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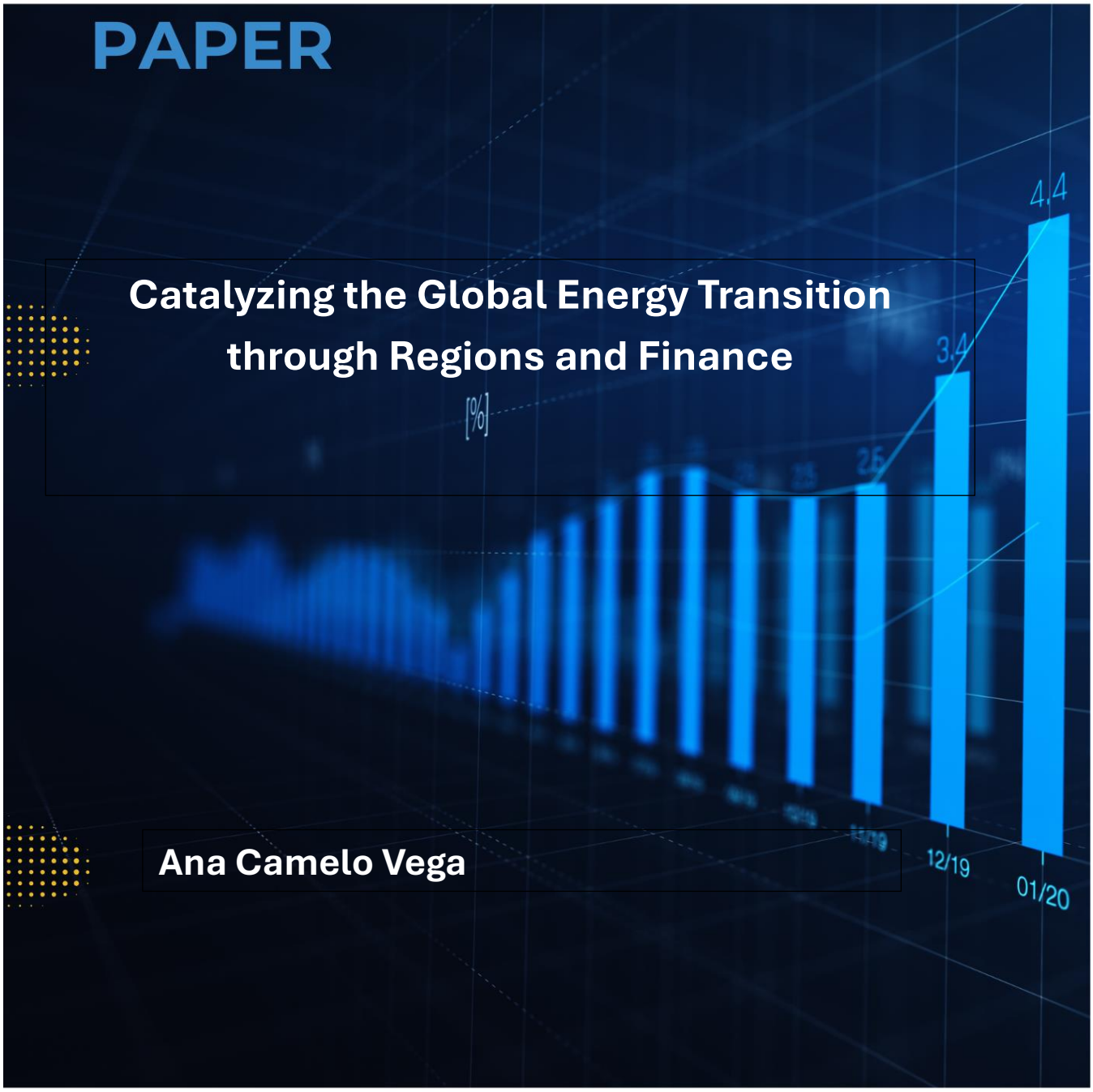

Catalyzing the Global Energy Transition through Regions and Finance

Ana Camelo Vega

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
DEPARTMENT OF ECONOMICS

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Ana M. Camelo Vega, Columbia Climate School, Columbia Centre of Sustainable Investment, USA, ac5545@columbia.edu

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International Economics and Development Laboratory (IEDL), University of Athens, Greece

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ABSTRACT

The global energy transition, essential for achieving climate goals and sustainable development, faces significant challenges, particularly in emerging markets and developing economies. These challenges include high capital costs, policy inconsistencies, debt burdens, and limited mobilization of private capital due to high perceived risks. This paper explores the importance of regional perspectives in overcoming these barriers, emphasizing how regional public goods, cross-border investments, and tailored financial mechanisms can drive scalable solutions. It provides a comprehensive assessment of regional contexts—highlighting opportunities and constraints in Africa, Asia and the Pacific, and Latin America and the Caribbean—and identifies the potential of innovative financial catalysts, namely blended finance. The analysis underscores the critical role of regional collaboration and financial innovation in fulfilling global commitments, such as the latest USD 300 billion pledge, and presents actionable recommendations for policymakers, international financial institutions, and private sector stakeholders to accelerate the energy transition equitably and effectively.

