p><b>Explore opportunities to deploy catalytic equity</b> into projects, platforms, and funds in order to mobilize private capital for philanthropic priorities, alongside other tools like grant-making and ecosystem building.</p> <p><i>For impact-oriented investors</i></p> <p>Explore opportunities where catalytic equity deployment can <b>align with impact mandates</b> and other objectives.</p>	<p><b>Collaborate with development finance providers and philanthropies</b> to co-design targeted investment structures which can use catalytic equity effectively to direct capital toward scaling clean energy infrastructure with high additionality.</p>

### 3. Learn from the use of equity and catalytic equity in the market

**Work across providers to reduce frictions and increase speed of deployment, e.g.,**

- **Building shared practices and standards** for catalytic equity deployment.
- **Developing platforms to aggregate and deploy** catalytic equity from multiple providers.
- **Improve interoperability** for due diligence, additionality and impact assessment frameworks across providers.

**Increase the velocity of capital deployment through exits, including:**

- **Exiting positions** to commercial investors when the risk-return profile no longer requires subsidy from catalytic providers.
- Working across provider types to **establish vehicles to support exits** in markets where secondaries and strategic buyers are limited.

*With input from climate and development finance research bodies*

**Collect, evaluate, and share catalytic equity performance and impact, including:**

- Return and loss data and use to recalibrate internal risk and capital intensity assessments.
- Consolidated data on private sector equity performance.
- Minimum required levels of concessionality to bridge viability for private commercial FIs.
- Differences in performance and impact between (catalytic) equity invested into projects or corporates or intermediated via platforms or funds.

**Balance trade-offs** between private capital mobilization, impact potential, capital intensity and risk management of equity and catalytic equity versus debt.

**Assess the impacts of catalytic equity** on other factors and interventions including technology deployment, policy and regulatory change.

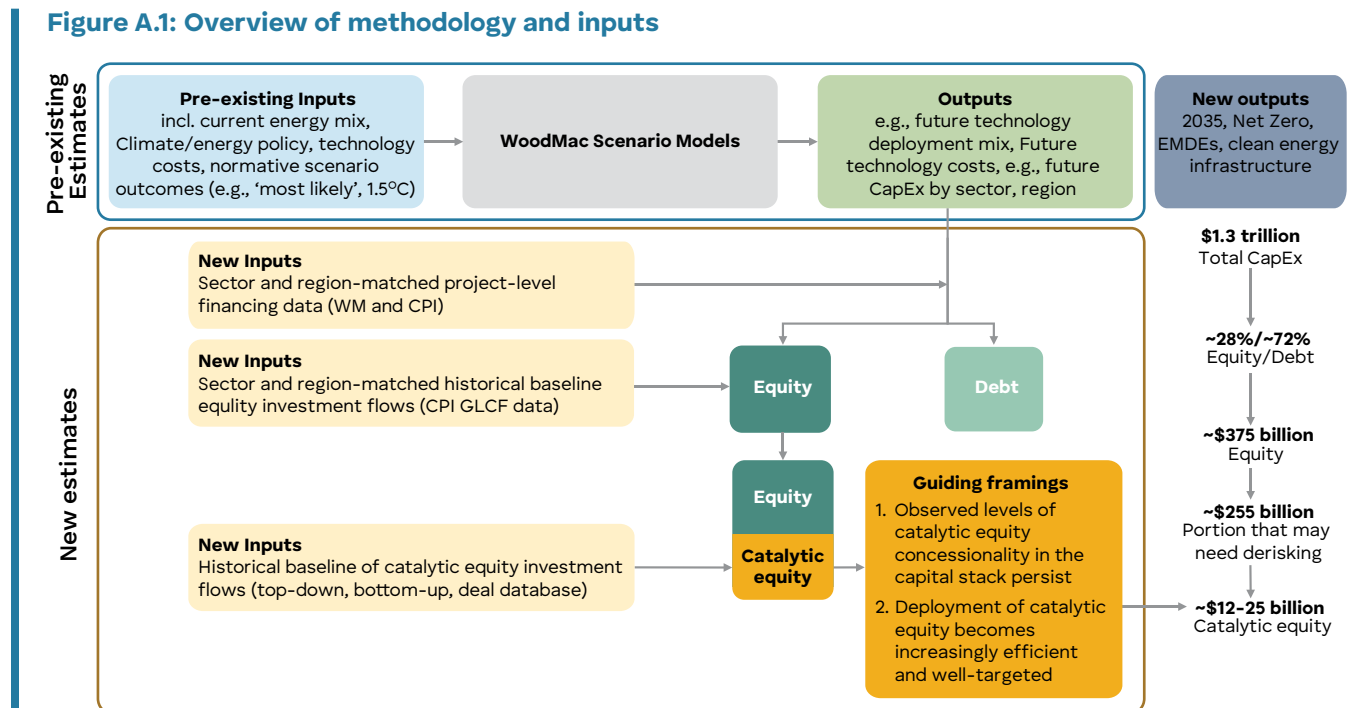
**Share real examples of catalytic equity's power to close financing structures** with private sector participation, providing detailed data where possible.

**Highlight regulatory barriers to equity investment** to governments and regulators.

# Appendix A: Overview of source data and methods

The estimates in this report represent a first directional attempt to size future equity and catalytic equity capital requirements in EMDEs. As such, they carry a wide margin of uncertainty but can serve as a foundation for future work. The authors welcome feedback and are happy to share further details on scope, assumptions, and model logic upon request.

Figure A.1 below provides an overview of the methodological steps undertaken, noting off-the-shelf and new data inputs, approaches to calculate equity and catalytic equity shares, and outputs.



## Scenario framework

Our analysis is based on two scenario pathways published in October 2024 by Wood Mackenzie,<sup>59</sup> each reflecting different sets of integrated assumptions about policy, technology, and market conditions:

- 1. Base Case Outlook** – Wood Mackenzie’s reference case, representing their assessment of the most likely outcome for the global energy system based on the projected evolution of current policies and future technological advancements.
- 2. Net Zero 2050** – A more ambitious path, consistent with reaching global net-zero greenhouse gas emissions by 2050, requiring accelerated policy action and technological innovation.

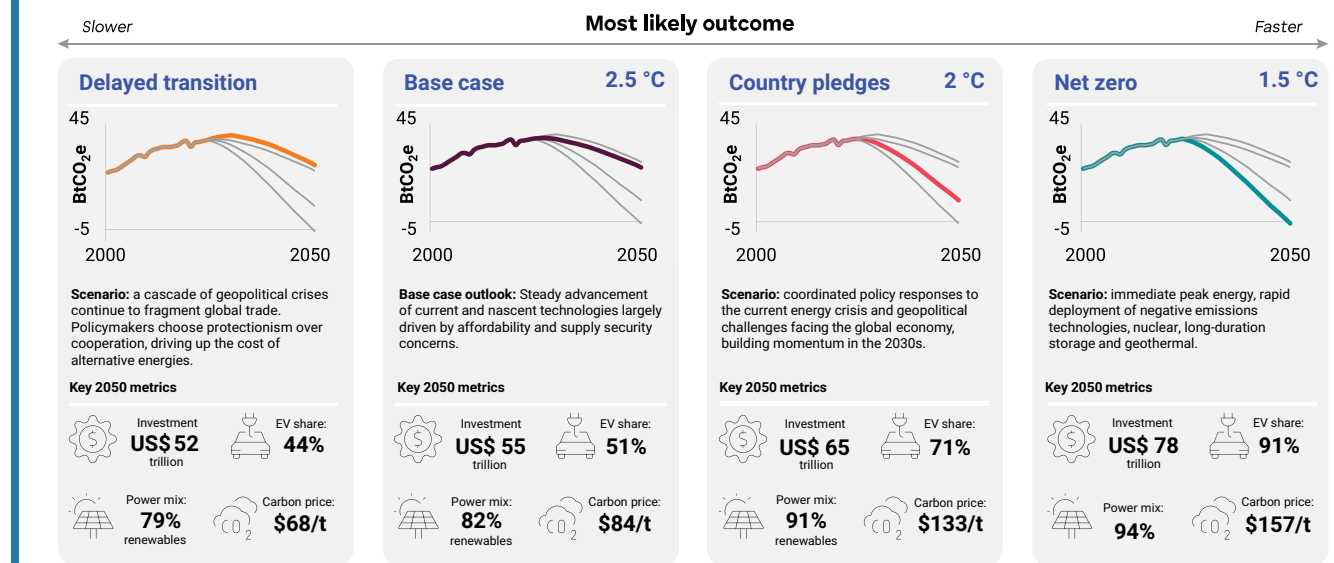
59 For more details on Wood Mackenzie modeling approach and scenarios, see Wood Mackenzie (2025), [Energy transition outlook: 2024-25 update](#). Note: Wood Mackenzie’s Energy Transition Outlook 2025 has since been published and represents the firm’s latest expectations at the time of publication.

