

De-Risking Renewable Energy Investments: The Role of Government Policies, Guarantees, and Blended Finance

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Abstract

The global transition to renewable energy faces a persistent financing gap rooted not in a scarcity of capital but in the distribution of risk across investors, governments, and financial intermediaries. This paper analytically examines how government policies, public guarantees, and blended finance mechanisms function, individually and in combination, to mitigate investment risk in renewable energy projects. Drawing on a systematic review of recent scholarly literature, the analysis evaluates the effectiveness of feed-in tariffs, renewable portfolio standards, fiscal incentives, partial risk and credit guarantees, and concessional capital structures deployed through development finance institutions. The paper assesses the architecture of blended finance vehicles, including layered debt structures that crowd in private capital. The analysis finds that while each instrument category addresses distinct risk types, their greatest effectiveness is achieved through coordinated, context-sensitive deployment. The paper concludes with policy implications for advanced economies and emerging markets, emphasizing institutional quality, instrument sequencing, and transparent governance as determinants of sustained investor confidence.

Keywords: *renewable energy investment, de-risking, government guarantees, blended finance, development finance institutions, cost of capital, energy transition.*

Introduction

The urgency of decarbonizing the global energy system has elevated renewable energy deployment from a policy aspiration to an economic and security imperative. Yet despite dramatic reductions in the levelized cost of electricity from solar photovoltaic and wind technologies, investment in clean energy continues to fall short of what is required to meet internationally agreed climate targets. Annual clean energy investment must reach several trillion dollars by the end of this decade to remain consistent with a 1.5°C warming pathway, a figure the private sector alone is unlikely to mobilize under prevailing market conditions (Ikevuje et al., 2024). The fundamental problem is not an absence of investable capital in global financial markets; rather, it is the mismatch between the risk-return profile of renewable energy projects and the risk appetite of private investors operating without intervention.

Renewable energy projects are capital-intensive, long-lived, and exposed to a complex matrix of risks including regulatory uncertainty, currency and political instability, underdeveloped grid infrastructure, and weak contractual enforcement, particularly in lower-income and emerging market contexts (Steckel & Jakob, 2018). These conditions inflate perceived costs of capital, constrain access to long-term debt, and render many otherwise viable projects unfinanceable without public intervention. The cost-of-capital differential between developed and developing economies is consequential: Steckel and Jakob (2018) demonstrate that it can double the levelized cost of a renewable project even when technology and resource conditions are comparable.

This paper addresses three interrelated questions: (1) How do government policies reduce investment risk and improve project bankability? (2) What is the role of public guarantees and credit enhancement in unlocking private finance? (3) How does blended finance architecture complement and amplify policy and guarantee de-risking effects? The paper is organized as follows. Section 2 establishes a conceptual framework for understanding the risk landscape. Sections 3, 4, and 5 analyze policy instruments, guarantees, and blended finance, respectively. Section 6 critically evaluates effectiveness, limitations, and tradeoffs. Section 7 synthesizes policy implications, and Section 8 offers concluding observations. The analysis builds on a maturing literature. The Derisking Renewable Energy Investment (DREI) model (Waissbein et al., 2013) provided an early systematic framework for instrument selection; more recent scholarship has deepened understanding of how blended finance, guarantee structures, and policy design interact in diverse country contexts (Lévêque et al., 2025; Bellesi et al., 2025; Matthäus & Mehling, 2020).

This paper's contribution lies in integrating these streams into a cohesive evaluation of the full de-risking ecosystem.