Keywords: Sustainable Finance, Energy Transition, Cost of Capital, Emerging Markets, Regional Pathways

JEL Classification: Q01, Q40, F35, G23, O16.

1. Introduction

The global economy—already burdened by persistent inflation, supply chain disruptions, and geopolitical tensions—now faces growing pressure from escalating conflicts, extreme weather events, and rising financial instability. Ongoing crises are compounding uncertainty, driving volatility in energy markets, and further undermining international cooperation.[i] At the same time, the accelerating impacts of climate change, from devastating wildfires to record-breaking heat waves and floods, underscore the urgent need for resilient, sustainable energy systems.[ii] Meeting global climate targets and the Sustainable Development Goals (SDGs) requires a worldwide commitment to phasing out fossil fuels and building clean energy systems.

Rising interest rates and growing debt burdens, particularly in emerging markets and developing economies (EMDEs), are making it increasingly challenging to finance the global clean energy transition. Many countries are compelled to prioritize immediate economic stabilization over long-term sustainability, forcing a difficult trade-off between short-term energy security and the urgency of accelerating decarbonization. Yet 2024 marked a turning point: for the first time, global investments in renewable power, grids, and storage surpassed total spending on oil, gas, and coal.[iii]

In the same year, advanced economies (AEs) pledged to mobilize USD 300 billion annually by 2030 to support climate action in developing economies.[iv] While this is an increase from the USD 100 billion commitment in 2009, it remains grievously insufficient and fails to account for inflation or other macroeconomic shifts that erode its real value.[v] Worse, AEs failed to meet their original target on time –the USD 100 billion pledge was meant for 2020 but was only fulfilled in 2022.[vi] The updated broader goal, known as the new collective quantified goal (NCQG), aims to mobilize USD 1.3 trillion international climate finance over the same period, a closer figure to the actual needs of developing nations.[vii] However, the effectiveness of these commitments remains uncertain.

While estimates of the financing gap to achieve net zero vary due to inconsistencies in definition, standardization, and methodology, one conclusion remains clear: current climate financing flows fall drastically short of what is needed globally. Meeting global investment needs will

require $6.4 to $6.7 trillion per year by 2030, according to the latest estimates.[viii] Existing policies and market dynamics are projected to finance less than two-thirds of the investment required to triple installed renewable capacity by 2030. [ix]

Most importantly, significant disparities persist in the distribution of clean energy funding. EMDEs outside of China account for only about 15% of global clean energy spending—a stark contrast to the estimated USD 2.4 trillion they require annually to achieve net-zero targets.[x] While there are signs of increased investments in regions such as India, Brazil, parts of Southeast Asia, and Africa—attributed to new policy initiatives and improved grid infrastructure—the overall share remains woefully insufficient to meet sustainable energy demands.[xi]

Clean energy transformation fundamentally demands interconnected systems, collaborative frameworks, and large-scale investment flows. Addressing the energy transition requires a bold, regionally tailored strategy that integrates engineering, institutional, and financial solutions at scale, ensuring a just and effective transformation.

Beyond financial and economic reasons (i.e. economies of scale, cost-sharing, and reduced need for standalone national financing), joint investments in large-scale clean energy projects offer a well-documented array of benefits, making them a crucial strategy for a sustainable future, especially in regions where energy demand justifies the significant investment in long-distance power transmissions. [xii] Many countries are increasingly looking beyond their borders to enhance energy security and reliability by integrating their power grids into broader regional networks.[xiii]

Cross-border interconnections improve trade efficiency, diversify energy sources, and reduce the risk of disruptions. They balance variable renewables like wind and solar across regions, lowering costs and strengthening resilience. These networks also connect energy-rich areas with those that have higher demand, reducing storage needs and operating costs. By spreading generation and use over a wider area, they stabilize grids and accelerate the clean energy transition.[xiv]

While cross-border integration of power grids offers substantial benefits, it also presents multifaceted challenges that can hinder progress. Presently,

less than 3% of global electricity is traded across borders.[xv] Geopolitics plays a critical role in shaping the effectiveness of regional energy transition planning.[xvi] Divergent political priorities, regulatory fragmentation, and economic competition hinder regional energy coordination. The lack of harmonized frameworks undermines investor confidence, delays approvals, and raises transaction costs, slowing the energy transition. Fossil fuel subsidies, bureaucratic permitting, and inadequate grid infrastructure further obstruct the efficient deployment of renewable energy.

Beyond regulatory and financial barriers, technical and operational complexities present significant obstacles. Aligning grids with disparate technical standards and operational practices is both intricate and costly, necessitating substantial infrastructure upgrades to facilitate seamless cross-border energy exchange.[xvii] Addressing these multifaceted challenges requires strategic planning, enhanced stakeholder collaboration, and scaled investment to foster an integrated and resilient regional energy system capable of supporting the global energy transition.

This paper adopts a qualitative, comparative approach to examine regional financing frameworks and investment trends across three key geographies: Africa, Asia and the Pacific (APAC), and Latin America and the Caribbean (LAC). Drawing on a range of secondary sources—including datasets from the International Energy Agency (IEA), International Monetary Fund (IMF), World Bank, and relevant regional initiatives—it synthesizes the major financial challenges and investment opportunities that define each region's pathway toward an accelerated energy transition.