## The Clean Energy Equity Investment Gap

These pathways are part of Wood Mackenzie’s integrated energy transition outlook and scenarios analysis, which comprises four distinct and different views of the energy and resources landscape.<sup>60</sup>

We also include outputs of this analysis based on a third Wood Mackenzie scenario, **Country Pledges**, in which countries achieve their currently pledged climate commitments, in Appendix B. The Country Pledges case is consistent with a 2°C warming pathway. We do not report results from Wood Mackenzie’s Delayed Transition Scenario. Each of these scenarios is associated with different outcomes across a range of variables associated with the energy transition, as illustrated in Figure A.2. While the analysis in this paper focuses on 2035 results from the Base Case and Net Zero scenarios, the figure shows overall outcomes for all four scenarios modeled through 2050.

**Figure A.2: Emission trajectories and key outputs of Wood Mackenzie’s 2024 scenarios<sup>61</sup>**



## Benchmarking against other major energy transition scenarios

We benchmarked the CapEx projections under Wood Mackenzie’s Base Case and Net Zero against other key energy transition scenarios, as compiled and standardized by CPI:<sup>62</sup>

- Wood Mackenzie’s Base Case Outlook was benchmarked against the most recent comparable scenarios available at the time of the analysis, namely 2024 IEA’s Announced Pledge Scenario, 2023 IRENA’s Planned Energy Scenario, and 2024 BNEF’s Economic Transition Scenario.
- Wood Mackenzie’s Net Zero 2050 scenario was benchmarked against the most recent net zero scenarios available at the time of the analysis, namely 2024 IEA’s Net Zero Emissions, 2023 IRENA’s 1.5°C Scenario, 2022 McKinsey’s Net Zero 2050, IPCC 2022, and BNEF’s 2024 Net Zero Scenario.

<sup>60</sup> Wood Mackenzie’s integrated energy outlook and scenarios are based on cross-sector and multi-commodity modeling, consolidating sector analyses of power and renewables, upstream and downstream oil and gas, metals and mining, and the emerging technologies of low-carbon hydrogen, carbon capture, utilization, and storage (CCUS) and direct air capture (DAC). A full list is shown in Table A.2. Each scenario explores the policy targets, technology choices and behavioral changes the world could be making or would need to make to align with the underlying worldview for each case. Population projections are informed by [UN Population Prospects](#) and GDP is projected by Wood Mackenzie in 2015 constant US dollars, a measure of real GDP accounting for inflation and currency spreads, based on changes in the labor force, growth in capital stock, and growth in productivity.

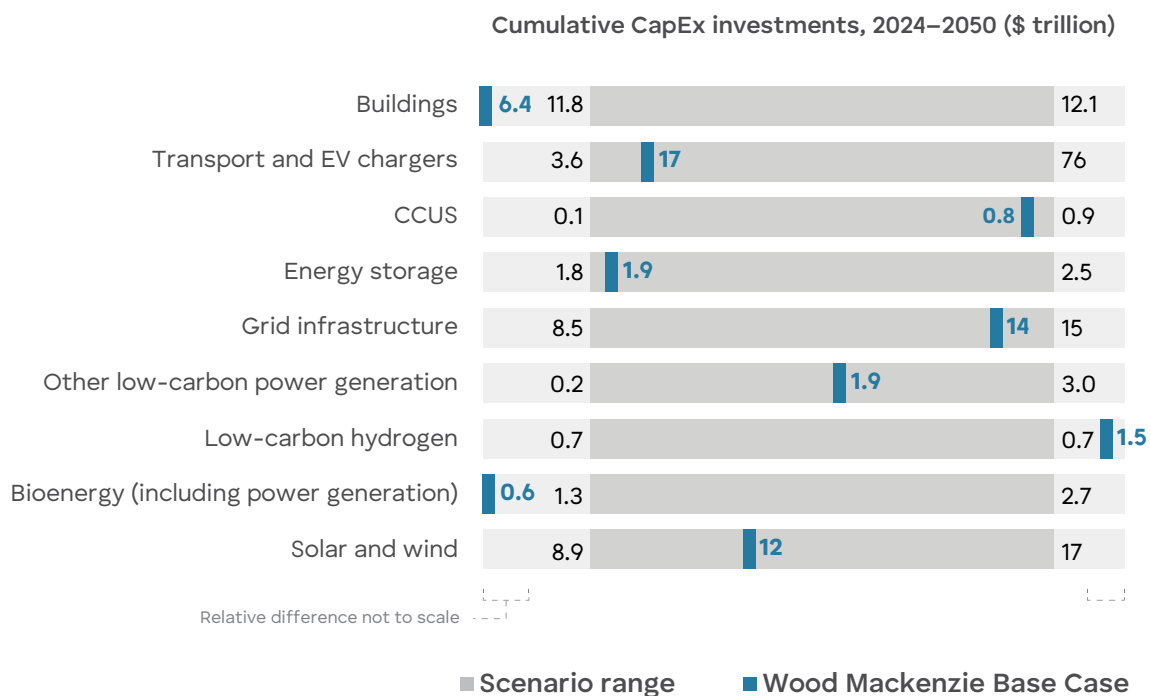
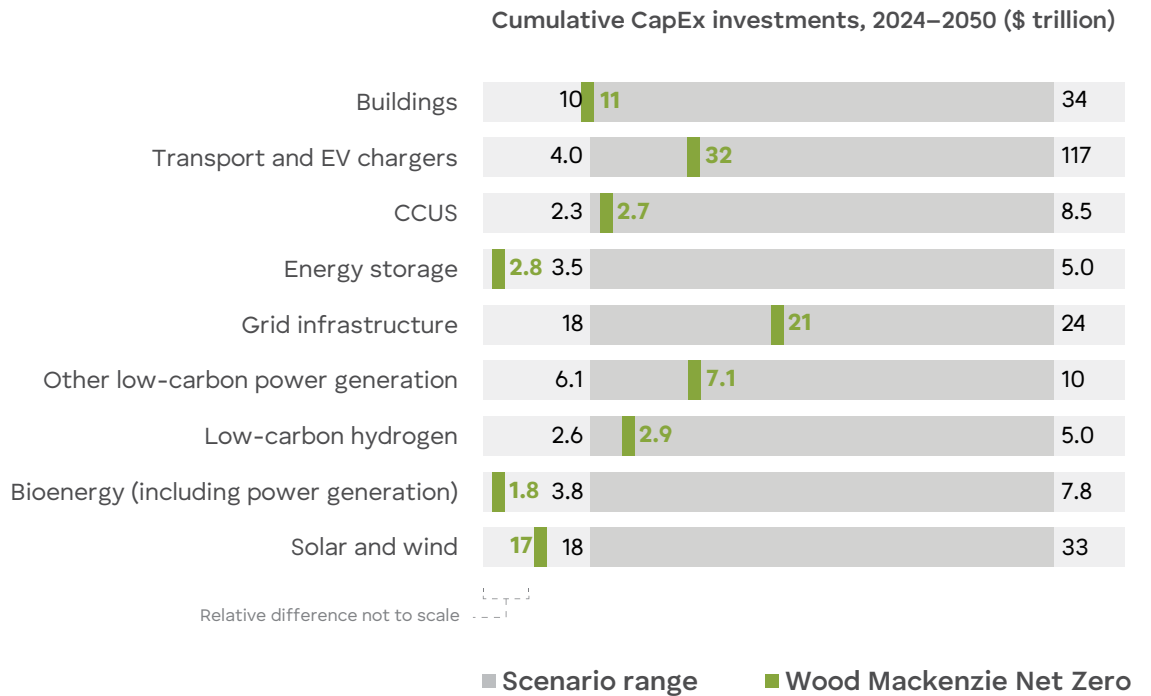
<sup>61</sup> Wood Mackenzie Energy Transition Outlook 2024. Note: Wood Mackenzie’s Energy Transition Outlook 2025 has since been published and represents the firm’s latest expectations at the time of publication.

<sup>62</sup> CPI (2025), [Top-down Climate Finance Needs](#).

## The Clean Energy Equity Investment Gap

Based on data available from CPI, the comparison focused solely on low-carbon sectors and technologies. See Figure A.3.

**Figure A.3: Benchmarking Wood Mackenzie Net Zero and Base Case results against other major energy transition scenarios<sup>63</sup>**



## The Clean Energy Equity Investment Gap

For both the Base Case and Net Zero scenarios, Wood Mackenzie's cumulative CapEx estimates for 2050 fall well within the range of compiled estimates. These estimates are presented as ranges of values to reflect the variability of underlying assumptions and approaches used to develop these scenarios, as well as the specific scope of each model.

- Wood Mackenzie's 2024 Base Case Outlook is generally comparable with other energy transition scenarios, with slightly more conservative figures for buildings and higher estimates for low-carbon hydrogen.
- Wood Mackenzie's 2024 Net Zero Scenario generally falls at the lower end of the range across technologies, with slightly more conservative estimates for energy storage, solar, wind, and bioenergy.