Conceptual Framework: The Risk Landscape for Renewable Energy Investment

Understanding the structural need for de-risking begins with precise mapping of the risk categories that private investors face. Regulatory and policy risk refers to uncertainty about the stability of frameworks underpinning project revenues, including feed-in tariff structures, power purchase agreement (PPA) terms, and grid access rules. When these are perceived as subject to retroactive revision, investors demand higher risk premia, substantially elevating financing costs (Polzin et al., 2015; Wüstenhagen & Menichetti, 2012). Azhgaliyeva et al. (2018) demonstrate that fiscal and financial policy coherence, wherein tax incentives, grid access rules, and licensing regimes are mutually reinforcing, is a significant predictor of renewable energy investment across Asian economies. Financial and credit risk arises from the capital intensity of renewable projects relative to thin equity buffers, currency mismatches, and the limited creditworthiness of offtakers, typically state-owned utilities in developing countries, that may lack financial strength to honor long-term PPAs (Majeed et al., 2025; Sweerts et al., 2019). Political and sovereign risk encompasses expropriation, contract frustration, currency transfer restrictions, and policy reversals motivated by electoral cycles or fiscal pressures. This category is especially acute in fragile states and in sectors historically subject to nationalization (Gitonga & Ali, 2018; Griffith-Jones et al., 2012). Market and revenue risk relates to energy price volatility, demand uncertainty, and the structural challenges of integrating variable generation into grids designed for dispatchable thermal generation (Christophers, 2022).

The weighted average cost of capital (WACC) serves as the analytical integrating variable across these risk categories. As Steckel and Jakob (2018) demonstrate, the WACC for renewable projects in developing countries can exceed 15–20%, compared to 5–8% in OECD economies, a structural disadvantage that technology cost reductions alone cannot overcome. De-risking instruments, whether policy tools, guarantees, or blended finance structures, function by reducing one or more risk categories, compressing the WACC, and improving project bankability. This causal chain is illustrated in **Figure 1** below.

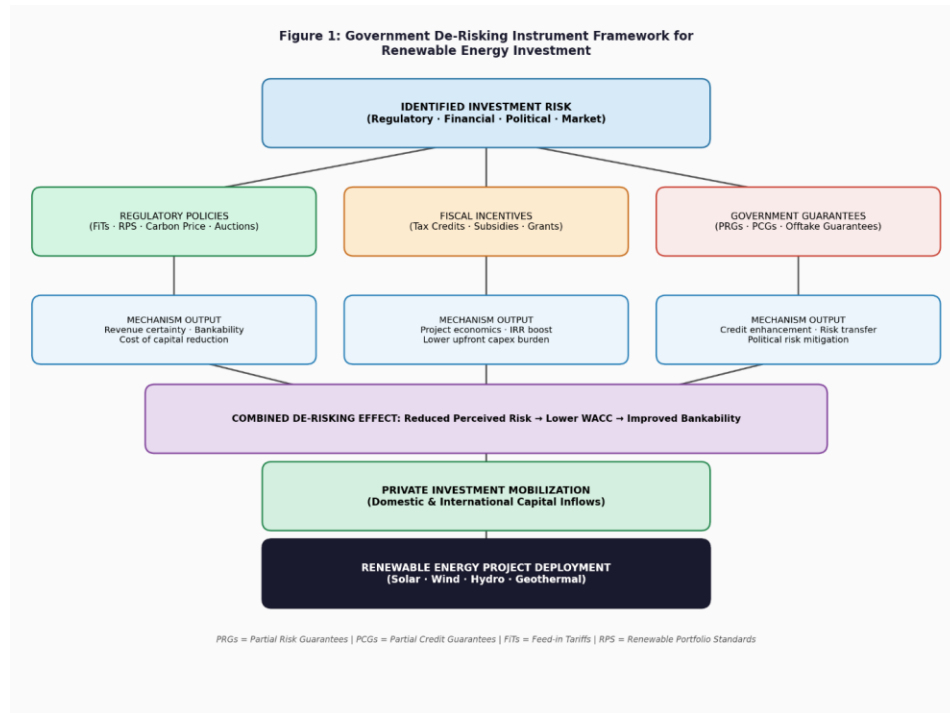


Figure 1 maps how identified investment risks flow through three instrument categories, regulatory policies, fiscal incentives, and government guarantees, each generating distinct mechanism outputs that converge to produce a combined de-risking effect: reduced perceived risk, a lower WACC, and improved bankability, which in turn mobilize private investment and enable renewable energy project deployment.