The analysis integrates a thematic review of policy frameworks, financial instruments (notably blended finance), and regional cooperation mechanisms. It is further informed by empirical data on financing costs, clean energy deployment patterns, and cross-border investment strategies observed across EMDEs, as well as by insights from multilateral and regional stakeholders.

In addition, this research builds upon prior work conducted by the Columbia Center on Sustainable Investment (CCSI) and the UN-convened Council of Engineers for the Energy Transition (CEET), in collaboration with the Global Energy Interconnection Development and Cooperation Organization (GEIDCO), the Environmental Defense Fund (EDF),

regional UN Economic Commissions, Multilateral Development Banks (MDBs), and other regional partners.

This paper contributes to ongoing efforts by further analyzing regional financing dynamics, with a focus on EMDEs. It is structured as follows: Section II identifies the cost of capital as the main barrier to financing the energy transition—a common challenge across EMDEs. Section III explores the advantages and limitations of a regional approach, followed by a brief overview of regional contexts. Section IV examines the roles of public and private investors in closing the investment gap and supporting the implementation of regional transition plans and long-term strategies. The final section concludes.

2. Cost of Capital as the Main Barrier to Finance the Energy Transition

Effective financing of the energy transition requires a clear understanding of key variables. Chief among these are the high capital intensity of clean energy projects, the early-stage nature of many technologies, and the diverse risks inherent to the energy sector—including policy instability, shifting priorities, regulatory uncertainty, execution risks, currency depreciation, market volatility, and the threat of stranded assets. [xviii] These factors undermine investor confidence, raise financing costs, and threaten project viability. The structure and reliability of revenue streams, along with regulatory support—such as feed-in tariffs, tax incentives, and market reforms—are equally critical in shaping financing accessibility and determining appropriate financial instruments.

The biggest barrier to financing the energy transition—both nationally and regionally—is limited access to affordable capital, especially in EMDEs. Financing costs in these markets are, on average, 700 to 1,500 basis points (bp) higher than in AEs such as the U.S. or Europe. [xix] Lowering the cost of capital is essential to speeding up the global clean energy transition. Even a 1 percentage point (100 bp) drop could save EMDEs around USD 150 billion in annual financing costs.[xx]

The economic literature has constantly proven that the cost of capital, often measured by the Weighted Average Cost of Capital (WACC), is highly responsive to perceived investment risks across multiple dimensions.[xxi] These risks, which include sovereign, political, currency, liquidity, and

project-level risks, are irrefutable and present in clean energy investments across regions. However, accurately assessing these risks in EMDEs requires a nuanced and context-specific approach. Research on investment risk perception in these markets is growing, revealing that investors often overestimate actual risks. This misjudgment stems from limited understanding of local market dynamics, home-country bias, unfamiliarity with risk mitigation instruments, and insufficient access to reliable data.[xxii]

Moreover, the methodologies and criteria used by asset managers and investors to assess risk are central to investment decision-making, directly affecting capital allocation and strategy. Despite greater scrutiny since the 2008–2009 financial crisis, credit ratings from the three major Credit Rating Agencies (CRAs) continue to heavily influence investment decisions and determine access to capital.[xxiii]

EMDEs generally receive significantly lower sovereign credit ratings than AEs, primarily due a strong focus on short-term default risks. As of May 2024, only less than 15% of EMDEs with a sovereign credit rating had an investment grade.[xxiv] based on indicators such as GDP per capita, inflation, external debt, and fiscal vulnerabilities—can create a self-reinforcing cycle in EMDEs. Lower ratings raise the WACC, reduce investor confidence, and intensify fiscal strain, thereby increasing the very default risks the ratings are meant to reflect.[xxv] Problematically, regression analyses indicate that GDP per capita is the most influential determinant of sovereign credit ratings, often outweighing other key financial indicators.[xxvi] This suggests that sovereign credit ratings often overlook critical factors—such as potential economic growth—resulting in credit assessments that may be overly simplistic or biased.

EMDEs with lower credit ratings have faced slower economic growth and tougher financial conditions, including currency depreciation and widening sovereign spreads. Roughly one-third are projected to have per capita incomes in 2024 below 2019 levels, with growth between 2020 and 2024 marking the weakest non-consecutive five-year average since the mid-1990s.[xxvii]

As a result, EMDEs are often forced to rely on short-term, high-cost loans that are poorly suited to the long-term nature of clean energy investments. In addition to these unfavorable financing conditions, they continue to depend heavily on public funding to advance the energy transition.[xxviii]

Notably, a substantial portion of climate and renewable energy funding from advanced economies to EMDEs is diminished by high costs embedded in loan terms. Between 2015 and 2020, advanced economies provided at least USD 18 billion in market-rate loans and an additional USD 11 billion in loans with restrictive conditions.[xxix] This underscores how EMDEs remain constrained by a financial system that inadequately reflects their specific challenges and the long-term nature of their development goals.