These differences in CapEx estimates generally stem from differences in sectoral scope, underlying assumptions and modeling methodologies. Most notably, compared to other sectors, the range of CapEx estimates for transport and EV charges varies widely across scenarios, ranging between \$4-117 trillion under a Net Zero and between \$4-76 trillion under Base Case. See Figure A.3. These large differences in estimates are primarily due to approaches used to calculate electric vehicle costs: some scenarios (scenarios including BNEF's Net Zero and Economic Transition Scenarios, incorporate the full cost of EVs, while others – including Wood Mackenzie's Net Zero and Base Case – only count EVs' incremental costs (i.e., the EV battery and electric drivetrain) relative to conventional cars. In comparisons involving the Base Case, different definitions of "business-as-usual" also contribute to the gap.

## Scope

### Geographical scope

The analysis in this paper follows the regional taxonomy and market classification, as shown in Table A.1.

**Table A.1. Regional taxonomy and market classification**

Market classification	Wood Mackenzie scenario markets	Countries and regional groupings included
<b>Emerging</b>	Africa	Algeria, Angola, Cote d'Ivoire, Egypt, Ethiopia, Ghana, Kenya, Libya, Morocco, Mozambique, Namibia, Nigeria, Other Africa, South Africa, Tunisia
	Brazil	Brazil
	Mexico	Mexico
	India	India
	Indonesia	Indonesia
	Malaysia	Malaysia
	Thailand	Thailand
	Vietnam	Vietnam
	Middle East	Iran, Iraq, Israel, Jordan, Kuwait, Oman, Other Middle East, Qatar, Saudi Arabia, United Arab Emirates
	Rest of World <sup>64</sup>	Albania, Argentina, Azerbaijan, Bangladesh, Belarus, Bolivia, Bosnia and Herzegovina, Brunei Darussalam, Cambodia, Colombia, Ecuador, Georgia, Guyana, Kazakhstan, Myanmar, New Zealand, North Macedonia, Norway, Other Asia, Other Europe, Other Latin America, Other World, Pakistan, Peru, Philippines, Serbia, Singapore, Switzerland, Taiwan, Trinidad and Tobago, Türkiye, Turkmenistan, Ukraine, Uruguay, Uzbekistan, Venezuela
<b>Mature</b>	Australia	Australia
	Canada	Canada
	China	China
	EU27	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden
	Japan	Japan
	Russian Federation	Russian Federation
	South Korea	South Korea
	United Kingdom	United Kingdom
	United States of America	United States of America

<sup>64</sup> Wood Mackenzie's "Rest of World" regional grouping in its scenario data includes five countries not typically classified as EMDEs: New Zealand, Norway, Singapore, Switzerland, and Taiwan. For the purposes of this analysis, this country group is treated as part of the EMDE aggregate. As a result, a modest portion (estimated to be approximately 5% by GDP weight) of the rounded EMDE investment totals we report may reflect estimated investment activity in these five countries.

## Sectoral scope

The analysis in this paper encompasses a total of 49 individual technologies covering major energy supply and demand sectors, as summarized in Table A.2. We model at the technology level and here report findings at the sector level.

**Table A.2 Sector taxonomy and technology classification used for the analysis**

Sector	Subsector	Technology	Sector classification
<b>Bioenergy</b>	Biofuels production	Biofuels production	Emerging
		Sustainable aviation fuel	Emerging
	Biomass production	Biomass production	Mature
	Biomethane production	Biogas	Emerging
<b>Buildings</b>	Buildings efficiency	Heat pumps	Mature
		New builds and retrofits	Mature
<b>Carbon capture utilization and storage (CCUS)</b>	CCUS – blue hydrogen production	CCS and local storage – blue hydrogen	Emerging
	CCUS – DAC	Direct Air Capture	Emerging
	CCUS – industry	CCS and local storage – "other industry"	Emerging
	CCUS – industry	CCS and local storage – cement	Emerging
	CCUS – industry	CCS and local storage – chemicals	Emerging
	CCUS – industry	CCS and local storage – iron & steel	Emerging
	CCUS – power	CCS and local storage – power	Emerging
<b>Energy storage</b>	Energy storage	Battery storage	Mature
		Fuel cells	Emerging
		Pumped hydro	Mature
<b>Grid &amp; charging infrastructure</b>	EV charger	EV charging	Mature
	Grid infrastructure	Grid infrastructure – transmission and distribution	Mature
<b>Low-carbon hydrogen</b>	Hydrogen derivatives production	Green ammonia and methanol production	Emerging
	Low-carbon hydrogen production	Blue hydrogen	Emerging
		Electrolytic hydrogen	Emerging
<b>Manufacturing</b>	Manufacturing	Manufacturing – batteries	Mature
		Manufacturing – green steel	Emerging
		Manufacturing – offshore wind	Mature
		Manufacturing – onshore wind	Mature
		Manufacturing – solar	Mature

## The Clean Energy Equity Investment Gap

Sector	Subsector	Technology	Sector classification
Power generation	CCUS – power	Bioenergy into power with CCS	Emerging
		Coal into power with CCS	Emerging
		Gas into power with CCS	Emerging
	Low-carbon hydrogen	Coal into power with hydrogen blending	Emerging
		Gas into power with hydrogen blending	Emerging
	Nuclear	Nuclear – SMR	Emerging
	Renewables	Bio energy into power unabated	Mature
		Geothermal – advanced	Emerging
		Geothermal – conventional	Mature
		Hydro Power (Hydro Power – large and Hydro Power – small)	Mature
		Other renewables	Emerging
	Solar	Solar – CSP	Mature
		Solar – PV	Mature
	Wind	Wind – offshore	Mature
		Wind – onshore	Mature
Transport	Rail transport	Metro	Mature
	Road transport	Commercial – BEV	Mature
		Commercial – FCEV	Emerging
		Commercial – PHEV	Mature
		Passenger – BEV	Mature
		Passenger – FCEV	Emerging
		Passenger – HEV	Mature
		Passenger – PHEV	Mature

### Establishing historical baselines

To set a baseline for future projections (2025-2050), we benchmarked against historical data:

**CapEx** – We triangulated data from CPI’s 2025 Global Landscape of Climate Finance, the IEA’s World Energy Investment Outlook 2024, and Wood Mackenzie’s 2025 sector and regional deployment and cost actuals to estimate a recent baseline for total capital expenditure (CapEx).

**Equity** – We calculated the share of CapEx financed through equity by splitting out balance sheet equity and project-level equity instruments from CPI’s transaction-level data for each technology and region and comparing these with averages from Wood Mackenzie’s asset-level financing dataset. Minor adjustments were made for data gaps or to normalize scope differences where necessary.

## The Clean Energy Equity Investment Gap

**Catalytic equity** – This paper is the first known estimate of catalytic equity volumes. To estimate historical catalytic equity deployment, we used three approaches:

- **Top-down by provider type:** We applied conservative assumptions<sup>65</sup> to CPI data split by investor type to estimate the share of equity flows by investor type in the CPI data that could be considered catalytic.
- **Bottom-up by provider:** We reviewed portfolios and reported transactions from major official sector providers of catalytic equity<sup>66</sup> that meet our definition of catalytic equity, capturing as much as 80% of the top-down estimate.
- **Bottom-up by transaction:** We compiled a sample of 70+ recent structured transactions involving catalytic equity to illustrate its role in capital stacks and provide an indicative deployment range which help to validate our \$650 million estimate.

## Projecting CapEx and equity requirements

**CapEx** – For each scenario, total CapEx was determined by taking the product of projected clean energy deployment and projected unit costs through 2050. The trajectory of technology deployment and unit costs is based on scenario-specific assumptions from various Wood Mackenzie asset cost models and sector forecasts. In more rapid transition scenarios, technology deployment is faster, and unit costs decline more quickly.

**Equity** – We adjusted **equity shares** over time to reflect sector and market classifications. See Tables A.1 and A.2. Because equity owns risk, in less-developed countries or for nascent technologies, a larger equity share is typically necessary due to the elevated uncertainty and volatility. Strategic equity allocation in emerging markets can help projects to attract the necessary capital to drive the energy transition. As technologies scale and economies mature, available leverage increases as commercial financial institutions gain comfort providing finance – particularly debt – to increasingly mature sectors. As a result, the level of equity needed in each transaction erodes over time.

The difference between estimated equity deployment in the Net Zero scenario and in the Base Case represents the “**equity gap**” reported in this paper.

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<sup>65</sup> We excluded transactions not clearly allocated within our taxonomy or with incomplete data, and we benchmarked these percentage estimates against data from Convergence’s 2024 State of Blended Finance Report and British International Investment.

<sup>66</sup> Includes the Green Climate Fund, British International Investment, the International Finance Corporation, KfW/DEG, FMO, Norfund, IDB Invest, and PROPARCO.