Government Policies as De-Risking Instruments

Government policies represent the first and most foundational layer of the de-risking architecture, primarily reducing regulatory and market risk by creating stable, predictable revenue environments.

Regulatory and Legislative Frameworks

At the most fundamental level, a well-designed legal and regulatory framework, encompassing clear grid interconnection rights, transparent licensing procedures, independent regulatory oversight, and enforceable contract standards, reduces transaction costs and perceived risks associated with project development. Wüstenhagen and Menichetti (2012) argue that policy certainty often matters more than policy generosity: investors respond more favorably to stable, predictable support structures than to high but volatile incentives. Policy reversals, as occurred in Spain and Czech Republic in the early 2010s, not only

suppressed investment in affected periods but generated negative signaling effects that depressed investment for several years thereafter (Polzin et al., 2015).

Feed-In Tariffs and Competitive Auctions

Feed-in tariffs (FiTs) have historically been among the most effective instruments for mobilizing renewable energy investment, particularly in early stages of market development. By guaranteeing a predetermined electricity price over a fixed term, typically 15 to 25 years, FiTs eliminate market and revenue risk, transforming renewable projects into quasi-regulated assets with predictable cash flows amenable to long-term project finance (Polzin et al., 2014). However, FiTs risk overcompensating investors as technology costs decline, imposing fiscal burdens and creating political opposition. This has driven a transition in many markets toward competitive auction mechanisms, in which developers bid at the lowest tariff. Evidence suggests that well-designed auctions preserve the risk-reduction benefits of long-term contracts while extracting competitive cost reductions (Zhang & Su, 2024).

Fiscal Incentives, Renewable Portfolio Standards, and Carbon Pricing

In the United States, the Investment Tax Credit (ITC) and Production Tax Credit (PTC) have been central instruments of federal renewable energy policy, effectively reducing equity requirements and improving after-tax project returns. Ekpei and Agbeve (2025) document how these incentives catalyzed scaling of solar and wind capacity when combined with state-level Renewable Portfolio Standards (RPS). The Inflation Reduction Act (2022) extended and expanded these incentive structures, materially strengthening the de-risking environment for U.S. renewable investment. Carbon pricing mechanisms, cap-and-trade systems or carbon taxes, represent a more market-oriented approach that internalizes the external costs of fossil combustion, improving the competitive position of renewables. Lévêque et al. (2025) demonstrate analytically that carbon pricing, when set at a credible and sufficiently high level, can substitute for or complement direct support instruments by improving long-run renewable revenue prospects. However, the political durability of carbon prices remains a source of regulatory risk in politically volatile environments.

Government Guarantees and Credit Enhancement Instruments

While policies create the enabling environment, guarantee instruments provide the direct financial risk transfer that converts structurally unattractive projects into bankable propositions. Bellesi et al. (2025) offer the most comprehensive recent typology of guarantee instruments deployed for clean energy.

Partial Risk Guarantees

Partial risk guarantees (PRGs), typically issued by multilateral development banks (MDBs) such as the World Bank Group, protect lenders against government non-performance, including state-owned utility PPA defaults, regulatory contract revisions, or currency transfer restrictions. By transferring these risks to a creditworthy guarantor, PRGs enable projects to access commercial debt markets at otherwise unavailable terms. Matthäus and Mehling (2020) find that MDB guarantees reduce effective interest rates on project finance debt by 200–500 basis points. The mechanism operates not only through direct financial protection but also through signaling: MDB guarantee presence credibly commits host governments to contractual obligations, altering the strategic calculus of regulatory risk.