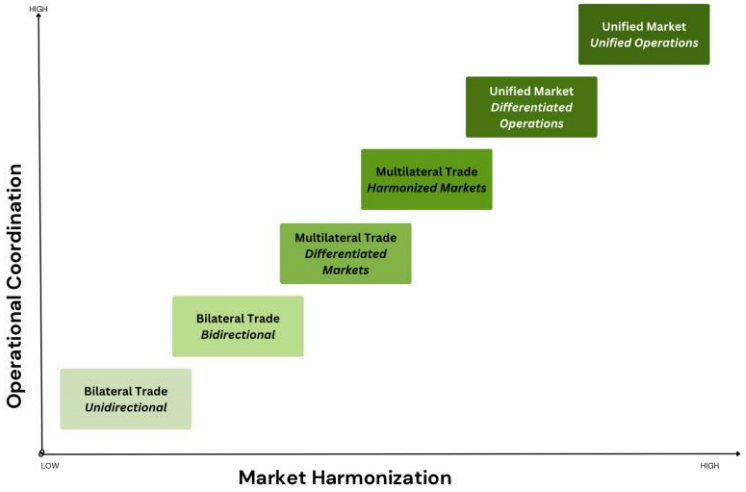
Though widespread, financial challenges in EMDEs vary by region due to differing economies, regulations, and transition priorities. Addressing them requires tailored, region-specific financing strategies.

3. Regional Insights as Part of the Solution

As highlighted in the Introduction and supported by evidence, cross-border cooperation in the clean energy transition offers significant benefits, which can be categorized into four key areas: cost-efficiency reliability, trading, competition, and reintegration.[xxx] More importantly, regional power systems can accommodate higher shares of variable renewables by leveraging larger balancing areas and benefiting from the natural smoothing of resource variability, facilitating a clean energy transition at scale.[xxxi]

Regional energy systems can involve –but not be limited to— cross-border transition planning cooperation, grid synchronization, electricity markets integration, system operation coordination, policy and regulatory alignment, and institutional consolidation.[xxxii] Regional integration can involve bilateral (unidirectional or bidirectional) power trade, multilateral (multidirectional) trade among differentiated markets, multilateral (multidirectional) trade among harmonized markets, unified market structure with differentiated operations, and ultimately, unified market with unified operations.[xxxiii] Figure 1 showcases this.

Figure 1: Regional Energy Systems



Source: Author's elaboration based on IEA.

Investment costs for cross-border energy integration typically fall into two main categories: generation capacity and transmission infrastructure.[xxxiv] Electricity generation costs are usually borne by individual public or private investors and rarely shared across borders, except in cases like bilateral projects with cross-border impacts. In contrast, transmission costs are typically shared among parties based on the "beneficiary pays" principle—each pays in proportion to the benefits received. In practice, this is hard to apply due to difficulties in measuring benefits and securing public support, especially when benefits are widely dispersed. Globally, generation investment has long outpaced transmission, highlighting a persistent imbalance in energy sector financing.[xxxv]

A key example of cross-border energy cooperation is the Itaipu Dam, jointly developed by Brazil and Paraguay along their shared border on the Paraná River. [xxxvi] Built under the 1973 Itaipu Treaty, the project features shared costs, management, and electricity output. Itaipu supplies about 90% of Paraguay's electricity and is a major source for Brazil. [xxxvii] While it has driven economic growth in both countries, its financing—especially debt repayment and pricing—has been a recurring issue. The 2023 treaty renegotiation highlights the complexities of long-term cross-border energy agreements, including cost-sharing, benefit allocation, and shifting market conditions. [xxxviii]

Cross-border cooperation and planning are not end goals but critical enablers of an efficient, resilient, and sustainable energy system. While

regional power systems can accelerate the clean energy transition, they are not a cure-all. Economic challenges include fair cost-sharing for infrastructure and operations, while security concerns involve supply self-sufficiency, blackout risks, and uncoordinated power flows.[xxxix] Additionally, local energy policies can have unintended cross-border effects, such as imbalances in capacity and power flows.[xl]

For regional energy transitions to succeed, benefits must be clearly demonstrated and transparent across jurisdictions. This requires a holistic approach—strong institutions, effective interconnection governance, regional knowledge-sharing, long-term investment planning, and coordinated, transparent cost-sharing. Transnational clean energy systems, above all, depend on political, technical, and institutional alignment.[xli]

From this perspective, it is crucial to carefully evaluate the diverse socio-economic and energy landscapes across Africa, APAC, and LAC, with a particular emphasis on EMDEs within these regions.

Africa

Africa faces a unique and urgent challenge: over 75% of the global population without electricity lives on the continent. [xlii] This structural energy gap puts the region at a disadvantage, as expanding access must take priority before a full transition to clean energy. Global energy transition goals cannot be met without achieving universal electrification in Africa and other underserved regions.

Beyond access, affordability, reliability, and fuel quality remain major hurdles. The region's energy mix is still dominated by traditional biomass and fossil fuels. Biomass—mainly wood and charcoal—accounts for over 45% of primary energy use, especially for cooking in rural areas. [xliii] Without targeted investment in clean cooking solutions, millions will remain dependent on inefficient, polluting fuels, worsening deforestation, environmental degradation, and health risks from indoor air pollution.