## Future catalytic equity estimates

This is the first known attempt to quantify directional future catalytic equity volumes. We used two framing approaches; both seek to estimate the *share of project-level equity represented by catalytic equity*:

### 1. Persistent levels of concessionality

Based on observed participation levels of catalytic equity in 70+ recent transactions, we estimated the average catalytic equity share of project-level equity using conservative simplifying assumptions about how catalytic equity invested into funds or platforms flows into project equity and project CapEx:

- Where it is not observed directly, we conservatively estimate a co-investment multiple of 3x and a project-level sponsor equity share of 75%. Net of fund or platform fees and expenses (assumed at 20%) and costs such as overhead and failed projects (assumed at 25%), this yields an equity co-investment multiple of 2.3x.
- Consistent with our findings, we conservatively assume projects are financed with 30% equity and 70% debt, a 3.3x multiplier on project-level debt.

These estimates inform both our upper bound estimate (described below) of catalytic equity need as well as the observed and estimated mobilization potential of catalytic equity. Our modeling estimates the share of equity need in sector-region pairs that may require derisking based on the stage of maturity in each year relative to future projections in that scenario. This share was applied to the portion of 2035 equity needs most likely to require derisking (about \$255 billion of \$375 billion). We believe this estimate represents a generous upper bound.

### 2. Improved targeting and efficiency

In this framing, catalytic equity is deployed more efficiently and in a more well-targeted way, focused on owning early-stage market or technology risks, minimizing concessionality, and reallocating to sectors and regions poised for rapid growth.

We represent this by estimating a reduced catalytic equity share of project-level equity. Our modeling indicates that its highly efficient, temporary, and well-targeted use could result in catalytic equity representing approximately 5% of project-level equity in relevant sectors. We believe this represents a directional lower bound.

These initial estimates carry a wide margin of uncertainty and form the basis for future work.

## Appendix B – Data Tables

Table B.1: Estimated project-level CapEx investment (\$ billions), Base Case (2025, 2030, 2035)

Base Case	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	<b>\$ 40.5</b>	<b>\$ 23.3</b>	<b>\$ 68.6</b>	<b>\$ 19.0</b>	<b>\$ 6.9</b>	<b>\$ 9.7</b>	<b>\$ 40.1</b>	<b>\$ 5.9</b>	<b>\$ 9.1</b>	<b>\$ 107.6</b>	<b>\$ 330.8</b>
Bioenergy	\$ 0.0	\$ 1.8	\$ 1.3	\$ 0.8	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.4	\$ 0.1	\$ 0.4	\$ 5.1
Buildings	\$ 8.6	\$ 1.6	\$ 13.7	\$ 1.7	\$ 0.3	\$ 2.2	\$ 2.5	\$ 0.6	\$ 1.1	\$ 10.8	\$ 43.0
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.0	\$ -	\$ 0.6	\$ -	\$ 0.0	\$ 0.2	\$ 1.1
Energy Storage	\$ 0.2	\$ -	\$ 1.5	\$ 0.7	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.2	\$ 1.0	\$ 3.9
Grid & Charging Infrastructure	\$ 11.6	\$ 9.1	\$ 25.3	\$ 4.5	\$ 2.6	\$ 4.4	\$ 18.5	\$ 3.1	\$ 4.2	\$ 33.5	\$ 116.7
Low-carbon Hydrogen	\$ 0.0	\$ 0.0	\$ 0.4	\$ 0.1	\$ 0.4	\$ 0.0	\$ 0.5	\$ 0.1	\$ 0.0	\$ 0.5	\$ 2.0
Clean Energy Manufacturing	\$ 0.4	\$ 0.2	\$ 7.9	\$ 0.9	\$ 0.1	\$ 0.1	\$ 5.8	\$ 0.0	\$ 0.1	\$ 1.6	\$ 16.9
Low-Carbon Power Generation	\$ 19.5	\$ 8.9	\$ 13.8	\$ 9.4	\$ 2.1	\$ 2.6	\$ 11.3	\$ 0.7	\$ 2.6	\$ 55.1	\$ 126.0
Transportation	\$ 0.2	\$ 1.8	\$ 4.9	\$ 0.6	\$ 1.1	\$ 0.3	\$ 0.7	\$ 1.1	\$ 0.9	\$ 4.5	\$ 16.2
<b>2030</b>	<b>\$ 60.3</b>	<b>\$ 26.6</b>	<b>\$ 97.0</b>	<b>\$ 19.5</b>	<b>\$ 9.2</b>	<b>\$ 14.0</b>	<b>\$ 46.7</b>	<b>\$ 9.6</b>	<b>\$ 16.5</b>	<b>\$ 140.4</b>	<b>\$ 439.8</b>
Bioenergy	\$ 0.1	\$ 0.5	\$ 0.5	\$ 1.1	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.1	\$ 0.5	\$ 3.4
Buildings	\$ 17.0	\$ 2.6	\$ 27.9	\$ 3.2	\$ 0.5	\$ 3.5	\$ 4.6	\$ 1.1	\$ 2.0	\$ 20.2	\$ 82.6
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.5	\$ 0.7	\$ -	\$ 1.2	\$ 0.3	\$ 0.3	\$ 1.1	\$ 4.2
Energy Storage	\$ 0.2	\$ 3.1	\$ 3.0	\$ 0.6	\$ 0.1	\$ 0.6	\$ 0.4	\$ 0.1	\$ 0.8	\$ 1.0	\$ 9.8
Grid & Charging Infrastructure	\$ 14.7	\$ 10.2	\$ 34.8	\$ 5.9	\$ 3.1	\$ 5.2	\$ 21.6	\$ 3.5	\$ 5.9	\$ 38.9	\$ 143.8
Low-carbon Hydrogen	\$ 1.6	\$ 0.6	\$ 1.1	\$ 0.4	\$ 0.2	\$ 0.1	\$ 0.8	\$ 0.1	\$ 0.0	\$ 1.8	\$ 6.8
Clean Energy Manufacturing	\$ 0.7	\$ 0.1	\$ 8.2	\$ 0.8	\$ 0.2	\$ 0.1	\$ 5.8	\$ 0.0	\$ 0.2	\$ 2.5	\$ 18.8
Low-Carbon Power Generation	\$ 25.8	\$ 6.7	\$ 11.8	\$ 5.4	\$ 2.5	\$ 3.3	\$ 11.3	\$ 2.3	\$ 5.4	\$ 67.2	\$ 141.7
Transportation	\$ 0.2	\$ 2.6	\$ 9.8	\$ 1.5	\$ 1.7	\$ 1.1	\$ 1.1	\$ 2.0	\$ 1.6	\$ 7.1	\$ 28.7
<b>2035</b>	<b>\$ 68.6</b>	<b>\$ 31.8</b>	<b>\$ 147.7</b>	<b>\$ 29.9</b>	<b>\$ 11.4</b>	<b>\$ 15.4</b>	<b>\$ 60.2</b>	<b>\$ 11.2</b>	<b>\$ 23.0</b>	<b>\$ 160.7</b>	<b>\$ 559.7</b>
Bioenergy	\$ 0.1	\$ 0.6	\$ 0.3	\$ 2.0	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.5	\$ 3.8
Buildings	\$ 26.2	\$ 2.7	\$ 39.0	\$ 3.8	\$ 0.4	\$ 3.7	\$ 4.7	\$ 1.0	\$ 1.8	\$ 24.2	\$ 107.6
CCUS	\$ 0.0	\$ 0.8	\$ 2.6	\$ 1.8	\$ 1.3	\$ 0.2	\$ 6.6	\$ 0.4	\$ 0.3	\$ 0.7	\$ 14.6
Energy Storage	\$ 0.4	\$ 8.0	\$ 2.9	\$ 0.4	\$ 0.2	\$ 0.8	\$ 0.5	\$ 0.1	\$ 1.0	\$ 1.6	\$ 15.8
Grid & Charging Infrastructure	\$ 17.7	\$ 11.1	\$ 43.3	\$ 7.6	\$ 3.6	\$ 5.7	\$ 23.6	\$ 4.0	\$ 7.5	\$ 43.1	\$ 167.1
Low-carbon Hydrogen	\$ 0.5	\$ 0.8	\$ 2.8	\$ 0.9	\$ 0.3	\$ 0.3	\$ 2.5	\$ 0.0	\$ 0.0	\$ 1.5	\$ 9.6
Clean Energy Manufacturing	\$ 1.0	\$ 0.1	\$ 9.0	\$ 1.1	\$ 0.1	\$ 0.1	\$ 6.1	\$ 0.1	\$ 0.5	\$ 2.4	\$ 20.5
Low-Carbon Power Generation	\$ 22.1	\$ 3.7	\$ 24.3	\$ 8.4	\$ 2.9	\$ 2.1	\$ 14.5	\$ 2.3	\$ 8.5	\$ 74.4	\$ 163.3
Transportation	\$ 0.6	\$ 4.0	\$ 23.5	\$ 3.9	\$ 2.6	\$ 2.5	\$ 1.7	\$ 3.1	\$ 3.4	\$ 12.3	\$ 57.4