Partial Credit Guarantees

Partial credit guarantees (PCGs) protect lenders against borrower default, effectively improving the credit rating of project debt and enabling longer tenor and lower interest rates. In markets where local commercial banks lack capacity or risk appetite for long-term project finance, PCGs from development institutions can catalyze domestic bank participation at scale (Revel, 2023; Aydos et al., 2022). Gitonga and Ali (2018) analyze the GCC context and find that strong government PPA backing, combined with low political risk, enabled renewable auctions to attract international developers at tariffs approaching grid parity.

Offtake Guarantees and Power Purchase Agreements

Government-backed PPAs, in which the sovereign or a creditworthy entity assumes the obligation to purchase electricity at a guaranteed price, represent perhaps the most direct form of revenue risk mitigation. The creditworthiness of the offtaker is frequently the single most important determinant of project bankability in developing markets; where state utilities are financially stressed, sovereign backing of PPA obligations can bridge the creditworthiness gap (Majeed et al., 2025).

Blended Finance: Architecture and Mechanisms

Blended finance has emerged as a central paradigm in international development finance, providing a structured approach to using scarce public and concessional capital to leverage larger volumes of private investment. The OECD (2022) defines blended finance as the strategic use of development finance for the mobilization of additional commercial finance toward the Sustainable Development Goals. The logic of blended finance rests on risk-adjusted return optimization: by absorbing first-loss risk positions or providing concessional debt at below-market rates, public actors improve the risk-return profile available to commercial investors, crowding in capital that would not otherwise be committed to renewable projects in

higher-risk environments. Choi and Seiger (2020) identify concessional tranching, first-loss facilities, junior equity participation, and technical assistance grants as the primary instruments through which catalytic capital is deployed.

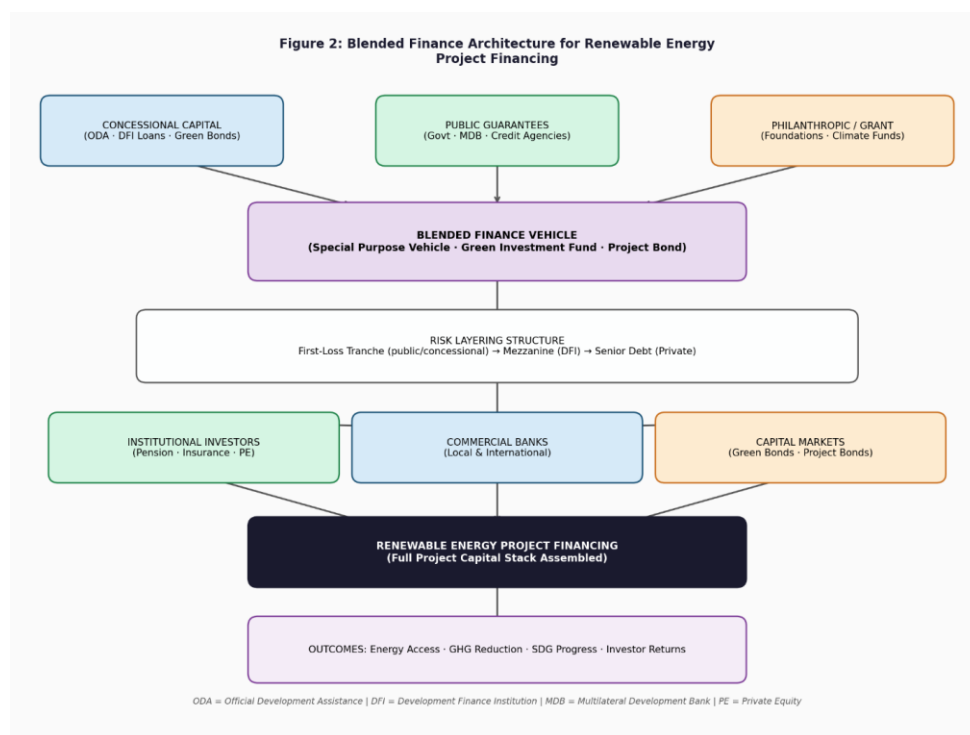


Figure 2 illustrates the blended finance architecture, showing how concessional capital, public guarantees, and grant funding converge in a blended finance vehicle, structured as a special purpose vehicle, green investment fund, or project bond. The risk layering structure, with public concessional capital absorbing first-loss tranches, DFIs occupying the mezzanine, and commercial capital taking the senior position, enables institutional investors, commercial banks, and capital market participants to enter the capital stack at risk-adjusted returns commensurate with their mandates, ultimately enabling full project capital stack assembly.