Despite this, the region possesses immense potential for renewable energy, with abundant solar, bioenergy, geothermal, wind, and hydropower resources.[xliv] Hydropower has historically been the largest source of renewable electricity on the continent, with major projects such as the Grand Ethiopian Renaissance Dam demonstrating its continued relevance.

[xlv] Similarly, solar and wind energy are now experiencing rapid growth, driven by declining technology costs and increasing investment. [xlvi]

Beyond its abundant natural potential for the energy transition, Africa has taken bold steps toward regional planning and coordination. Among the most significant initiatives is Agenda 2063, led by the African Union (AU), which serves as a long-term blueprint for inclusive and sustainable development.[xlvii] A key component of this vision is the African Single Electricity Market (AfSEM), designed to integrate transnational power pools and enhance electricity trade across the continent. In parallel, the Continental Power Systems Masterplan (CMP) provides a strategic roadmap for the long-term interconnection of Africa's energy infrastructure.[xlviii]

Complementing these efforts, the African Continental Free Trade Area (AfCFTA) has the potential to accelerate the energy transition by reducing tariffs and trade barriers, facilitating the smoother exchange of energy technologies and resources. Market integration under AfCFTA is expected to attract greater investment in renewable energy projects while also promoting regional infrastructure development, including interconnected energy grids that improve access and reliability. [xlix]

While these initiatives are ambitious and forward-looking, policy implementation remains far from sufficient to meet SDG7—let alone achieve net-zero emissions by mid-century. [1] The region's regulatory landscape is fragmented, with inconsistent standards and policies across countries, limiting cross-border energy projects and trade. Without major reforms, current frameworks could leave 565 million people without electricity and nearly one billion without clean cooking access by 2030. [li]

A major obstacle to implementing the desired regulatory framework is the stark mismatch between available capital and the financial needs of Africa's rapidly expanding clean energy sector. Despite accounting for roughly 20% of the global population, Africa receives less than 2% of the world's clean energy funding. [lii] Sub-Saharan Africa (SSA) has experienced a notable decline in per capita investment, receiving less than 1.5% of global renewable energy investment between 2000 and 2020. [liii]

To successfully achieve Agenda 2063 and meet SDG7 by 2030, Africa requires an estimated USD 4.22 trillion by 2050 (in 2019 dollars). [liv]

Implementing African Nationally Determined Contributions (NDCs) is projected to cost nearly USD 3 trillion by 2030. [lv] Historically, due to competing fiscal priorities, African governments have committed to investing only about 10% of the annual funding required to advance the region's energy transition. [lvi] The IEA estimates that African energy systems will need an average of USD 30 billion per year in concessional financing by 2030 to leverage the threefold increase required in private investment given that national governments cannot bridge alone.[lvii]

Due to this shortfall, many African countries depend heavily on external financing—from private and public lenders, international institutions, and foreign governments. However, the cost of capital in Africa remains prohibitively high. [lviii] Between 2019 and 2021, utility-scale solar PV projects in the region that successfully secured external funding faced WACC ranging from 6.9% to 10.7%, compared to 2.2% to 10% in Western Europe. [lix] Even after accounting for risk ratings, SSA countries incur significantly higher borrowing costs in foreign currency than their peers in other regions. From 2004 to 2021, SSA countries paid, on average, 2.1 percentage points more in coupon rates at issuance compared to other regions. [lx] Similarly, between 2014 and 2021, SSA issuances consistently carried coupon rates that were 1.3 percentage points higher per year than those of EMDEs. [lxi] The disparity is even more pronounced in the secondary market, further exacerbating financing challenges.

Asia and the Pacific

With a rapidly growing population exceeding 4.5 billion, the APAC region accounts for more than half of global energy consumption, with over 97% of its residents having access to energy.[lxii] Within the APAC region, the ten member countries of the Association of Southeast Asian Nations (ASEAN) are at a pivotal juncture, poised to play a key role in driving the global energy transition. As the world's fourth-largest energy consumer, ASEAN's demand is fueled by a fast-growing population nearing 700 million and one of the highest economic growth rates globally. [lxiii] This rapid expansion drives an annual energy consumption increase of over 3%, a trend expected to persist throughout the decade. [lxiv]

Fossil fuels—mainly coal—currently meet about 85% of the Asia-Pacific region's energy needs, highlighting APAC's pivotal role in the global energy transition. [lxv] Without bold decarbonization efforts, fossil fuels

could still supply over 50% of ASEAN's power by 2050, underscoring the urgency for a coordinated transition strategy.[lxvi] Achieving net-zero in the region requires a fivefold increase in renewable energy deployment by 2030.[lxvii]

The region has made notable progress in advancing regional and cross-national initiatives aimed at enhancing energy cooperation and market integration. Efforts such as the APEC Energy Roadmap, the ASEAN Super Grid, and the Trans-ASEAN Gas Pipeline represent critical steps toward creating a more interconnected and efficient energy system.[lxviii]