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**Table B.2: Estimated project-level equity investment (\$ billions), Base Case (2025, 2030, 2035)**

Base Case	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	\$ 14.0	\$ 6.5	\$ 18.3	\$ 5.3	\$ 1.7	\$ 2.5	\$ 11.2	\$ 1.3	\$ 2.3	\$ 33.4	\$ 96.6
Bioenergy	\$ 0.0	\$ 0.6	\$ 0.4	\$ 0.2	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 1.6
Buildings	\$ 3.2	\$ 0.5	\$ 4.4	\$ 0.5	\$ 0.1	\$ 0.7	\$ 0.9	\$ 0.2	\$ 0.3	\$ 3.8	\$ 14.6
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ -	\$ 0.3	\$ -	\$ 0.0	\$ 0.1	\$ 0.6
Energy Storage	\$ 0.1	\$ -	\$ 0.5	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.3	\$ 1.3
Grid & Charging Infrastructure	\$ 2.3	\$ 1.5	\$ 4.2	\$ 0.7	\$ 0.4	\$ 0.7	\$ 3.3	\$ 0.5	\$ 0.7	\$ 6.4	\$ 20.8
Low-carbon Hydrogen	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.9
Clean Energy Manufacturing	\$ 0.2	\$ 0.1	\$ 2.5	\$ 0.3	\$ 0.0	\$ 0.0	\$ 2.0	\$ 0.0	\$ 0.0	\$ 0.6	\$ 5.6
Low-Carbon Power Generation	\$ 8.2	\$ 3.5	\$ 5.3	\$ 3.0	\$ 0.7	\$ 1.0	\$ 4.3	\$ 0.3	\$ 0.9	\$ 21.0	\$ 48.2
Transportation	\$ 0.0	\$ 0.3	\$ 0.9	\$ 0.1	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.9	\$ 3.0
<b>2030</b>	<b>\$ 21.4</b>	<b>\$ 7.2</b>	<b>\$ 25.5</b>	<b>\$ 5.3</b>	<b>\$ 2.4</b>	<b>\$ 3.8</b>	<b>\$ 13.2</b>	<b>\$ 2.4</b>	<b>\$ 4.4</b>	<b>\$ 44.0</b>	<b>\$ 129.5</b>
Bioenergy	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.3	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 1.1
Buildings	\$ 6.3	\$ 0.9	\$ 8.9	\$ 1.0	\$ 0.1	\$ 1.1	\$ 1.6	\$ 0.3	\$ 0.7	\$ 7.1	\$ 28.0
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.3	\$ -	\$ 0.6	\$ 0.2	\$ 0.2	\$ 0.6	\$ 2.3
Energy Storage	\$ 0.1	\$ 1.0	\$ 0.9	\$ 0.2	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.0	\$ 0.3	\$ 0.3	\$ 3.2
Grid & Charging Infrastructure	\$ 3.0	\$ 1.7	\$ 5.9	\$ 1.0	\$ 0.5	\$ 0.9	\$ 3.9	\$ 0.6	\$ 1.0	\$ 7.4	\$ 25.7
Low-carbon Hydrogen	\$ 0.7	\$ 0.3	\$ 0.5	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.8	\$ 2.9
Clean Energy Manufacturing	\$ 0.3	\$ 0.0	\$ 2.6	\$ 0.3	\$ 0.1	\$ 0.0	\$ 2.0	\$ 0.0	\$ 0.1	\$ 0.9	\$ 6.2
Low-Carbon Power Generation	\$ 11.0	\$ 2.6	\$ 4.7	\$ 1.7	\$ 0.8	\$ 1.3	\$ 4.5	\$ 0.8	\$ 1.9	\$ 25.2	\$ 54.6
Transportation	\$ 0.0	\$ 0.5	\$ 1.8	\$ 0.3	\$ 0.3	\$ 0.2	\$ 0.2	\$ 0.4	\$ 0.3	\$ 1.4	\$ 5.4
<b>2035</b>	<b>\$ 23.0</b>	<b>\$ 8.5</b>	<b>\$ 39.3</b>	<b>\$ 8.4</b>	<b>\$ 3.0</b>	<b>\$ 4.0</b>	<b>\$ 18.4</b>	<b>\$ 2.7</b>	<b>\$ 6.1</b>	<b>\$ 49.8</b>	<b>\$ 163.2</b>
Bioenergy	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.6	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 1.2
Buildings	\$ 9.7	\$ 0.9	\$ 12.4	\$ 1.2	\$ 0.1	\$ 1.2	\$ 1.6	\$ 0.3	\$ 0.6	\$ 8.6	\$ 36.5
CCUS	\$ 0.0	\$ 0.4	\$ 1.3	\$ 0.9	\$ 0.6	\$ 0.1	\$ 3.5	\$ 0.2	\$ 0.1	\$ 0.4	\$ 7.6
Energy Storage	\$ 0.1	\$ 2.6	\$ 0.9	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.0	\$ 0.3	\$ 0.6	\$ 5.2
Grid & Charging Infrastructure	\$ 3.6	\$ 1.9	\$ 7.4	\$ 1.3	\$ 0.6	\$ 0.9	\$ 4.2	\$ 0.7	\$ 1.3	\$ 8.3	\$ 30.1
Low-carbon Hydrogen	\$ 0.2	\$ 0.3	\$ 1.1	\$ 0.3	\$ 0.1	\$ 0.1	\$ 1.0	\$ 0.0	\$ 0.0	\$ 0.6	\$ 3.9
Clean Energy Manufacturing	\$ 0.4	\$ 0.0	\$ 2.9	\$ 0.4	\$ 0.0	\$ 0.0	\$ 2.1	\$ 0.0	\$ 0.2	\$ 0.9	\$ 6.8
Low-Carbon Power Generation	\$ 8.8	\$ 1.4	\$ 8.7	\$ 2.8	\$ 1.0	\$ 0.9	\$ 5.5	\$ 0.8	\$ 3.0	\$ 27.8	\$ 60.7
Transportation	\$ 0.1	\$ 0.7	\$ 4.5	\$ 0.8	\$ 0.5	\$ 0.5	\$ 0.3	\$ 0.6	\$ 0.7	\$ 2.4	\$ 11.1

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**Table B.3: Estimated project-level CapEx investment (\$ billions), Country Pledges (2025, 2030, 2035)**