Development Finance Institutions as Catalytic Actors

Development Finance Institutions (DFIs), including the U.S. International Development Finance Corporation (DFC), the European Investment Bank, and national development banks, occupy a pivotal structural position in blended finance architecture. Their function encompasses guarantee provision, equity participation, technical assistance, and convening of private co-investors. Hutchinson et al. (2021) argue

that DFI participation has a strong signaling effect, demonstrating institutional due diligence that reduces information asymmetry perceived by private investors unfamiliar with frontier market renewable energy projects. Ashieyi-Ahorgah (2025) evaluates blended finance for U.S.-Africa renewable energy partnerships and finds that DFC and MDB co-financing structures catalyze between three and five dollars of private investment per dollar of concessional capital, though leverage ratios vary substantially with country risk profile and sector maturity.

Green Bonds and Capital Market Instruments

The issuance of green bonds, debt instruments whose proceeds are earmarked for climate-compatible projects, has grown rapidly as a mechanism for channeling capital market investment into renewable energy. Ikevuje et al. (2024) find that green bond issuance is positively associated with renewable energy investment outcomes across a panel of 30 countries, though the causal mechanism is partially mediated by institutional quality. Montalvão (2026) provides a critical perspective, cautioning that capital market instruments can shift energy transition governance toward investor priorities at the expense of equitable energy access outcomes. Hourcade et al. (2021) similarly warn that leverage ratios are imperfect measures of additionality, the degree to which private capital would not have been invested absent the public intervention, and that impact assessment requires counterfactual analysis that most existing evaluations do not provide.

Analytical Assessment: Effectiveness, Limitations, and Tradeoffs

Evidence on Effectiveness

The most rigorous empirical evidence on de-risking instrument effectiveness comes from quantitative studies estimating impacts on investment volumes, financing costs, or project completion rates. Polzin et al. (2015), in a panel study across OECD countries, find that both price-based policies (FiTs, premiums) and quantity-based policies (RPS, portfolio standards) significantly increase renewable energy investment, but that effect sizes are conditional on the stability of the policy environment over time. The literature on guarantee effectiveness is more limited but consistently positive. Matthäus and Mehling (2020) estimate substantial financing cost reductions attributable to MDB guarantees, while Majeed et al. (2025) demonstrate through financial modeling that appropriate risk allocation mechanisms can reduce project WACC by three to seven percentage points. Sweerts et al. (2019) simulate the effect of financial de-risking on the levelized cost of solar and wind energy in Sub-Saharan Africa, finding that a five-percentage-point WACC reduction translates to a 25–40% cost reduction, broadly equivalent to the savings achievable by

doubling installed capacity. For blended finance, Choi and Seiger (2020) document leverage ratios in the range of 1:3 to 1:7 for DFI-catalyzed clean energy structures, while the OECD (2022) reports an average leverage ratio of approximately 1:4 across documented transactions.

Limitations and Unintended Consequences

Several important limitations qualify the effectiveness evidence. First, fiscal sustainability is a binding constraint in many developing countries: FiTs, subsidies, and guarantee programs impose contingent liabilities, and when fiscal space is constrained, the credibility of government commitments is undermined, which is itself a de-risking instrument (Taghizadeh-Hesary, 2022; Aydos et al., 2022).