The ASEAN Power Grid, if fully implemented, could reduce cumulative system costs by up to 11.9% and lower the unit cost of electricity by 12.6%.[lxix] These interconnections would redistribute renewable energy resources more efficiently, allowing countries with high solar and hydropower potential (e.g., Laos, Myanmar, Vietnam) to export clean electricity to energy-intensive markets (e.g., Thailand, Singapore, and Malaysia).[lxx] Yet, energy transmission investments remain modest, accounting for only 0.4%–0.5% of total infrastructure costs.[lxxi]

Investment in the broader APAC region remains well below what's needed to meet net-zero targets, despite higher financing needs compared to Africa and LAC. EMDEs in APAC alone require at least USD 1.1 trillion in annual investment, translating into an estimated financing gap of approximately USD 800 billion per year. [lxxii] Indonesia, Vietnam, and the Philippines face the highest capital expenditures, with investment needs reaching USD 330.5 billion, USD 321.1 billion, and USD 175.4 billion, respectively.[lxxiii]

This shortfall is further exacerbated by the continued dominance of fossil fuels in regional energy financing. In 2022, fossil fuel projects accounted for approximately 79% of total energy investments, highlighting a persistent misalignment between capital flows and decarbonization goals. [lxxiv] Similarly, clean energy investment in Southeast Asia remains significantly below necessary levels. Between 2016 and 2020, the region attracted less than USD 30 billion per year in clean energy investment—well below the USD 150 billion annually needed for ASEAN to align with the Paris Agreement. [lxxv] In 2024, the region attracted a mere 2% of global clean energy investment, suggesting a continued lack of capital flows for the energy transition.[lxxvi]

Major Asian economies are advancing low-carbon technologies, yet financial and policy barriers continue to hinder a full and equitable energy transition. China leads the region, with significant investments aimed at decarbonizing its energy and transport sectors. Between 2017 and 2022, China's annual investments in electrified transport surged by 330%, reaching USD 234.1 billion, while investments in renewable energy grew by 93%, totaling USD 274.4 billion. [lxxvii] In 2024 alone, China invested approximately USD 940 billion in clean energy, nearing the global fossil fuel investment total of USD 1.12 trillion.[lxxviii] While this is remarkable, the country's continued reliance on coal continues to slow the pace of the transition. [lxxix] China represents 93% of the world's new coal power plant construction starts in 2024, reinforcing a persistent dependency that poses risks not only to its own decarbonization goals but also to international efforts to achieve net-zero emissions.[lxxx]

Public initiatives increasingly seek to engage the private sector. One example is the Just Energy Transition Partnerships (JET-Ps), which aim to mobilize USD 20 billion—led by Japan and the U.S.—to support Indonesia's coal phase-out. [lxxxi] While designed to leverage public funds to attract private capital, JET-Ps have struggled with implementation, generating more negotiation than progress. [lxxxii] The core issue remains: funding levels fall far short of recipient countries' needs. Without a more ambitious and structured approach, such initiatives risk underdelivering on their promises.

Latin America and the Caribbean

Latin America and the Caribbean boasts one of the cleanest electricity matrices globally, largely due to its historical reliance on hydropower. [lxxxiii] However, this dependence also heightens the region's vulnerability to climate change, as shifting precipitation patterns, prolonged droughts, and extreme weather events threaten energy security. Over the past 50 years, climate-related natural disasters have tripled, further straining economic resilience by reducing GDP—by approximately 0.9% in lower-income countries and up to 3% in the Caribbean. [lxxxiv] Additionally, climate disasters are expected to increase annual debt by an average of 3% of GDP across countries in the region. [lxxxv] Although the region has made significant progress—increasing its renewable energy capacity by 51% between 2015 and 2022—accelerating and deepening transformations in energy matrices

and infrastructure expansion plans is essential for LAC to successfully achieve its 2050 targets.[lxxxvi]

To successfully achieve the energy transition, LAC countries must not only diversify their energy generation sources but also significantly expand and modernize their infrastructure. The region's energy infrastructure remains largely oriented toward oil and gas production and consumption, along with widespread reliance on hydropower. [lxxxvii] However, a persistent mismatch between electricity generation and transmission infrastructure limits efficiency and integration. This issue is often exacerbated by prolonged and inconclusive consultations with local communities, as well as gaps in comprehensive planning.[lxxxviii]

To address infrastructure and planning challenges, it is critical to develop dedicated transmission corridors and effectively integrate transmission planning into generation projects. Achieving this integrated approach and successfully incorporating 80% renewable energy into the regional grid by 2030 could generate savings of USD 23 billion and reduce carbon dioxide emissions by approximately 0.7 gigatons. [lxxxix]

Despite notable progress, such as the Central American Electrical Interconnection System (SIEPAC)—a 1,790-kilometer transmission network linking six countries—regional energy integration remains fragmented.[xc] In parallel, the proposed **Arco Norte** interconnection, which would link Guyana, French Guiana, Suriname, and Brazil with a 3,000-megawatt capacity at an investment of USD 800 million, illustrates the potential for deeper cooperation. [xci] However, scaling such initiatives demands stronger institutional coordination and greater financial commitment.