Country Pledges	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	<b>\$ 44.7</b>	<b>\$ 26.4</b>	<b>\$ 71.5</b>	<b>\$ 19.3</b>	<b>\$ 7.1</b>	<b>\$ 10.0</b>	<b>\$ 41.0</b>	<b>\$ 6.5</b>	<b>\$ 9.4</b>	<b>\$ 110.2</b>	<b>\$ 346.1</b>
Bioenergy	\$ 0.0	\$ 1.7	\$ 1.3	\$ 0.7	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.4	\$ 0.1	\$ 0.6	\$ 5.1
Buildings	\$ 8.1	\$ 1.6	\$ 13.0	\$ 1.7	\$ 0.3	\$ 2.3	\$ 2.6	\$ 0.6	\$ 1.1	\$ 11.2	\$ 42.4
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.0	\$ -	\$ 0.6	\$ -	\$ 0.0	\$ 0.2	\$ 1.1
Energy Storage	\$ 0.2	\$ -	\$ 1.6	\$ 0.7	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.2	\$ 1.0	\$ 4.0
Grid & Charging Infrastructure	\$ 12.4	\$ 9.7	\$ 27.0	\$ 4.7	\$ 2.7	\$ 4.7	\$ 19.3	\$ 3.2	\$ 4.4	\$ 35.4	\$ 123.4
Low-carbon Hydrogen	\$ 2.3	\$ 2.6	\$ 0.4	\$ 0.1	\$ 0.4	\$ -	\$ 0.5	\$ 0.1	\$ 0.0	\$ 0.5	\$ 6.8
Clean Energy Manufacturing	\$ 0.4	\$ 0.2	\$ 8.1	\$ 0.9	\$ 0.1	\$ 0.1	\$ 5.9	\$ 0.0	\$ 0.1	\$ 1.6	\$ 17.3
Low-Carbon Power Generation	\$ 21.0	\$ 8.9	\$ 14.4	\$ 9.4	\$ 2.1	\$ 2.6	\$ 11.3	\$ 1.1	\$ 2.6	\$ 55.1	\$ 128.6
Transportation	\$ 0.2	\$ 1.8	\$ 5.8	\$ 0.6	\$ 1.1	\$ 0.3	\$ 0.7	\$ 1.1	\$ 0.9	\$ 4.7	\$ 17.3
<b>2030</b>	<b>\$ 64.7</b>	<b>\$ 59.2</b>	<b>\$ 104.7</b>	<b>\$ 22.9</b>	<b>\$ 11.1</b>	<b>\$ 19.3</b>	<b>\$ 72.0</b>	<b>\$ 11.3</b>	<b>\$ 22.4</b>	<b>\$ 217.0</b>	<b>\$ 604.7</b>
Bioenergy	\$ 0.1	\$ 0.7	\$ 0.4	\$ 1.0	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.1	\$ 0.9	\$ 3.9
Buildings	\$ 10.2	\$ 2.7	\$ 20.0	\$ 3.4	\$ 0.5	\$ 4.5	\$ 21.3	\$ 1.2	\$ 2.0	\$ 59.0	\$ 124.7
CCUS	\$ -	\$ 3.1	\$ 0.3	\$ 0.6	\$ 0.5	\$ 0.1	\$ 2.3	\$ 0.5	\$ 0.3	\$ 3.4	\$ 11.2
Energy Storage	\$ 0.2	\$ 3.1	\$ 4.0	\$ 0.2	\$ 0.2	\$ 0.7	\$ 0.4	\$ 0.1	\$ 1.0	\$ 1.4	\$ 11.5
Grid & Charging Infrastructure	\$ 16.4	\$ 12.2	\$ 39.4	\$ 6.5	\$ 3.3	\$ 5.5	\$ 22.9	\$ 3.9	\$ 6.6	\$ 43.2	\$ 159.9
Low-carbon Hydrogen	\$ 2.9	\$ 3.7	\$ 1.2	\$ 0.4	\$ 0.6	\$ 0.0	\$ 1.8	\$ 0.1	\$ 0.4	\$ 1.7	\$ 12.8
Clean Energy Manufacturing	\$ 0.8	\$ 0.3	\$ 9.1	\$ 1.0	\$ 0.3	\$ 0.2	\$ 6.3	\$ 0.1	\$ 0.4	\$ 3.6	\$ 22.0
Low-Carbon Power Generation	\$ 33.8	\$ 28.2	\$ 17.3	\$ 7.5	\$ 3.5	\$ 7.2	\$ 15.9	\$ 2.9	\$ 8.9	\$ 93.8	\$ 219.0
Transportation	\$ 0.2	\$ 5.1	\$ 13.0	\$ 2.1	\$ 1.9	\$ 1.2	\$ 1.1	\$ 2.3	\$ 2.7	\$ 10.0	\$ 39.5
<b>2035</b>	<b>\$ 84.2</b>	<b>\$ 55.3</b>	<b>\$ 198.0</b>	<b>\$ 40.3</b>	<b>\$ 17.1</b>	<b>\$ 24.6</b>	<b>\$ 103.0</b>	<b>\$ 16.4</b>	<b>\$ 34.1</b>	<b>\$ 278.3</b>	<b>\$ 851.3</b>
Bioenergy	\$ 0.2	\$ 0.6	\$ 0.7	\$ 1.7	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.9	\$ 4.6
Buildings	\$ 19.4	\$ 2.9	\$ 34.3	\$ 4.3	\$ 0.5	\$ 4.8	\$ 32.3	\$ 1.2	\$ 2.0	\$ 87.3	\$ 189.1
CCUS	\$ 0.4	\$ 2.3	\$ 5.8	\$ 1.4	\$ 1.4	\$ 0.6	\$ 7.8	\$ 1.2	\$ 1.2	\$ 5.5	\$ 27.5
Energy Storage	\$ 0.4	\$ 11.0	\$ 4.5	\$ 0.9	\$ 0.3	\$ 1.2	\$ 0.6	\$ 0.2	\$ 1.6	\$ 2.3	\$ 22.9
Grid & Charging Infrastructure	\$ 21.4	\$ 15.8	\$ 54.3	\$ 9.8	\$ 4.6	\$ 6.9	\$ 27.7	\$ 4.9	\$ 9.9	\$ 53.3	\$ 208.7
Low-carbon Hydrogen	\$ 1.9	\$ 4.3	\$ 3.0	\$ 1.2	\$ 1.2	\$ 0.0	\$ 4.9	\$ 0.2	\$ 0.4	\$ 2.3	\$ 19.4
Clean Energy Manufacturing	\$ 1.2	\$ 0.2	\$ 10.6	\$ 1.5	\$ 0.2	\$ 0.1	\$ 7.0	\$ 0.1	\$ 0.7	\$ 3.4	\$ 24.9
Low-Carbon Power Generation	\$ 38.6	\$ 9.2	\$ 42.3	\$ 11.3	\$ 5.1	\$ 5.8	\$ 21.0	\$ 3.6	\$ 11.7	\$ 98.4	\$ 247.0
Transportation	\$ 0.6	\$ 8.9	\$ 42.4	\$ 8.2	\$ 3.7	\$ 5.1	\$ 1.8	\$ 4.7	\$ 6.5	\$ 25.0	\$ 107.0

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**Table B.4: Estimated project-level equity investment (\$ billions), Country Pledges (2025, 2030, 2035)**

Country Pledges	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	<b>\$ 15.7</b>	<b>\$ 7.7</b>	<b>\$ 18.9</b>	<b>\$ 5.4</b>	<b>\$ 1.7</b>	<b>\$ 2.6</b>	<b>\$ 11.4</b>	<b>\$ 1.5</b>	<b>\$ 2.3</b>	<b>\$ 34.0</b>	<b>\$ 101.2</b>
Bioenergy	\$ 0.0	\$ 0.5	\$ 0.4	\$ 0.2	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 1.6
Buildings	\$ 3.0	\$ 0.5	\$ 4.2	\$ 0.5	\$ 0.1	\$ 0.7	\$ 0.9	\$ 0.2	\$ 0.4	\$ 3.9	\$ 14.4
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ -	\$ 0.3	\$ -	\$ 0.0	\$ 0.1	\$ 0.6
Energy Storage	\$ 0.1	\$ -	\$ 0.5	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.4	\$ 1.3
Grid & Charging Infrastructure	\$ 2.5	\$ 1.6	\$ 4.5	\$ 0.8	\$ 0.4	\$ 0.8	\$ 3.4	\$ 0.5	\$ 0.8	\$ 6.7	\$ 22.1
Low-carbon Hydrogen	\$ 1.1	\$ 1.1	\$ 0.2	\$ 0.0	\$ 0.2	\$ -	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.2	\$ 3.0
Clean Energy Manufacturing	\$ 0.2	\$ 0.1	\$ 2.6	\$ 0.3	\$ 0.0	\$ 0.0	\$ 2.0	\$ 0.0	\$ 0.0	\$ 0.6	\$ 5.7
Low-Carbon Power Generation	\$ 8.9	\$ 3.5	\$ 5.5	\$ 3.0	\$ 0.7	\$ 1.0	\$ 4.3	\$ 0.4	\$ 0.9	\$ 21.0	\$ 49.3
Transportation	\$ 0.0	\$ 0.3	\$ 1.0	\$ 0.1	\$ 0.2	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.9	\$ 3.2
<b>2030</b>	<b>\$ 22.9</b>	<b>\$ 18.2</b>	<b>\$ 27.2</b>	<b>\$ 6.3</b>	<b>\$ 3.0</b>	<b>\$ 5.6</b>	<b>\$ 22.0</b>	<b>\$ 2.9</b>	<b>\$ 6.3</b>	<b>\$ 70.3</b>	<b>\$ 184.6</b>
Bioenergy	\$ 0.0	\$ 0.2	\$ 0.1	\$ 0.3	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.3	\$ 1.3
Buildings	\$ 3.7	\$ 0.9	\$ 6.4	\$ 1.1	\$ 0.2	\$ 1.4	\$ 7.1	\$ 0.4	\$ 0.7	\$ 20.6	\$ 42.4
CCUS	\$ -	\$ 1.6	\$ 0.2	\$ 0.3	\$ 0.2	\$ 0.0	\$ 1.3	\$ 0.3	\$ 0.2	\$ 1.9	\$ 6.0
Energy Storage	\$ 0.1	\$ 1.0	\$ 1.3	\$ 0.1	\$ 0.1	\$ 0.2	\$ 0.1	\$ 0.0	\$ 0.3	\$ 0.5	\$ 3.7
Grid & Charging Infrastructure	\$ 3.2	\$ 2.1	\$ 6.8	\$ 1.1	\$ 0.5	\$ 0.9	\$ 4.1	\$ 0.6	\$ 1.1	\$ 8.3	\$ 28.7
Low-carbon Hydrogen	\$ 1.3	\$ 1.5	\$ 0.5	\$ 0.2	\$ 0.2	\$ 0.0	\$ 0.8	\$ 0.0	\$ 0.2	\$ 0.7	\$ 5.5
Clean Energy Manufacturing	\$ 0.3	\$ 0.1	\$ 2.9	\$ 0.3	\$ 0.1	\$ 0.1	\$ 2.1	\$ 0.0	\$ 0.1	\$ 1.3	\$ 7.3
Low-Carbon Power Generation	\$ 14.2	\$ 9.8	\$ 6.7	\$ 2.5	\$ 1.2	\$ 2.7	\$ 6.3	\$ 1.0	\$ 3.1	\$ 34.8	\$ 82.2
Transportation	\$ 0.0	\$ 1.0	\$ 2.4	\$ 0.4	\$ 0.3	\$ 0.2	\$ 0.2	\$ 0.4	\$ 0.5	\$ 2.0	\$ 7.6
<b>2035</b>	<b>\$ 28.2</b>	<b>\$ 15.3</b>	<b>\$ 52.3</b>	<b>\$ 10.8</b>	<b>\$ 4.7</b>	<b>\$ 6.5</b>	<b>\$ 32.5</b>	<b>\$ 4.2</b>	<b>\$ 9.2</b>	<b>\$ 88.0</b>	<b>\$ 252.0</b>
Bioenergy	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.5	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.3	\$ 1.5
Buildings	\$ 7.0	\$ 0.9	\$ 10.8	\$ 1.3	\$ 0.2	\$ 1.5	\$ 10.8	\$ 0.4	\$ 0.6	\$ 30.2	\$ 63.8
CCUS	\$ 0.2	\$ 1.2	\$ 2.9	\$ 0.7	\$ 0.7	\$ 0.3	\$ 4.1	\$ 0.6	\$ 0.6	\$ 3.0	\$ 14.2
Energy Storage	\$ 0.1	\$ 3.5	\$ 1.4	\$ 0.3	\$ 0.1	\$ 0.4	\$ 0.2	\$ 0.1	\$ 0.5	\$ 0.8	\$ 7.4
Grid & Charging Infrastructure	\$ 4.2	\$ 2.7	\$ 9.4	\$ 1.7	\$ 0.7	\$ 1.2	\$ 4.9	\$ 0.8	\$ 1.7	\$ 10.2	\$ 37.5
Low-carbon Hydrogen	\$ 0.8	\$ 1.7	\$ 1.2	\$ 0.5	\$ 0.5	\$ 0.0	\$ 2.0	\$ 0.1	\$ 0.2	\$ 1.0	\$ 7.9
Clean Energy Manufacturing	\$ 0.4	\$ 0.1	\$ 3.3	\$ 0.5	\$ 0.0	\$ 0.0	\$ 2.3	\$ 0.0	\$ 0.2	\$ 1.2	\$ 8.2
Low-Carbon Power Generation	\$ 15.2	\$ 3.3	\$ 14.7	\$ 3.8	\$ 1.8	\$ 2.1	\$ 7.9	\$ 1.3	\$ 4.1	\$ 36.3	\$ 90.5
Transportation	\$ 0.1	\$ 1.7	\$ 8.3	\$ 1.6	\$ 0.7	\$ 1.0	\$ 0.3	\$ 0.9	\$ 1.3	\$ 5.0	\$ 21.0