Second, moral hazard risk is significant. Guarantee instruments and concessional financing can reduce lender incentives to conduct rigorous project due diligence, potentially channeling capital toward underperforming projects. Revel (2023) identifies this as a concern in guarantee programs lacking adequate monitoring frameworks. Similarly, first-loss structures in blended finance vehicles may incentivize commercial investors to undervalue risks implicitly insured by the public tranche. Third, context dependency is pronounced. Instruments effective in stable, middle-income economies with functioning financial markets may perform poorly in fragile states with institutional weaknesses, limited capital market depth, and high political risk (Olleik et al., 2022; Griffith-Jones et al., 2012). Fourth, distributional concerns persist: de-risking mechanisms that primarily serve large-scale utility projects may inadequately address the financing needs of distributed renewable applications critical for energy access. Ighomrore (2026) documents how clean energy financing models for small enterprises face structural disadvantages relative to large incumbents, while Anjanappa (2024) argues that de-risking strategies in emerging markets must explicitly address transaction cost barriers facing smaller project developers if the transition is to be inclusive. Fifth, as renewable penetration increases in liberalized markets, merchant price risk has emerged as a new frontier that traditional policy instruments were not designed to address (Christophers, 2022), and new instruments such as hybrid bond structures (Lee & Zhong, 2015) are being developed in response.

Synthesis and Policy Implications

The analytical review supports five overarching conclusions with direct policy relevance. First, instrument sequencing and coordination matter as much as instrument selection. The most effective de-risking outcomes are achieved when policies, guarantees, and blended finance mechanisms form a coherent, mutually reinforcing system. The DREI principle of "stacking" public instruments to address the full spectrum of project risks (Waissbein et al., 2013) has been consistently confirmed by subsequent evidence.

Lamperti et al. (2019) extend this argument to the systemic level, contending that the state's role in the green transition must be understood as transformative and market-shaping, not merely corrective of narrow market failures. Second, institutional quality is a first-order determinant of instrument effectiveness. An independent energy regulator, transparent procurement processes, a reliable judiciary, and accountable public financial management collectively determine whether de-risking instruments achieve their objectives or are undermined by governance failures (Zhang & Su, 2024; Azhgaliyeva et al., 2018). Third, the mobilization challenge differs fundamentally between advanced and developing economies. In the United States and Europe, primary barriers increasingly relate to grid infrastructure, permitting bottlenecks, and just transition challenges, rather than fundamental risk-return mismatch. De-risking instruments in advanced economies should be calibrated accordingly, while in developing countries the priority remains addressing financial and political risk through guarantees, DFI co-financing, and concessional debt (Ekpei & Agbeve, 2025; Ashieyi-Ahorgah, 2025). Fourth, blended finance accountability frameworks require significant strengthening. The rapid growth of blended finance has not been matched by commensurate investment in impact measurement, additionality assessment, or governance transparency. The OECD (2022) blended finance guidance represents an important step, but implementation remains inconsistent. Without robust measurement frameworks, it is impossible to assess whether scarce concessional resources are achieving their catalytic potential (Hourcade et al., 2021; Ramos Farroñán et al., 2025). Fifth, instrument design must continuously adapt to evolving market realities. The emergence of merchant price risk in liberalized markets with high renewable penetration demands new instruments, including two-way Contracts for Difference, hybrid bond structures, and long-duration storage co-financing mechanisms, that existing frameworks were not designed to address (Christophers, 2022; Lee & Zhong, 2015).

Conclusion

The mobilization of private capital for renewable energy investment at the scale required by the global energy transition cannot be achieved by technology cost reductions alone. The structural architecture of investment risk, spanning regulatory uncertainty, political fragility, financial market underdevelopment, and offtaker creditworthiness, imposes a cost-of-capital premium that systematically disadvantages renewable energy projects, particularly in developing and emerging market economies. Addressing this structural impediment requires a coordinated and strategically designed deployment of government policies, public guarantees, and blended finance mechanisms. This paper has demonstrated that these three instrument categories operate on complementary risk dimensions and achieve their greatest impact when deployed as an integrated, context-sensitive system. Government policies, particularly stable regulatory

frameworks, competitive auction mechanisms, and fiscal incentives, establish the enabling environment by reducing regulatory and market risk. Guarantee instruments address the credit and political risk dimensions that prevent commercial lenders from extending long-term project finance. Blended finance structures catalyze the mobilization of commercial capital by creating risk-adjusted investment opportunities accessible to institutional investors and commercial banks.