One of the main barriers to scaling renewable energy in LAC at the regional level is the lack of a unified regulatory framework that provides a clear, long-term vision for the energy transition—an approach that regions such as Africa and ASEAN have been actively pursuing, though their frameworks remain works-in-progress. Beyond regulatory challenges—and similar to Africa and APAC—LAC's financing gap remains stark, requiring an annual injection of USD 215–284 billion between 2023 and 2030 to achieve its low-carbon and climate-resilient goals. [xcii]

Financing challenges in LAC are further exacerbated by constrained fiscal space, high inflation, governance instability, and incomplete investment frameworks. [xciii] Government bond yields in the region are generally higher compared to other developing regions. In 2023, Brazil's ten-year government bond yield in reais exceeded 12%, nearly double the 6.5–7.5% observed in domestic-currency bonds from Indonesia and India. [xciv] As expected, this discrepancy becomes even more pronounced when compared to AEs.

Rising inflation has reduced the average debt maturity in the LAC region from 12 years pre-pandemic to just 5 years in 2023.[xcv] This shortened horizon deters investors from committing to long-term, fixed-return renewable energy projects. More broadly, weakly defined clean-energy objectives, inadequate pricing and tariff structures, and underdeveloped market mechanisms further hinder the region's transition. Despite its clean electricity matrix and growing renewable capacity, the region continues to face deep structural, financial, and regulatory challenges that threaten progress.

4. Public and Private Finance in Regional Energy Transition

Addressing the distinct regional realities of Africa, APAC, and LAC requires more than policy alignment and infrastructure planning alone—it demands substantial, targeted, long-term investment. Public and private investors are overdue to disrupt the cycle of chronic underinvestment by redirecting critical capital flows. This section explores the distinct yet interdependent roles of public and private finance in advancing clean energy deployment and regional cooperation, identifying key financial instruments and mechanisms that can bridge the investment gap.

Climate finance can be channeled through four primary instruments: grants, loans, bonds, and equity investments.[xcvi] Grants from advanced economy donors, MDBs, Development Finance Institutions (DFIs), and Vertical Climate and Environmental Funds (VCEFs) play a vital role in supporting projects that deliver public goods. However, they are not sufficient to meet the scale of climate investment required—especially for large-scale infrastructure and energy transitions.

Debt instruments—including concessional, market-rate loans, and bonds—play a dominant role in climate finance, accounting for over 60%

of global flows.[xcvii] Concessional loans offer favorable terms to support public investments in clean energy, resilience, and adaptation. Market-rate loans, typically structured through project finance vehicles such as Special Purpose Vehicles (SPVs), provide capital for large-scale energy and infrastructure projects while managing investment risks.[xcviii] Only a fraction of climate-related loans, specifically USD 76 billion out of a total of USD 384 billion, is concessional, limiting affordable capital access for EMDEs. [xcix]

Bonds, particularly thematic bonds, have grown in prominence but remain constrained by inconsistent standards and accountability measuresEquity investments—where investors take ownership stakes in exchange for returns—are essential for attracting private capital to infrastructure and clean energy projects. However, maintaining a viable risk-return balance is key to sustaining investor confidence. Project finance typically blends equity, loans, and grants to spread risk, but overall financing costs remain highly sensitive to sovereign and project-specific risks.

To fully leverage a regional perspective, public support must be the cornerstone of strategic coordination and investment mobilization. Regional energy transitions demand policy and financial alignment that cannot be achieved by governments operating in silos. Public support must extend beyond national borders, fostering collaboration among governments, international financial institutions, and private investors to build an integrated and scalable climate finance approach.

Public support is also essential for managing risk and ensuring clean energy project success. It must operate on two complementary levels. First, national governments in EMDEs must coordinate closely to harmonize regulations, align policies and incentives, and develop coherent, long-term regional investment strategies.[c] EMDE governments must foster policy environments that attract private capital and scale investment by ensuring regulatory stability, tax incentives, and efficient permitting. Mitigating currency risk through hedging facilities and local currency guarantees is key to building investor confidence. National transition plans should embed long-term investment strategies that use public funds strategically to crowd in private capital.[ci]

Second, given the high cost of capital and budget constraints in EMDEs, advanced economy governments must scale up concessional funding and

push for structural reforms in MDBs and DFIs to better mobilize private investment. Evidence shows that public investment has a consistently strong impact on crowding in private capital—often more so than feed-in tariffs or tax incentives.[cii] To improve funding efficiency and align national policies with investment priorities, donor governments should promote country-level alliances and pooled capital structures. Creating a dedicated first-loss capital pool at the donor level would help mobilize private investment by mitigating risk in volatile markets. Beyond providing funds, advanced economies must actively shape investable markets by supporting risk-positive strategies—such as guarantees and first-loss protection—to reduce barriers and attract private capital at scale.

MDBs and DFIs must evolve from direct lenders to market enablers, strategically mobilizing private capital to drive systemic progress toward the SDGs.[ciii] Their role should go beyond risk mitigation to actively shaping markets through innovative financing structures, including equity participation, structured risk-sharing, and guarantees. Key strategies include leveraging their AAA credit ratings to issue bonds, co-financing B-loans to distribute risk, and employing securitization to unlock additional liquidity.