## The Clean Energy Equity Investment Gap

**Table B.5: Estimated project-level CapEx investment (\$ billions), Global Net Zero 2050 (2025, 2030, 2035)**

Global Net Zero 2050	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	<b>\$ 62.0</b>	<b>\$ 27.5</b>	<b>\$ 81.6</b>	<b>\$ 19.5</b>	<b>\$ 7.1</b>	<b>\$ 10.8</b>	<b>\$ 42.1</b>	<b>\$ 6.8</b>	<b>\$ 9.5</b>	<b>\$ 111.9</b>	<b>\$ 378.8</b>
Bioenergy	\$ 0.1	\$ 1.7	\$ 1.3	\$ 0.7	\$ 0.3	\$ 0.0	\$ 0.0	\$ 0.4	\$ 0.1	\$ 0.7	\$ 5.2
Buildings	\$ 8.7	\$ 1.6	\$ 12.3	\$ 1.7	\$ 0.3	\$ 2.4	\$ 2.6	\$ 0.6	\$ 1.1	\$ 11.1	\$ 42.3
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.3	\$ 0.0	\$ 0.2	\$ 0.6	\$ -	\$ 0.0	\$ 0.2	\$ 1.3
Energy Storage	\$ 0.2	\$ -	\$ 2.7	\$ 0.7	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.2	\$ 1.0	\$ 5.2
Grid & Charging Infrastructure	\$ 13.3	\$ 9.8	\$ 28.0	\$ 4.8	\$ 2.7	\$ 4.7	\$ 19.6	\$ 3.3	\$ 4.4	\$ 36.5	\$ 127.1
Low-carbon Hydrogen	\$ 2.6	\$ 3.4	\$ 0.4	\$ 0.1	\$ 0.4	\$ 0.0	\$ 0.5	\$ 0.1	\$ 0.0	\$ 0.5	\$ 8.1
Clean Energy Manufacturing	\$ 0.5	\$ 0.2	\$ 8.5	\$ 1.0	\$ 0.1	\$ 0.1	\$ 6.1	\$ 0.0	\$ 0.1	\$ 1.6	\$ 18.1
Low-Carbon Power Generation	\$ 36.0	\$ 8.9	\$ 21.4	\$ 9.4	\$ 2.1	\$ 3.0	\$ 11.4	\$ 1.3	\$ 2.6	\$ 55.1	\$ 151.2
Transportation	\$ 0.6	\$ 1.8	\$ 7.0	\$ 0.7	\$ 1.2	\$ 0.4	\$ 1.2	\$ 1.2	\$ 1.0	\$ 5.2	\$ 20.3
<b>2030</b>	<b>\$ 101.1</b>	<b>\$ 90.1</b>	<b>\$ 207.6</b>	<b>\$ 26.6</b>	<b>\$ 12.3</b>	<b>\$ 23.4</b>	<b>\$ 92.1</b>	<b>\$ 13.0</b>	<b>\$ 26.9</b>	<b>\$ 278.6</b>	<b>\$ 871.7</b>
Bioenergy	\$ 0.2	\$ 1.0	\$ 0.7	\$ 1.0	\$ 0.3	\$ 0.0	\$ 0.1	\$ 0.2	\$ 0.1	\$ 1.4	\$ 5.1
Buildings	\$ 24.0	\$ 3.3	\$ 76.2	\$ 4.0	\$ 0.7	\$ 5.9	\$ 26.0	\$ 1.4	\$ 2.3	\$ 82.4	\$ 226.2
Carbon Capture, Utilization, and Storage (CCUS)	\$ -	\$ 6.1	\$ 3.3	\$ 0.7	\$ 0.3	\$ 0.2	\$ 4.0	\$ 0.7	\$ 0.0	\$ 5.6	\$ 20.8
Energy Storage	\$ 0.2	\$ 3.1	\$ 7.1	\$ 0.1	\$ 0.2	\$ 0.9	\$ 0.4	\$ 0.2	\$ 1.2	\$ 1.9	\$ 15.2
Grid & Charging Infrastructure	\$ 21.1	\$ 13.9	\$ 49.4	\$ 7.4	\$ 3.5	\$ 6.2	\$ 25.2	\$ 4.3	\$ 7.6	\$ 49.4	\$ 188.2
Low-carbon Hydrogen	\$ 3.8	\$ 4.8	\$ 7.2	\$ 0.4	\$ 1.0	\$ 0.0	\$ 3.1	\$ 0.0	\$ 0.5	\$ 1.5	\$ 22.4
Clean Energy Manufacturing	\$ 1.0	\$ 0.5	\$ 10.0	\$ 1.1	\$ 0.3	\$ 0.2	\$ 6.7	\$ 0.1	\$ 0.5	\$ 4.5	\$ 24.8
Low-Carbon Power Generation	\$ 47.2	\$ 49.7	\$ 34.8	\$ 8.7	\$ 3.9	\$ 8.4	\$ 21.3	\$ 3.3	\$ 10.6	\$ 118.2	\$ 305.9
Transportation	\$ 3.6	\$ 7.7	\$ 19.1	\$ 3.1	\$ 2.1	\$ 1.7	\$ 5.2	\$ 2.8	\$ 4.0	\$ 13.8	\$ 63.0
<b>2035</b>	<b>\$ 148.9</b>	<b>\$ 78.9</b>	<b>\$ 381.7</b>	<b>\$ 52.0</b>	<b>\$ 21.5</b>	<b>\$ 38.8</b>	<b>\$ 143.7</b>	<b>\$ 22.2</b>	<b>\$ 45.6</b>	<b>\$ 366.4</b>	<b>\$ 1,299.7</b>
Bioenergy	\$ 0.4	\$ 0.9	\$ 1.6	\$ 1.5	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.2	\$ 0.1	\$ 1.7	\$ 6.5
Buildings	\$ 45.3	\$ 3.6	\$ 114.0	\$ 5.2	\$ 0.7	\$ 6.6	\$ 34.7	\$ 1.5	\$ 2.4	\$ 111.0	\$ 324.9
Carbon Capture, Utilization, and Storage (CCUS)	\$ 0.7	\$ 3.7	\$ 14.6	\$ 1.3	\$ 1.6	\$ 0.8	\$ 9.9	\$ 2.0	\$ 1.4	\$ 8.9	\$ 44.9
Energy Storage	\$ 0.5	\$ 13.9	\$ 6.1	\$ 1.1	\$ 0.4	\$ 1.7	\$ 0.6	\$ 0.3	\$ 2.1	\$ 2.9	\$ 29.3
Grid & Charging Infrastructure	\$ 35.2	\$ 21.0	\$ 82.7	\$ 13.6	\$ 5.6	\$ 10.2	\$ 36.6	\$ 6.3	\$ 14.1	\$ 72.9	\$ 298.2
Low-carbon Hydrogen	\$ 4.8	\$ 6.5	\$ 7.6	\$ 1.6	\$ 2.0	\$ 0.4	\$ 8.0	\$ 0.3	\$ 0.5	\$ 3.6	\$ 35.3
Clean Energy Manufacturing	\$ 1.4	\$ 0.2	\$ 11.8	\$ 1.7	\$ 0.2	\$ 0.3	\$ 7.7	\$ 0.2	\$ 0.8	\$ 4.1	\$ 28.4
Low-Carbon Power Generation	\$ 47.3	\$ 14.7	\$ 67.8	\$ 13.0	\$ 6.1	\$ 9.9	\$ 29.0	\$ 4.6	\$ 13.6	\$ 120.1	\$ 326.1
Transportation	\$ 13.3	\$ 14.5	\$ 75.6	\$ 13.2	\$ 4.9	\$ 9.0	\$ 17.2	\$ 6.8	\$ 10.5	\$ 41.3	\$ 206.3