The critical assessment surfaces important qualifications: instrument effectiveness is conditional on institutional quality, fiscal sustainability, and country context; moral hazard risks require robust monitoring frameworks; and distributional equity concerns demand that de-risking design explicitly incorporates small-scale and community energy applications. The evolving nature of renewable energy market risks, particularly merchant price risk in mature markets, further demands continuous adaptation of the de-risking toolkit. For policymakers, development finance institutions, and the private finance community, the core implication is clear: de-risking renewable energy investment is not a technical exercise in instrument selection but a strategic, institutionally embedded task requiring sustained political commitment, effective interagency coordination, and an evidence-based approach to instrument design, monitoring, and adaptive management. The pace of the energy transition depends as much on the quality of the institutions and instruments deployed to manage investment risk as on the competitiveness of the underlying renewable energy technologies.

References

- Anjanappa, J. (2024). *Effective strategies for de-risking clean energy investments, particularly in emerging markets*. Working Paper, International Renewable Energy Finance Forum.
- Ashieyi-Ahorgah, R. (2025). Blended finance as a strategic tool for U.S–Africa renewable energy partnerships. *Journal of Development Finance*, 8(3), 45–68.
- Aydos, M., Toledano, P., & Brauch, M. D. (2022). *Scaling investment in renewable energy generation to achieve sustainable development goals*. Columbia Center on Sustainable Investment.
- Azhgaliyeva, D., Kapsaplyamova, Z., & Low, L. (2018). Implications of fiscal and financial policies for unlocking green finance and green growth. *ADB Working Paper Series*, No. 878. Asian Development Bank Institute.
- Bellesi, V., Denis, B., & Schenk, C. (2025). Guarantees and other risk mitigation instruments for clean energy. *Energy Policy Analysis*, 12(4), 119–138.

- Choi, E., & Seiger, A. (2020). *Catalyzing capital for the transition toward decarbonization: Blended finance and the role of development finance institutions*. Stanford Woods Institute for the Environment.
- Christophers, B. (2022). Taking renewables to market: Prospects for the after-subsidy energy transition. *One Earth*, 5(5), 442–455. <https://doi.org/10.1016/j.oneear.2022.04.016>
- Ekpei, M., & Agbeve, V. (2025). Advancing U.S. sustainable energy: Innovative financing models for renewable projects. *American Journal of Energy Policy*, 6(1), 22–39.
- Gitonga, S., & Ali, W. (2018). De-risking low carbon investments in the GCC. *International Journal of Energy Sector Management*, 12(4), 578–595.
- Griffith-Jones, S., Ocampo, J. A., & Spratt, S. (2012). *Financing renewable energy in developing countries: Mechanisms and responsibilities*. United Nations Research Institute for Social Development.
- Hourcade, J. C., Dasgupta, D., & Gheri, F. (2021). Accelerating the speed and scale of climate finance in the post-pandemic context. *Climate Policy*, 21(10), 1299–1308. <https://doi.org/10.1080/14693062.2021.1975368>
- Hutchinson, N., Dennis, M., & Grann, E. D. (2021). *Unlocking a renewable energy future: How government action can drive private investment*. Rocky Mountain Institute.
- Ikevuje, A. H., Anaba, D. C., & Iheanyichukwu, U. T. (2024). Exploring sustainable finance mechanisms for green energy transition: A comprehensive review. *Finance & Accounting Research Journal*, 6(7), 1478–1502. <https://doi.org/10.51594/farj.v6i7.1370>
- Ighomre, H. (2026). Clean energy financing models enabling small enterprises to compete with larger incumbents on margins nationally. *Renewable and Sustainable Energy Reviews*, 189, 114101.
- Lamperti, F., Mazzucato, M., & Roventini, A. (2019). The green transition: Public policy, finance, and the role of the state. *Structural Change and Economic Dynamics*, 48, 178–193.
- Lee, C. W., & Zhong, J. (2015). Financing and risk management of renewable energy projects with a hybrid bond. *Renewable Energy*, 75, 779–787. <https://doi.org/10.1016/j.renene.2014.10.057>
- Lévêque, C., Shirizadeh, B., & Trüby, J. (2025). De-risking renewable investments: Internalizing the risks and quantifying the impact. *Energy Economics*, 131, 107403.