To maximize their impact, MDBs and DFIs must enhance operational efficiency, streamline investment processes, and strengthen coordination with the private sector. This shift requires realigning incentives to prioritize capital mobilization over lending volume while ensuring donor countries hold these institutions accountable for maximizing private-sector participation with minimal concessionality.[civ] Their leadership is also essential for mobilizing the estimated USD 80 billion to USD 100 billion annually in concessional funding required by the early 2030s to attract sufficient private investment in EMDEs for the energy transition aligned with the IEA's Net Zero Emissions by 2050 Scenario.[cv]

Even with increased public financing, private investment also needs got scale up dramatically, and at a much faster pace. Private investment brings critical advantages, such as efficiency, innovation, and risk diversification, that the public sector alone cannot fully provide. Similarly, private investors are essential for asset recycling. To bridge the climate finance gap in EMDEs, the private sector must increase its contribution by 50% by

2030 and mobilize between USD 0.9-1.1 trillion annually by the early 2030s. [cvi]

Private sector mobilization in the energy transition remains well below what is needed, largely due to structural barriers. High risk perceptions, cognitive biases, weak sovereign credit ratings, currency volatility, home-market preference, limited local knowledge, and poor due diligence all reduce investor appetite. Institutional mandates, strict risk-return thresholds, and regulatory constraints further limit engagement, reinforcing chronic underinvestment. As discussed in Section II, EMDEs face steep disadvantages—clean energy projects often carry excessive risk premiums, making them unattractive to private investors. Section III also highlights how regulatory uncertainty and fragmented policies further deter private sector leadership in financing the global energy transition.

Even when investors are inclined to participate, the absence of scalable investment vehicles and limited exit opportunities significantly impede capital flows. [cvii] Compounding these issues, many institutional investors remain unaware of the considerable growth potential within EMDEs, driven by favorable demographic trends, increased workforce participation, expanding middle-class consumption, and a clear trajectory toward advanced-economy productivity and income levels.[cviii]

Mobilizing private investment for the energy transition requires tailoring approaches to the varied risk-return profiles, liquidity needs, and regulatory constraints of different investor types—including banks, institutional investors, insurers, family offices, and impact investors. Banks typically prioritize short-term liquidity, while institutional investors seek risk-adjusted, exit-friendly structures, often favoring securitized assets.[cix] Insurance companies, though constrained by regulation, are increasingly investing in infrastructure aligned with their long-term risk profiles. Impact investors and family offices show more flexibility with longer-term commitments. However, most mainstream investors—especially in the U.S.—remain primarily return-driven, highlighting the need for structures that both de-risk investments and offer competitive returns. Prudential regulations like Basel III and Solvency II further limit capital flows to EMDEs by requiring large capital buffers, reinforcing the need for structural innovations to overcome these barriers.[cx]

Blended finance can accelerate the energy transition through the strategic use of catalytic public capital to attract further private investment. Recent developments offer encouraging evidence of renewed momentum. In 2023, the blended finance market surged to USD 23 billion, marking its highest level in five years and a significant recovery from a decade-low point in 2022.[cxi] In recent years, private investors have shown growing interest in blended finance structures that balance risk and return, demonstrating the strong potential to scale private capital mobilization when global institutions and private actors align their priorities and investment strategies.

A robust blended finance ecosystem requires a structured approach focused on standardization, transparency, and liquidity to attract private investment at scale. Rather than bespoke deals, regional efforts should build integrated financial frameworks that align the interests of public institutions, private investors, and philanthropic actors. To be effective, blended finance must be embedded in national long-term development strategies, shifting concessional funding from project-level risk mitigation to market-building at scale.

Innovative, scalable financial instruments that enhance liquidity can boost capital flows while reducing reliance on public funds. Equally important is institutional coordination across regional frameworks—to design effective financial solutions, establish consistent risk and impact standards, and ensure viable exit strategies. This alignment is key to building investor confidence and drawing in mainstream capital.

5. Conclusion

The global energy transition is not just an environmental necessity—it is a core economic, geopolitical, and development challenge. The deep financing gaps in EMDEs highlight the urgent need to move beyond fragmented national efforts toward regionally integrated solutions. Bridging these gaps requires dismantling structural barriers: high capital costs, regulatory fragmentation, and limited private sector engagement.

Regional approaches offer clear advantages—economies of scale, stronger grid resilience, and greater investor confidence. But seizing these opportunities demands coordinated action: harmonizing regulations, aligning incentives, and investing in cross-border infrastructure. Africa,

APAC, and LAC demonstrate both the challenges and promise of regional collaboration.

Public finance must evolve—from isolated concessional lending to catalytic interventions that attract private capital at scale. This includes reforming multilateral institutions, deploying blended finance strategically, and adjusting prudential regulations to reduce perceived risk. At the same time, the private sector must be engaged through instruments that balance risk and return, enhance liquidity, and ensure credible exit strategies.

Ultimately, the success of the energy transition depends on transforming financial markets—from caution to opportunity. This transformation will require bold reforms, coordinated leadership, and a shared commitment across governments, financial institutions, and private investors. Only through collective action can we unlock the capital needed for a just, resilient, and sustainable global energy future.

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