## The Clean Energy Equity Investment Gap

**Table B.6: Estimated project-level equity investment (\$ billions), Global Net Zero 2050 (2025, 2030, 2035)**

Global Net Zero 2050	Africa	Brazil	India	Indonesia	Malaysia	Mexico	Middle East	Thailand	Vietnam	Rest of World	Total
<b>2025</b>	<b>\$ 22.9</b>	<b>\$ 8.1</b>	<b>\$ 22.3</b>	<b>\$ 5.4</b>	<b>\$ 1.7</b>	<b>\$ 2.9</b>	<b>\$ 11.6</b>	<b>\$ 1.6</b>	<b>\$ 2.4</b>	<b>\$ 34.4</b>	<b>\$ 113.2</b>
Bioenergy	\$ 0.0	\$ 0.5	\$ 0.4	\$ 0.2	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.2	\$ 1.7
Buildings	\$ 3.2	\$ 0.5	\$ 3.9	\$ 0.5	\$ 0.1	\$ 0.8	\$ 0.9	\$ 0.2	\$ 0.4	\$ 3.9	\$ 14.4
CCUS	\$ -	\$ 0.0	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.1	\$ 0.3	\$ -	\$ 0.0	\$ 0.1	\$ 0.7
Energy Storage	\$ 0.1	\$ -	\$ 0.9	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.1	\$ 0.4	\$ 1.7
Grid & Charging Infrastructure	\$ 2.7	\$ 1.7	\$ 4.7	\$ 0.8	\$ 0.4	\$ 0.8	\$ 3.5	\$ 0.5	\$ 0.8	\$ 7.0	\$ 22.8
Low-carbon Hydrogen	\$ 1.2	\$ 1.5	\$ 0.2	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.2	\$ 0.0	\$ 0.0	\$ 0.2	\$ 3.6
Clean Energy Manufacturing	\$ 0.2	\$ 0.1	\$ 2.7	\$ 0.3	\$ 0.0	\$ 0.0	\$ 2.0	\$ 0.0	\$ 0.0	\$ 0.6	\$ 6.0
Low-Carbon Power Generation	\$ 15.3	\$ 3.5	\$ 8.1	\$ 3.0	\$ 0.7	\$ 1.1	\$ 4.4	\$ 0.5	\$ 0.9	\$ 21.0	\$ 58.5
Transportation	\$ 0.1	\$ 0.3	\$ 1.3	\$ 0.1	\$ 0.2	\$ 0.1	\$ 0.2	\$ 0.2	\$ 0.2	\$ 1.0	\$ 3.8
<b>2030</b>	<b>\$ 35.1</b>	<b>\$ 28.3</b>	<b>\$ 59.3</b>	<b>\$ 7.3</b>	<b>\$ 3.3</b>	<b>\$ 6.6</b>	<b>\$ 28.3</b>	<b>\$ 3.3</b>	<b>\$ 7.4</b>	<b>\$ 90.5</b>	<b>\$ 269.6</b>
Bioenergy	\$ 0.1	\$ 0.3	\$ 0.2	\$ 0.3	\$ 0.1	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.5	\$ 1.7
Buildings	\$ 8.7	\$ 1.1	\$ 24.2	\$ 1.3	\$ 0.2	\$ 1.9	\$ 8.7	\$ 0.4	\$ 0.8	\$ 28.4	\$ 75.6
CCUS	\$ -	\$ 3.1	\$ 1.7	\$ 0.4	\$ 0.2	\$ 0.1	\$ 2.1	\$ 0.3	\$ 0.0	\$ 3.1	\$ 11.0
Energy Storage	\$ 0.1	\$ 1.0	\$ 2.2	\$ 0.0	\$ 0.1	\$ 0.3	\$ 0.1	\$ 0.1	\$ 0.4	\$ 0.6	\$ 4.9
Grid & Charging Infrastructure	\$ 4.2	\$ 2.4	\$ 8.7	\$ 1.3	\$ 0.6	\$ 1.0	\$ 4.5	\$ 0.7	\$ 1.4	\$ 9.5	\$ 34.2
Low-carbon Hydrogen	\$ 1.7	\$ 2.0	\$ 2.9	\$ 0.2	\$ 0.4	\$ 0.0	\$ 1.3	\$ 0.0	\$ 0.2	\$ 0.7	\$ 9.3
Clean Energy Manufacturing	\$ 0.4	\$ 0.2	\$ 3.2	\$ 0.3	\$ 0.1	\$ 0.0	\$ 2.2	\$ 0.0	\$ 0.2	\$ 1.5	\$ 8.1
Low-Carbon Power Generation	\$ 19.3	\$ 16.8	\$ 12.6	\$ 2.9	\$ 1.4	\$ 3.0	\$ 8.2	\$ 1.1	\$ 3.8	\$ 43.4	\$ 112.5
Transportation	\$ 0.7	\$ 1.5	\$ 3.7	\$ 0.6	\$ 0.4	\$ 0.3	\$ 1.0	\$ 0.5	\$ 0.8	\$ 2.7	\$ 12.2
<b>2035</b>	<b>\$ 46.9</b>	<b>\$ 21.9</b>	<b>\$ 104.5</b>	<b>\$ 13.5</b>	<b>\$ 5.9</b>	<b>\$ 10.3</b>	<b>\$ 43.2</b>	<b>\$ 5.7</b>	<b>\$ 11.9</b>	<b>\$ 112.9</b>	<b>\$ 376.7</b>
Bioenergy	\$ 0.1	\$ 0.3	\$ 0.5	\$ 0.5	\$ 0.0	\$ 0.0	\$ 0.0	\$ 0.1	\$ 0.0	\$ 0.6	\$ 2.1
Buildings	\$ 15.9	\$ 1.1	\$ 35.8	\$ 1.6	\$ 0.2	\$ 2.1	\$ 11.4	\$ 0.5	\$ 0.8	\$ 37.5	\$ 106.8
CCUS	\$ 0.4	\$ 1.8	\$ 7.1	\$ 0.6	\$ 0.8	\$ 0.4	\$ 5.1	\$ 1.0	\$ 0.7	\$ 4.8	\$ 22.6
Energy Storage	\$ 0.2	\$ 4.4	\$ 1.9	\$ 0.3	\$ 0.1	\$ 0.5	\$ 0.2	\$ 0.1	\$ 0.7	\$ 1.0	\$ 9.3
Grid & Charging Infrastructure	\$ 7.0	\$ 3.7	\$ 14.8	\$ 2.4	\$ 0.9	\$ 1.8	\$ 6.5	\$ 1.1	\$ 2.6	\$ 14.1	\$ 54.8
Low-carbon Hydrogen	\$ 2.1	\$ 2.6	\$ 2.9	\$ 0.6	\$ 0.8	\$ 0.2	\$ 3.3	\$ 0.1	\$ 0.2	\$ 1.5	\$ 14.3
Clean Energy Manufacturing	\$ 0.5	\$ 0.1	\$ 3.7	\$ 0.5	\$ 0.1	\$ 0.1	\$ 2.5	\$ 0.1	\$ 0.3	\$ 1.4	\$ 9.2
Low-Carbon Power Generation	\$ 18.1	\$ 5.1	\$ 22.9	\$ 4.3	\$ 2.2	\$ 3.5	\$ 10.7	\$ 1.6	\$ 4.7	\$ 43.7	\$ 116.8
Transportation	\$ 2.7	\$ 2.8	\$ 14.9	\$ 2.6	\$ 0.9	\$ 1.8	\$ 3.4	\$ 1.3	\$ 2.1	\$ 8.2	\$ 40.8