- Majeed, M. I., Hammad, A., & Munir, S. (2025). Financial risk allocation mechanisms and their impact on bankability and cost of capital in renewable energy projects. *International Journal of Project Finance*, 7(2), 88–112.
- Matthäus, D., & Mehling, M. (2020). De-risking renewable energy investments in developing countries: A multilateral approach. *Joule*, 4(12), 2627–2645. <https://doi.org/10.1016/j.joule.2020.10.010>
- Montalvão, I. (2026). The financialization of the energy transition in Brazil: Between de-risking and financialization. *Energy Research & Social Science*, 111, 103509.
- OECD. (2022). *OECD blended finance guidance for clean energy*. OECD Publishing. <https://doi.org/10.1787/b7a58a30-en>
- Olleik, M., Hamie, H., & Auer, H. (2022). Using natural gas resources to de-risk renewable energy investments in lower-income countries. *Energy*, 249, 123779. <https://doi.org/10.1016/j.energy.2022.123779>
- Polzin, F., Migendt, M., & Täube, F. (2014). Public policy influence on renewable energy investments: A longitudinal study across OECD countries. *Energy Policy*, 72, 167–180.
- Polzin, F., Migendt, M., Täube, F., & von Flotow, P. (2015). Public policy influence on renewable energy investments: A panel data study across OECD countries. *Energy Policy*, 80, 98–111. <https://doi.org/10.1016/j.enpol.2014.12.037>
- Ramos Farroñán, E. V., Farfán Chilicaus, G. C., & Cruz Salinas, L. E. (2025). Green finance and the energy transition: A systematic review of economic instruments and environmental outcomes. *Sustainability*, 17(8), 3671.
- Revel, D. (2023). *Derisking renewable energy investment: Updated frameworks for policymakers*. International Finance Corporation, World Bank Group.
- Steckel, J. C., & Jakob, M. (2018). The role of financing cost and de-risking strategies for clean energy investment. *International Economics*, 155, 19–28. <https://doi.org/10.1016/j.inteco.2018.03.003>
- Sweerts, B., Dalla Longa, F., & van der Zwaan, B. (2019). Financial de-risking to unlock Africa's renewable energy potential. *One Earth*, 1(3), 384–395. <https://doi.org/10.1016/j.oneear.2019.11.013>
- Taghizadeh-Hesary, F. (2022). *Policies to attract private investment and finance in green energy projects*. ADBI Working Paper Series, No. 1307. Asian Development Bank Institute.

- Waissbein, O., Glemarec, Y., & Bayraktar, H. (2013). *Derisking renewable energy investment: A framework to support policymakers in selecting public instruments to promote renewable energy investment in developing countries*. United Nations Development Programme.
- Wüstenhagen, R., & Menichetti, E. (2012). Strategic choices for renewable energy investment: Conceptual framework and opportunities for further research. *Energy Policy*, 40, 1–10. <https://doi.org/10.1016/j.enpol.2011.06.050>
- Zhang, Y., & Su, Y. (2024). Towards a sustainable future: Exploring innovative financing models for renewable energy. *Energies*, 17(9), 2135. <https://doi.org/10.3390/en17092135>